

# 2023 | 24

## SPORTS VENUES

THE ANNUAL YEARBOOK OF STADIUMS AND ARENAS

### OPERATION

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sustainability and more

### TECH REPORT

Technical trends  
in sports venues





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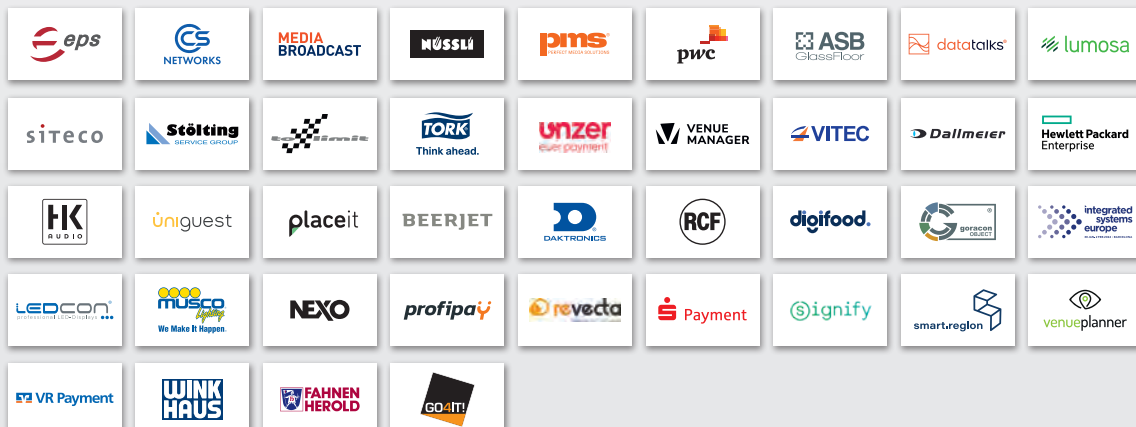
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# Old, new challenges



Dear readers,

you have before you the already 9th issue of our international yearbook SPORTS VENUES. Last year we headlined: “The dawn of a new era” – and this era, after the exhausting Covid crisis, has long since begun. But the industry has shown strength, endurance and also changeability – and thus overcome the pandemic.

But that certainly does not mean that there are no more tasks to be accomplished. On the contrary: the climate crisis is also a huge challenge to which sports and event venues all over the world can – and must – contribute. In an exclusive interview, Sam Booth, for example, tells us how this challenge can be approached. Since January this year, he has been Director of Sustainability at the operating company AEG Europe, whose portfolio includes some of Europe’s leading venues. He describes how he found his way into the industry, what his core tasks are as a sustainability manager, how he promotes sustainability in his professional and private life – and he also tells us how venues are already tackling climate change today.

It is one of many interviews worth reading in this yearbook, which again presents portraits of some of the leading sports venues around the world. For example, STADIAWORLD takes a look behind the scenes at Arthur Ashe Stadium: the largest tennis stadium in the world hosts the US Open in New York every year. But there are many more facilities on the grounds in Flushing Meadows that the operators take care of.

As usual, the exclusive construction report provides an in-depth overview of global sports facility construction. The report once again proves the role that major sporting events play in terms of the willingness to invest. For instance, a lot is being done in Germany, where UEFA EURO 2024 is already casting its shadow and will require some modernisation and improvements to the venues. But in the field of events, too, it is becoming apparent that sustainable solutions are more and more in demand – such as in Paris, where use will mostly be made of existing venues or temporary solutions for the 2024 Olympic Games.

This yearbook also covers the field of infrastructure once again. The Tech Report, as usual, deals with high-tech solutions, highlighting the latest technology trends and tricks in the sector. All these old and new tasks will once again be combined and addressed at the eps ARENA SUMMIT. We look forward to welcoming you to Frankfurt’s Deutsche Bank Park on 13 and 14 September 2023, when the industry will meet and exchange ideas for the fifth time in Frankfurt. Until then, we hope that this yearbook will again give you some food for thought.

Enjoy reading!

Benedikt Hellmann  
Editor





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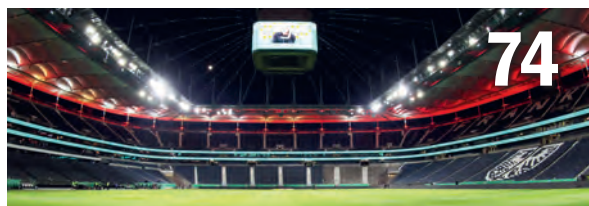
In Asia, China and Japan are traditionally the focus of stadium and arena projects. But things are also picking up the pace in Saudi Arabia, where the desert state prepares for its first major national team tournament.





## A VENUE LIKE NO OTHER

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## BILLIONS FOR BUILDINGS

A trend has developed in the USA to build very expensive new stadiums and arenas. It does not seem to be abating.



## MAJOR SPORTS EVENTS IN 2023 & 2024

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The European Football Championship 2024 will take place from 14th June to 14th July in Germany – for the second time after 1988. STADIAWORLD shows the host cities and tournament stadiums.

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# New openings: Hello venue world

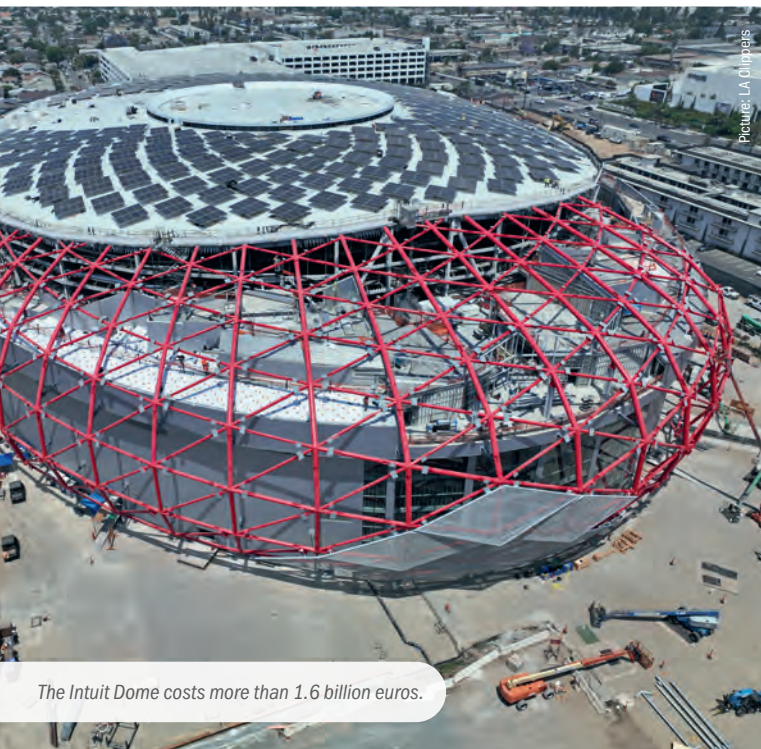
While investments are being made in the existing infrastructure in many places, many new openings were and are still on the agenda. A look at selected projects.

**W**hether stadiums or arenas, new venues are still being built and opened all over the world. The demand for new and modern infrastructure is unbroken – and sometimes even though modern facilities already exist. For example, just outside Los Angeles, where a new multi-billion-euro arena is currently under construc-

tion. Located right next to the most expensive stadium in the world – the SoFi Stadium – it will provide a new home for the LA Clippers. Until 2024, the NBA franchise will continue to play in the Crypto.com Arena – which is also undergoing a nine-figure renovation. The costs for the new building in Inglewood, on the other hand, are many times high-

er. The Intuit Dome is expected to cost more than 1.6 billion euros.

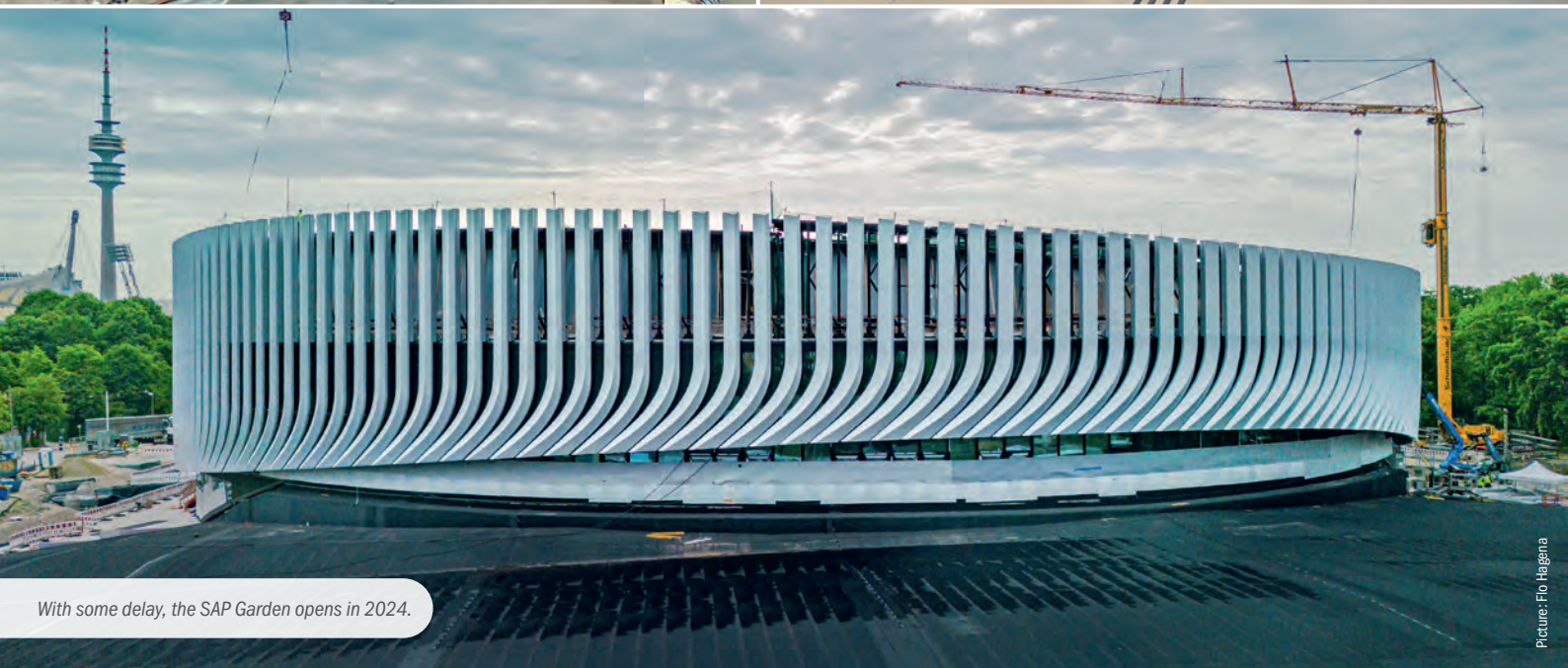
By contrast, the SAP Garden in Munich costs “peanuts” at 150 million euros. Located in the Olympic Park in Munich, the new building is intended to be the home of the EHC Red Bull Munich and the FC Bayern Munich Basketball. In addition, other events such as gaming will take place. After various delays, →



The Intuit Dome costs more than 1.6 billion euros.



Arena MRV: New home of Atlético Mineiro.



With some delay, the SAP Garden opens in 2024.

Picture: LA Clippers

Picture: imago/Sports Press Photo

Picture: Flo Hagen



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the SAP Garden is finally scheduled to open in 2024.

The BBBank Wildpark in Karlsruhe has already opened. On 19 July, the Liverpool FC came to Baden for the opening match. The Karlsruher SC had to admit defeat with 2:4. However, the loss did not dampen the joy about the opening of the stadium.

The Brazilian club Atlético Mineiro also got a new stadium. In April 2023, the club's own MRV Arena in Belo Horizonte was opened after almost exactly three years of construction. The stadium cost the equivalent of just under 180 million euros and has space for about 48,000 visitors.

The new home of Linzer ASK offers considerably less space. With a capacity of 19,080, the Raiffeisen Arena is still one of the largest stadiums in Austria. Reason enough for the Austrian Football Association to play national team matches in Linz. However, it is not the only stadium opened in Linz in 2023. With the Hofmann Personal Stadium, city rival Blau-Weiß Linz received a new sporting home, too.

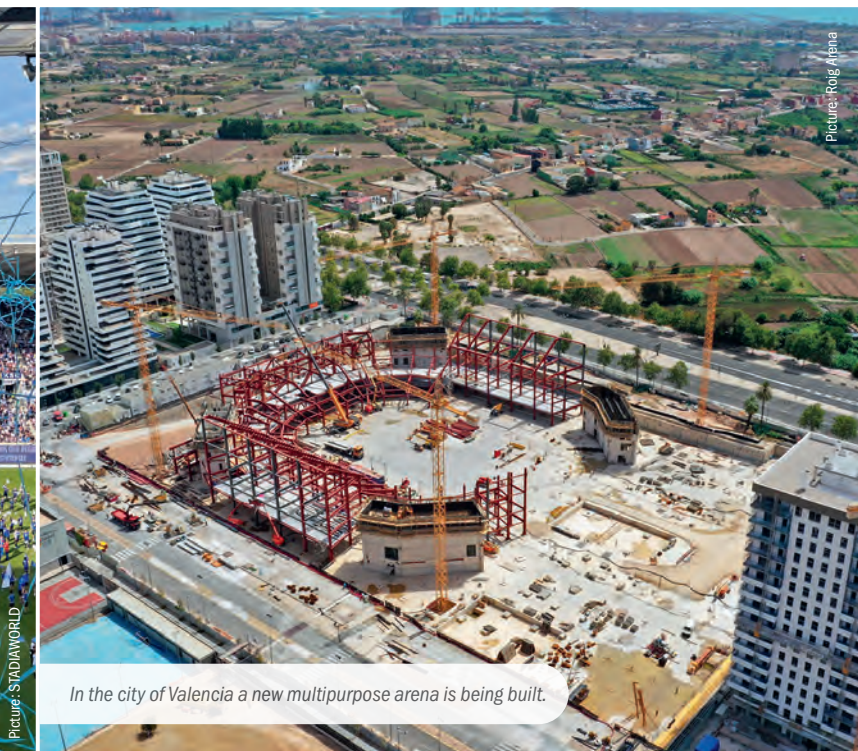
The Valencia Basket Club still has to wait for such. The opening of the Roig Arena, which will host concerts, shows, cultural and art events in addition to the Spanish first division club's home games, is planned for 2024.

In addition to the stadiums and arenas just mentioned, numerous other venues will see the light of day in the coming year. For example, Co-op Live in Manchester, the largest arena in the UK, is scheduled to open after a one-year delay. In Hong Kong, the opening of the Kai Tak Sports Park, including a stadium and an arena, is planned, and in Liverpool, the new stadium of Everton FC is to be opened.

Even though millions of euros are being spent on refurbishing and upgrading existing infrastructure in many places, there are still also many new stadiums and arenas that can then say "hello venue world". ♦



BBBank Wildpark: The big Liverpool FC came for the opening game.



In the city of Valencia a new multipurpose arena is being built.



Two new stadiums for Linz – here: the Raiffeisen Arena.



A woman with long brown hair, wearing a grey jacket, is standing in profile and holding a smartphone to scan an Axess SMART SCANNER 600 NFC. The scanner is a grey and orange device mounted on a white turnstile. In the background, other similar scanners and a modern building with glass windows are visible.

# Axess

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### Entry made easy with the Axess SMART SCANNER 600 NFC.

With the NFC module, it is now possible to use the NFC chip of the mobile phone to pass through a gate. Compatible with both Android and iOS wallets, this is perfect for use in stadia and arenas. The process is fast, contactless and allows you to keep your ticket on your smartphone. In addition, all barcode and QR-Code tickets can be read using the **SMART SCANNER**, meaning swift entry for all fans.

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# AXESS



# “The big moments happen at Wembley”

On 28 April 2023, Wembley Stadium celebrated its 100th anniversary. In this interview with Liam Boylan, Wembley’s Stadium Director, STADIAWORLD looks back at the most important events of the venue as well as upcoming changes in the future.



Liam Boylan

Picture: Wembley Stadium

**STADIAWORLD:** It’s fair to say, Wembley Stadium is one of the most iconic venues in the UK – what makes Wembley so special?

**Boylan:** When you think of places that help define England, some instinctive-

ly leap to mind: Stonehenge, Westminster Abbey, the Houses of Parliament ... and Wembley Stadium.

Over the last 100 years it has been the main pivot point of football history in England, and for numerous other occasions that transcend sport and music, which have now been all etched into our shared heritage.

Footballers want to play on the pitch, bands want to perform on stage and fans want to go to watch it all at Wembley because the big moments happen at Wembley. Yes, there are other great stadiums across the UK and the world, but we have a saying here that IT ALWAYS MATTERS MORE at Wembley.

**STADIAWORLD:** What role does Wembley Stadium play in the (inter) national venue landscape?

**Boylan:** Nationally, Wembley is still the home of England for both the men’s and women’s senior teams and the host for all major cup finals here in England. On the international circuit Wembley has hosted a World Cup Final in 1966. It has also been chosen for two men’s UEFA EURO tournaments – in 1996 and 2021. England were semi-finalists in the former and beaten finalists in the latter.

Last year Wembley hosted the final of the Women’s EURO 2022 which saw the England senior women’s team –

the Lionesses – go one step further and become European champions.

At club level, to date Wembley has hosted seven UEFA Champions League Finals – more than any other venue. As a belated birthday present it will hold an eighth final in 2024.

**STADIAWORLD:** Looking back on the history of the Stadium: What were the biggest highlights?

**Boylan:** Although synonymous with football, Wembley has hosted a variety of sports throughout its history. Everything from the Olympics (1948 and 2012) to world title boxing fights, NFL clashes, speedway, show-jumping, Gaelic football, hurling, motor-sport and greyhound racing. It has also held rugby matches of both codes and was a venue for the 2015 Rugby Union World Cup.

## “COVID HELPED US ENHANCE OUR SKILL SET

Perhaps the three biggest events Wembley will always be associated with though, are the World Cup in 1966, Live Aid in 1985 and the Women’s EURO 2022.

1966 was special as it was a World Cup win on home soil. It is still to this day England’s greatest ever performance at a major football tournament. It was also a classic final, beating close rivals Germany 4-2 in extra-time with Geoff Hurst scoring a hat-trick. It had all the drama you would want from a big

game with the right result – if you were an England fan of course.

Live Aid in 1985 was also special and really put Wembley on the map as a music venue. There were 70,000 fans in the stadium and along with the other Live Aid stage at Philadelphia’s JFK Stadium, the concert was broadcast live to more than one billion people across 110 countries. There were many great performances that day from some of the world’s biggest stars at the time, but it was Queen and Freddie Mercury’s ability to get the crowd involved that everyone recalls. It was only 20 minutes but still considered one of the great stadium shows.

Last year’s women’s EURO 2022 success was also epic. Not only was it a first success for an England team in over 50 years, it was a moment that propelled women’s football into the mainstream. It put women’s football on the back and front pages of every newspaper in the UK and Chloe Kelly wheeling away with her shirt off will be an iconic moment that will go down in the stadium’s history.

**STADIAWORLD:** 2022 was a record year for Wembley. Can one say you successfully overcame Covid?

**Boylan:** Strangely, we were the busiest venue in the country during the pandemic. We might have had no crowds and then some crowds, but we were operating and helping government with the Event Research Programme (ERP), which ultimately allowed for live events to come back in force. Covid perversely helped us re-tool and enhance our skill set.

However, it was still a strange period, so it was gratifying to bounce back in such style. 2022 was just exceptional.





Picture: Wembley Stadium

The new "Home of Football": Wembley Stadium in its current form opened in 2007.

More than 2.6 million people came through the doors of Wembley Stadium, and we hosted 35 events, including major football finals, heavyweight boxing bouts, an NFL fixture and sell out concerts from some of the biggest names on the globe. It was great to be able to create those magical moments once again.

**STADIAWORLD:** Over the years, a lot has changed, especially infrastructure-wise. In 2002/03 the old Wembley was demolished and replaced with a completely new building. How im-

portant was this for Wembley Stadium as an event location?

**Boylan:** As the 20th century drew to a close, it was clear the original stadium was no longer fit for purpose. It was built in the 1920's and a new millennium needed a modern national stadium to confidently embrace the future. The new Wembley stadium was designed to create the ultimate fan experience for everyone. It has 90,000 seats with no obstructed views – a first for a stadium of such size, where it is traditional to have obstructed views due to vital engineering structures. There is also now more leg room in every seat of the new Wembley than there was in the royal box of the old stadium.

The new Wembley is also a more welcoming and inclusive venue for guests with access requirements. There are specifically adapted areas for guests with different access requirements, including 310 wheelchair spaces each with a personal assistant/companion seat. Last year we also opened two multi-purpose sensory rooms within the stadium to better accommodate neuro-divergent guests and their families.

It is important that we continually look to adapt and develop the stadium. Customer requirements and expectations

are constantly evolving. What might have been fit for purpose ten years ago is not the case now. Wembley needs to reflect that.

**STADIAWORLD:** Do you already have further plans to invest in the infrastructure?

**Boylan:** We are continually looking at ways to improve the stadium and the experience of every customer who sets foot inside. That can be through technology or general maintenance. We never sit still or rest on our laurels. Several of the team have recently been in America, to look at some of the stadiums over there. In many areas we are still world leaders but there are many other aspects that we can learn from and look to implement over the next few years. Technology will be at the forefront of many changes, and I expect new processes for ordering food and drink, VR way-finding and crowd participation via smartphones to be features coming to a lot of stadia very soon. ♦



Picture: Wembley Stadium

Spectator magnet in London



**STADIAWORLD**

You can find the complete interview series online.



# The stadiums of the 2023/24 season

The highlights of the five large European leagues – England, France, Germany, Italy and Spain – will be presented on the following pages. In addition, there is an overview of the geographical allocation of all venues.

Some stadiums – especially the largest ones in the respective league – have been keeping their top position for some time now. An example of this is SIGNAL IDUNA PARK, which is the biggest stadium in Germany with a capacity of 81,365. The huge venue was opened in the 1970s, and to stay up to date, the operators regularly invest in the property.

## Newcomer to the Bundesliga

In Germany the stadium of 1.FC Heidenheim, Voith-Arena, will add to the list of Bundesliga venues. For the first time in the club's history, 1.FC Heidenheim achieved promotion to the Bundesliga this summer. The Voith-Arena, in its current form, has been the home of the FCH since 2010. 13 years ago, the then so-called "Albstadion" was converted into a pure football stadium by means of a major reconstruction, which provided space for 10,000 spectators. In 2011, the stadium was given its current name. For some time now, and regardless of league affiliation, the club has been planning to expand the stadium to 25,000. Another special German venue is the "Stadion An der Alten Försterei", which is home to 1.FC Union Berlin and now no longer the smallest venue in the league (with 22,012). FCU is also planning to expand its stadium. For the UEFA Champions League games coming up next season (a first, in fact), the

club will move to the Olympiastadion, home of city rivals Hertha BSC.

## Major projects in Spain

In Spain, of course, the prestige projects of FC Barcelona and Real Madrid still stand out. Currently, construction is underway in both Barcelona and Madrid, and the two stadiums will be transformed into modern high-tech venues. Even if the sight of the demolition is likely to break the hearts of many football romantics, the departure into the new era is inevitable for Spain's top clubs. Real's "Santiago Bernabéu of the 21st Century," as the club calls it itself, is soon to be finished. FC Barcelona will need to move temporarily and play its home games at the Olympic Stadium, with the modernised stadium probably being ready in 2026.

## London's still a hotspot

There are plenty of cities in Europe's top five leagues that host more than one club – but the London metropolis offers a wealth of top-level football. London will again host seven first division teams in the 2023/24 season. In the new season, top-tier football can be watched in London with Arsenal FC, Chelsea FC, Crystal Palace FC, Tottenham FC, West Ham FC, Brentford FC as well as Fulham FC.

A special home stadium is located in Luton, about 50 kilometres north of

London. The Kenilworth Road Stadium has a capacity of over 10,000 and has served as the home stadium of the Luton Town FC football club since 1905. The rise of the "Hatters" resembles a fairy tale – for it is the return to the first division after 31 years. In 1992, the club played in England's top league for the last time, even having been in the fifth division in the meantime. In any case, the dilapidated stadium exudes a special charm – and it is the counterpart to the modern high-tech architecture that can be seen, for example, at Tottenham Hotspur Stadium.

Due to teams getting promoted and relegated, stadiums have – on average – become significantly smaller in Germany. With the VELTINS-Arena (FC Schalke 04) and the Olympiastadion Berlin (Hertha BSC), two big stadiums (62,271/Schalke and 74,475/Berlin) have left the Bundesliga stage for now. With Heidenheim's Voith-Arena and Darmstadt's Merck-Stadium at Böllenfalltor, two smaller, but also younger stadiums are newly added. It comes as no surprise therefore that the average capacity in the Bundesliga decreases, too. Incidentally, as of the 2023/24 season, the Bundesliga is no longer the only championship of the European top five leagues with 18 teams. In fact, the French Ligue 1 decided last year to reduce the number of teams to 18. In the three other leagues, 20 teams are playing in the new season. ➔





Picture: THFC

#### Tottenham Hotspur Stadium – London

The Tottenham Hotspur Stadium is the most expensive stadium in the Premier League, with construction costs of over one billion euros. The Spurs have been playing their home games here since 2019, and the NFL also uses the venue on a regular basis.



Picture: Image/Wirestock

#### St. James' Park – Newcastle upon Tyne

St James' Park is the home ground of Newcastle United FC (capacity around 52,300). It is the oldest (1892) and largest football stadium in North East England. Last season, Newcastle United qualified for the Champions League for the first time in 21 years.



Picture: Manchester City FC

#### Etihad Stadium – Manchester (visualisation)

The Etihad Stadium opened in 2003 and since then more than 700 million euros have been invested in the home of Manchester City FC. The stadium of the current Champions League winner is soon to be expanded – to almost 62,000 seats (see rendering).



Picture: Image/PA Images

#### Kenilworth Road Stadium – Luton

After 31 years, Luton Town has managed to return to the first division. The dilapidated Kenilworth Road Stadium, about 50 kilometres north of London, holds just over 10,000 spectators. The home ground is definitely a special eye-catcher for traditionalists. Isn't it?

## London



# Premier League England

Ø stadium capacity: 38,889

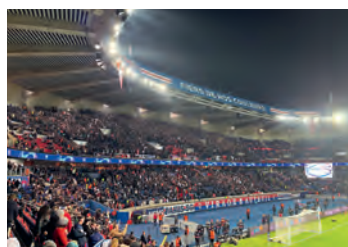
Ø stadium age: 94.4 years



Picture: Imagio/Panoramio

#### Stade Gabriel Montpied – Clermont-Ferrand

On the last matchday of the 2020/21 season, Clermont Foot were promoted back to the top division after 76 years. The Stade Gabriel Montpied, the league's smallest venue, opened in 1995 and was named after the city's former mayor.



Picture: STADIUMWORLD

#### Parc des Princes – Paris

The Parc des Princes, translating to "Prince Park", is a UEFA Category 4 stadium and home to Paris Saint-Germain. Rugby matches and concerts have also taken place here. The venue was originally built as a cycling track and has undergone several renovations.



Picture: Imagio/Panoramio

#### Stade Saint-Symphorien – Longeville-lès-Metz

The Stade Saint-Symphorien is located in Longeville-lès-Metz, on the south-western city border of Metz. The home ground of FC Metz was originally opened in the 1920s, but was recently extensively rebuilt in several stages for 60 million euros.



Picture: Populous/Intens-oid/Lotti Dahl

#### Groupama Stadium – Lyon

The Groupama Stadium, home of Olympique Lyon, is the third largest stadium in France (approx. 60,000). A unique selling point: it is the only stadium in Ligue 1 that is 100% privately owned. By the way: The new LDLC Arena is currently being built next door.

Ligue1

France



Ø stadium capacity: 33,218

Ø stadium age: 51.9 years





Picture: Borussia Dortmund

**SIGNAL IDUNA PARK – Dortmund**

With over 81,300 places, the SIGNAL IDUNA PARK is still the biggest stadium of the Bundesliga. Almost 25,000 fans cheer on BVB in the south stand alone. The stadium will also be used for UEFA EURO 2024 games (group stage, round of 16 and semi-final).



Picture: Imago / Mathias Koch

**Stadion An der Alten Försterei – Berlin**

The home of Union Berlin has a capacity of 22,012, but will soon be expanded. The goal pictured here led to entry into the Champions League – however, Union Berlin will play the UCL games at the Olympiastadion, the home of city rival Hertha BSC.



Picture: SV Darmstadt 98

**Merck-Stadion am Böllenfalltor – Darmstadt**

Newcomer to the Bundesliga: SV Darmstadt 98 are now back in the top flight after their relegation back in 2017. The home stadium has just been freshly rebuilt – and it can now present itself to the Bundesliga in fresh splendour.



Picture: Imago / Sportfoto Rudek

**Voith-Arena – Heidenheim**

On 4 September 2010, the home ground of 1.FC Heidenheim 1846 was ceremoniously opened. Since 2011, the stadium has borne the current name Voith-Arena. The club will play in the Bundesliga for the first time ever in the 2023/24 season.



# Bundesliga Germany

Ø stadium capacity: 41,063

Ø stadium age: 33.2 years



Picture: Imagio/Buzzd

#### U-Power Stadium – Monza

The Stadio Brianteo, officially “U-Power Stadium” due to sponsorship, is the municipal football stadium in Monza in the Lombardy region. The home of AC Monza is located only four kilometres southeast of the famous Formula 1 race track.



Picture: Populous

#### Milan – Giuseppe Meazza Stadium (visualisation)

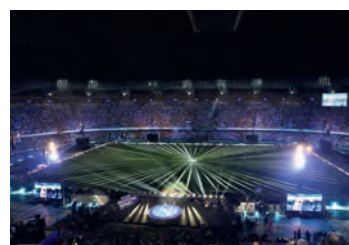
The Giuseppe Meazza Stadium is the largest stadium in Italy (nearly 76,000). AC Milan and Inter share this venue. Debates about the stadium's future and plans for new constructions have been going on for years. A proposal from Populous is shown here.



Picture: Imagio/LaPresse

#### Stadio Benito Stirpe – Frosinone

The Stadio Benito Stirpe was only opened six years ago, although planning for a new home for Frosinone Calcio had actually already begun in the 1970s. It seats just over 16,000 spectators. The photo shows the players celebrating their third promotion to Serie A.



Picture: Imagio/LaPresse

#### Stadio Diego Armando Maradona – Naples

The Stadio Diego Armando Maradona, formerly Stadio del Sole or Stadio San Paolo, is a football stadium with athletics facilities in Naples. The home ground of SSC Napoli is named after the argentinian club legend Diego Armando Maradona, who died in 2020.

Serie A

# Italy



Ø stadium capacity: 35,162

Ø stadium age: 59.8 years





Picture: Imago/Marc Aurich

**Estadio Santiago Bernabéu – Madrid**

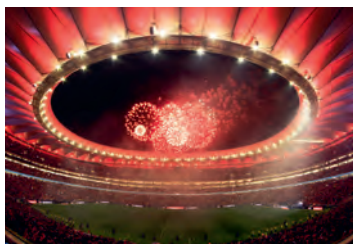
Real Madrid's Estadio Santiago Bernabéu was opened in 1947 – the stadium is currently being renovated. The "Bernabéu of the 21st century" will have a lockable roof and a new façade, to name some highlights. The 800 million euro project is to be completed soon.



Picture: Imago/NurPhoto

**Spotify Camp Nou – Barcelona**

The home of FC Barcelona is currently a construction site, too. The renovation is scheduled for completion in 2026. The stadium will fundamentally change its appearance, as the costs exceed the one-billion-mark. The club will temporarily move to the Olympic Stadium.



Picture: Atlético de Madrid.com

**Cívitas Metropolitano – Madrid**

The Cívitas Metropolitano originally opened in 1994. From 2011 until 2017, it was rebuilt – for instance, the athletics track was removed. Since September 2017, it has been the home ground of Atlético Madrid. It is the third largest stadium in the country.



Picture: Imago/Fotomana

**Estadio Ramón Sánchez Pizjuán – Seville**

The Estadio Ramón Sánchez Pizjuán in Seville has been the home of Sevilla FC since 1958. But not only that: On 18 May 2022, the UEFA Europa League Final took place here (see picture above). German team Eintracht Frankfurt won against the Glasgow Rangers.



**LALIGA**  
**Spain**

Ø stadium capacity: 36,137

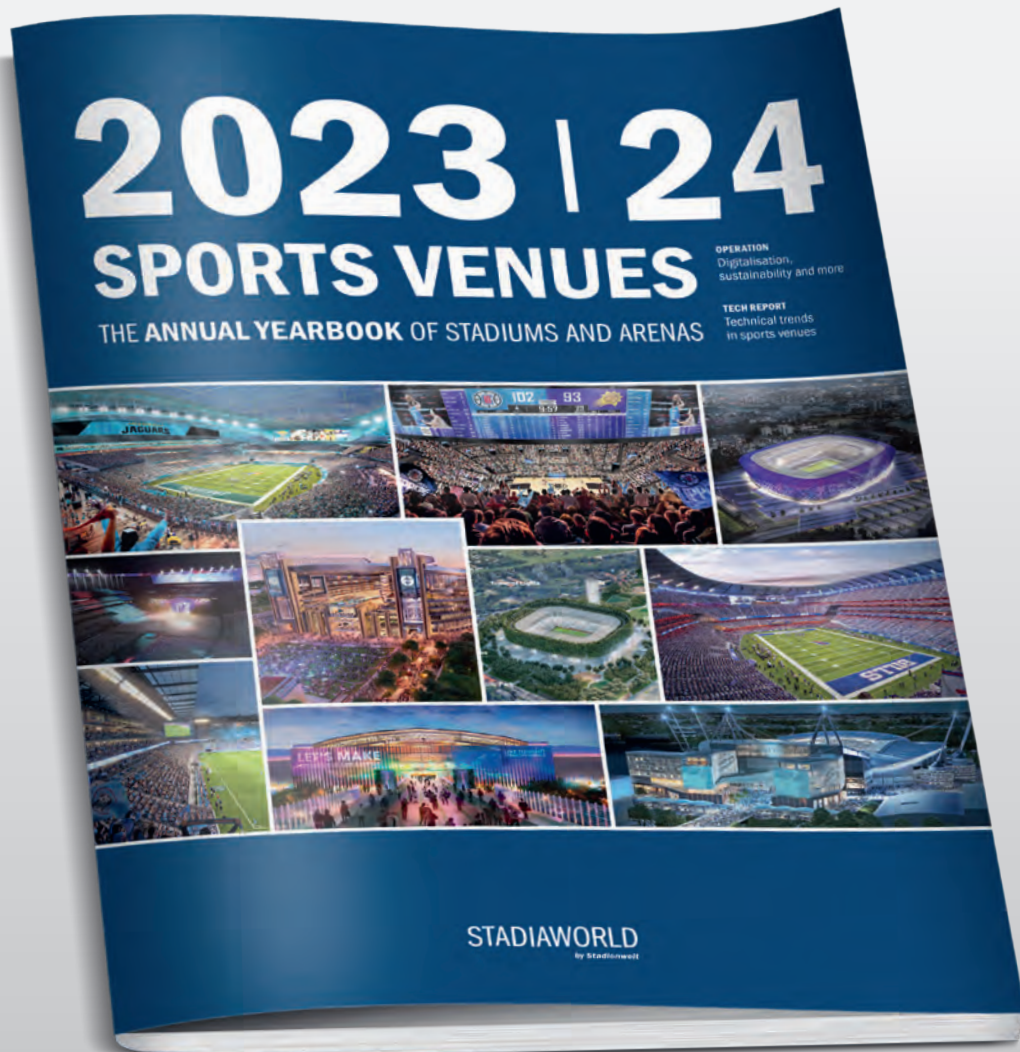
Ø stadium age: 53.7 years

**Bad  
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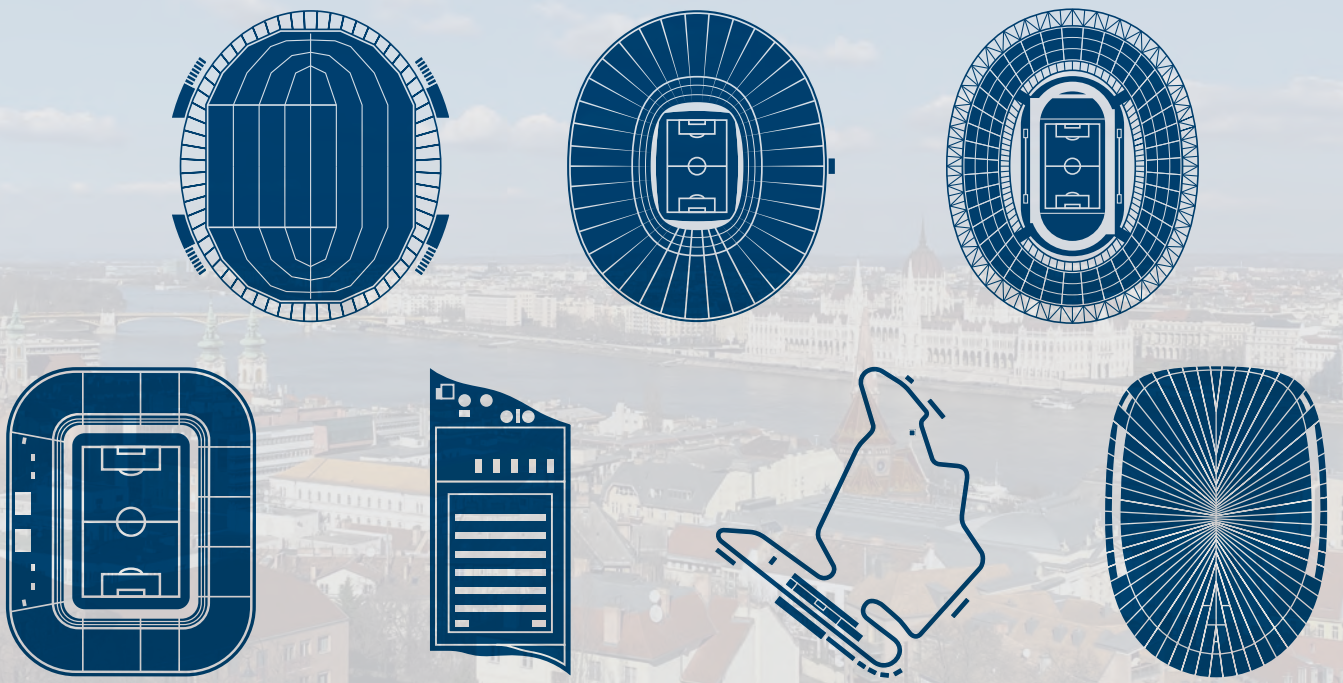
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# CITYPORTRAIT: BUDAPEST

## Will the Olympic dream come true?

Hungary's capital has many venues in its portfolio: modern and large stadiums, indoor arenas, even a Formula 1 circuit. However, the long desired Olympic dream has not yet come true. A closer look at Budapest's infrastructure.

UEFA Supercup Final (2020), UEFA Europa League final (2023), annually the Formula 1, plus world championships in athletics (2023), swimming (2022), judo (2021) and modern pentathlon (2023), European championships in soccer (2021) and wrestling (2022) – and finally the Olympics in 2036? Looking at the recent and upcoming sporting events in Budapest alone, Hungary should not have the worst chances of hosting the world's largest multi-sporting event. Nevertheless, the country and its capital still seem to be running somewhat under the radar. Time to take a closer look at Budapest's infrastructure in terms of its stadiums and arenas.

Hungary has unsuccessfully bid to host the Olympics six times (in 1916, 1920, 1936, 1944 and 1960), and the last attempt (for the 2024 edition) was withdrawn in 2017 due to popular op-

position. Most recently, however, the country has once again become something of a sports hotspot.

The construction of a new Olympic stadium had been planned specifically for "Budapest 2024"; the stadium was to be built on the edge of the Danube with space for more than 50,000 spectators. When the bid was withdrawn, the project was scrapped – but not the basic idea. The old plans were subsequently revived and modified, and in the summer of 2023 the city of Budapest was able to open the new "Nemzeti Atlétikai Központ" (National Athletics Center) on the same site.

In contrast to the international norm, the new athletics center is designed to accommodate different numbers of spectators, depending on the basic operation or competition event. In 'legacy mode', the building seats 15,000 in the lower fixed grandstand, which can be expanded during competitions to

include a rented, temporary upper tier with 25,000 additional seats. These temporary structures are dismantled after the event and the freed-up space is used for mass sport. In this way, the stadium will serve as a center for international sporting and cultural events, while at the same time being available for popular, recreational and youth sports. A "soft-opening" has already taken place in May 2023.

### **The highest category twice: the soccer stadiums**

Already completed is Hungary's new national stadium, the Puskás Aréna. Built in the run-up to EURO 2020, the stadium, which cost around 556 million euros, has already established itself several times as UEFA's favorite. For the European Championship during the pandemic, after all, it was the venue for the round of 16, plus it



hosted the 2020 Supercup Final (FC Bayern vs. FC Sevilla). Several Champions League matches that had to be played on neutral ground due to Covid took also place here. And, it hosted the UEFA Europa League final at the end of May. With space for 67,155 spectators (all-seater) and the highest classification according to UEFA and FIFA standards, it is the largest and most modern soccer stadium in Hungary. Budapest also has a second UEFA Category 4 stadium, the Groupama Aréna. Opened in 2014, the home ground of Ferencváros has a capacity of almost 24,000 and was home to the Hungarian national team until the opening of the Puskas Aréna.

### **Big and modern: Budapest's indoor arenas**

In the immediate vicinity of the two stadiums, the MVM Dome and the Papp László Budapest Sportaréna offer two multifunctional arenas. Together with the Duna Aréna, Budapest thus has three arenas with capacities of over 10,000 seats.

Opened in 2003 and located directly opposite the Puskás Aréna, the Papp László Budapest Sportaréna was for a long time the largest multifunctional arena in the Hungarian capital. The arena offers up to 12,500 seats for concerts, and almost all stars of various genres have been guests in the past 20 years. In terms of sports, it has also been home to a wide portfolio of the biggest indoor sporting events. In the sports configuration, the arena holds around 10,000 seats.

At the end of December 2021, it was replaced by the MVM Dome as the largest indoor sports venue. With space for over 20,000 spectators, the home of the Hungarian national team is even the largest handball arena in Europe. In early 2022, the venue hosted the European Men's Handball Championship and was the venue for the Final between Sweden and Spain. Until 2024, the venue is set to host the EHF Women's Champions League Final Four, and the MVM Dome will also host the 2027 Women's World Championship and 2024 European Championship. The construction of the multifunction-

al arena cost the Hungarian state more than 300 million euros.

In the field of aquatics, Budapest has a state-of-the-art facility in the form of the Duna Aréna, which has already inspired Tokyo in its Olympic preparations. Described by the Paris 2024 Organizing Committee as the "best competitive swimming pool in the world", it even serves as a model for the Olympic pool to be built in France. Opened in 2017, the three-story venue features two Olympic-size pools, a diving pool and a short course training pool, a sports museum, fitness center, conference rooms and VIP facilities. 6,000 fixed seats are available for spectators, and capacity can be increased to up to 15,000 for major events. At the same time, the arena is not only designed for major professional events, but is also open to the general public on a day-to-day basis.

### **Question mark Olympics**

In addition, the BOK Sportcsarnok (event center for up to 10,000 spectators, now an Olympic center), Kincsem Park (large, modernized facility for horse and greyhound racing) and the venerable Kis Stadium, which is in need of renovation, provide further facilities for various sports.

The Hungaroring, where Formula 1 Grand Prix races have been held without interruption since 1986, is another temple of sports located just outside the city gates. For a population of less than 1.8 million, Budapest's sports infrastructure is truly exceptional – and this in terms of quantity, quality and modernity.

But whether a renewed Olympic bid can really be expected soon is just as unclear as when the next possible Olympic Games (2036) will even be awarded, or what the chances of a Hungarian bid would be. The IOC famously changed its award criteria in 2019 and has since relied on informal and non-public talks rather than voting. Meanwhile, the 2030 Winter Olympics could not yet be awarded due to a lack of applicants. ♦



*MVM Dome: One of the most modern and largest arenas in Europe.*

# Venue comparison: LANXESS arena vs. Žalgirio Arena

While the European handball elite has been traveling to the EHF F4 to the LANXESS arena in Cologne since 2010, the final tournament of the EuroLeague in basketball was held for the first time in the Žalgirio Arena in Kaunas. A comparison.

Once again this year, the four best European handball teams met in the final of the EHF Champions League at Cologne's LANXESS arena. Since 2010, the final tournament of the handball elite league has been held in the cathedral city. In 2023, the handball players of German side SC Magdeburg triumphed for the first time in 21 years.

On the other hand, there was a premiere for the Žalgirio Arena, which hosted the final tournament of the Basketball EuroLeague for the first time this year. For the arena in Kaunas, Lithuania, this was certainly one of the highlights since its opening in 2011. Apart from the regular games of Žalgiris Kaunas, the local basketball club, the Žalgirio Arena has so far hardly hosted any sports events with international appeal. A few days

after the multifunctional arena opened its doors, it was one of the venues for the European Basketball Championship. In 2021, during the Covid pandemic, matches of the Futsal World Cup were held in the Žalgirio Arena. Among them the semifinals and the final. Otherwise, the event portfolio of Lithuania's largest arena features sporting events not quite as big. Quite the opposite of the LANXESS arena. The "Mecca of European club handball" has already been the venue for three Ice Hockey World Championships, two Handball World Championships, the 2022 European Basketball Championships and other diverse sporting events of international significance. In addition, the "KEC" (Kölner Haie) have been playing their home games in the LANXESS arena since 1998.

Sketch: LANXESS arena



Picture: STADIUMWORLD

Germany's largest multifunctional arena was also opened in the same year and will thus celebrate its 25th birthday in the fall of 2023. Planning for the Žalgirio Arena in Kaunas also began 25 years ago. The municipality of Lithuania's second-largest city began working with architect Eugenijus Miliuna on a plan for a new arena in Kalnieciu Park in 1988, as the Kaunas sports hall was deemed too small according to EuroLeague statutes. After several debates, construction of the new arena in Kaunas – at a different location than originally planned though – finally began on September 26, 2008. After about three years of construction, the new home of Žalgiris Kaunas was opened. By contrast, the LANXESS arena in Cologne, designed by the architectural firm of Peter Böhm, was completed somewhat faster: It took just over two years from the groundbreaking ceremony on July 31, 1996, before the new building, then called the "Kölnarena" (literally translat-



Picture: AMG

LANXESS arena: Germany's biggest indoor arena in Cologne.



ing to “CologneArena”), was officially opened on October 17, 1998. As part of a soft opening, however, the Sharks (KEC) began play in their new sporting home on September 11.

### Anchor tenant, operator and owner

Since then, the Sharks have played uninterruptedly in Germany’s top ice hockey league as anchor tenants in the LANXESS arena. In Kaunas, too, the Lithuanian basketball club and anchor tenant Žalgiris Kaunas has been playing in the Žalgirio Arena since the arena opened. What is special about this is that the club also acts as the operator of the multifunctional arena. Already when the city of Kaunas approved the plans for the construction of a new arena, the club decided to become the operator of the arena. In the end, Žalgiris Kaunas was awarded the contract for 25 years with an option to extend. The owner, on the other hand, is the city of Kaunas.

The situation in Cologne, however, is different. From 1998 to 2015, the arena was owned by the real estate fund “Köln-Deutz Arena und Mantelbebauung GbR”. On December 22, 2015, it was announced that the LANXESS arena would be transferred to the ownership of Junson Capital Company Limited from Hong Kong. ARENA Management GmbH remained the operating company. Well before the change of ownership,



Žalgirio Arena: EuroLeague Final Four 2023.

the arena’s name also changed. For a good ten years, the venue was officially called “Kölnarena” before the LANXESS chemicals group acquired the naming rights for an initial ten years. In 2017, the cooperation was extended ahead of schedule until December 31, 2023.

### External appearance and inner values

Anyone walking toward the LANXESS arena, which is located near the river Rhine, will first notice the distinctive arch that spans the arena roof. As a feature of the arena, it carries the roof of the building. At the Žalgirio Arena, the large LED outdoor screen, which was even enlarged again in 2019, catches the eye quite quickly. At 83.5 x 4 meters, it offers space for sponsors and organizers and is also one of the largest in Europe. Both arenas are united by the material of the facade. Both the outer shell of the LANXESS arena and that of the Žalgirio Arena consist largely of transparent glass, which allows a view into the interior.

Both arenas are also impressive on the inside. In Kaunas, for example, one of the largest outdoor LED walls in Europe is joined by a 262-meter LED fascia board between the lower and middle

### Venue comparison: LANXESS arena vs. Žalgirio Arena

| LANXESS arena                  |                             | Žalgirio Arena               |
|--------------------------------|-----------------------------|------------------------------|
| Germany                        | Country                     | Lithuania                    |
| Cologne                        | City                        | Kaunas                       |
| 31 July 1996                   | Construction start          | 26 September 2008            |
| 17 October 1998 <sup>1)</sup>  | Opening                     | 18 August 2011               |
| 153 million euros              | Cost                        | 49 million euros             |
| Architekturbüro Peter Böhm     | Architect                   | Eugenijus Minunas            |
| 20,000                         | Max. capacity <sup>2)</sup> | 20,000                       |
| Junson Capital Company Limited | Owner                       | City of Kaunas               |
| ARENA Management GmbH          | Operator                    | Žalgiris Kaunas              |
| Kölner Haie (Ice Hockey)       | Main tenant                 | Žalgiris Kaunas (Basketball) |

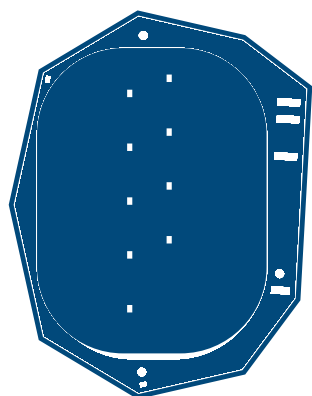
1) Official opening; soft opening already on 11 September 1998.

2) Capacity for concerts.

Source: Venues

tiers and an LED cube with a surface area of 21.5 square meters each. In Cologne, on the other hand, the old LED cube was replaced in 2019 by four flying displays that can be moved independently of each other. At 8 x 4.5 meters, the four screens achieve a total of 144 square meters. As part of the replacement, a 360° LED ring was also installed on the lower box ring, which stretches 302 meters through the arena. In addition, the LANXESS arena upgraded to an individually movable sound system. Visitors to both the LANXESS arena and the Žalgirio Arena can therefore expect a special arena experience. ♦

### Sketch: Žalgirio Arena



Picture: STADIUMWORLD

# Venue comparison:

## Tottenham Hotspur Stadium vs. Emirates Stadium

The two North London clubs Arsenal FC and Tottenham Hotspur are rivals not only on and off the pitch, but also in terms of infrastructure. STADIAWORLD compares the two clubs' stadiums.

North London was long dominated by Arsenal. In sporting terms, they permanently finished ahead of their biggest rivals, Tottenham Hotspur, and at the latest when they moved to Emirates Stadium for the 2006/07 season, they seemed to have finally overtaken their rivals. However, the Spurs have now reached the level of the Gunners, and not just in terms of sport. With the new stadium, they also drew level with their rivals in this respect – or even overtook them? With the Tottenham Hotspur Stadium, the club moved into a top-class stadium in 2019 that can certainly compete with the best venues in the world. Arsenal has been playing in just such a top stadium for almost 17 years. They moved into Emirates Stadium in 2006, far ahead of their national rivals. At first glance, however, the stadiums are more similar than the two rivals would probably admit: The biggest similarity is the architect: both stadiums were designed by Populous. The size of the Spurs' new stadium only slightly exceeds that of the Emirates by around



The Spurs' new stadium opened in 2019. The project has cracked the 1 billion euro mark.

Sketch: Tottenham Hotspur Stadium



Picture: STADIAWORLD



Distinctive emblem on the outside of the facade.

Picture: THFC



2,000 additional seats. The fact that Tottenham has a higher capacity than its rival is, of course, also for prestige reasons. THFC currently have the largest club stadium in London and the second largest in England.

### Naming rights

Since the opening of Arsenal FC's stadium, it has been called Emirates Stadium. The airline contributed around 160 million euros to the construction of the stadium and in return received the naming rights to the venue for 15 years. The contract was extended early in 2012 until 2028. Emirates is also the shirt sponsor of the Gunners and, according to reports, pays around 35 million euros per year for the entire package. The Spurs, on the other hand, are still looking for a suitable naming rights partner and, according to media reports, are asking for around 30 million euros per year. Even though the Spurs were said to be in promising talks, a company was not yet named in detail. Let alone a contract signing.

### Multifunctionality

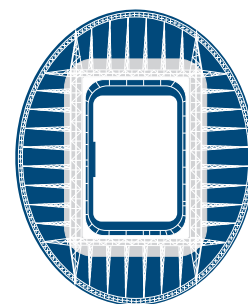
Tottenham Hotspur Stadium has integrated a multifunctionality installation that is unparalleled in Europe: For NFL games, there is an artificial turf field under the soccer field that can be brought out via a rail system. For American Football League games, various architectural adjustments have been made so that the games can take place here without much extra effort.

Rugby matches have already taken place in the stadium, and a boxing match has also been held here. Concerts are also on the stadium's agenda. Concerts have also been held at Emirates Stadium, but only a few. In 2008, Bruce Springsteen played the first concert at Arsenal's home ground. Emirates Stadium was also the venue for the Rugby League World Cup in 2021, with a semifinal being played here.

### Arsenal wants to catch up

The fact that its main rival has built such a stadium naturally offends Arsenal. For this reason, various investments have been made in recent years. Arsenal will have to keep the stadium up to date in all areas in order to follow Tottenham's fully new construction. The club has recognized this, however, so that North London has two stadiums that also have top international status. ♦

#### Sketch: Emirates Stadium



Picture: STADIOWORLD



Picture: STADIOWORLD

Emirates Stadium: Home of Arsenal FC since 2006.



Picture: Arsenal FC

Around 60,000 fans can watch the Gunners' games in north London.

# Venue comparison:

## La Bombonera vs. Estadio Monumental

When Boca Juniors meets River Plate, the air of Buenos Aires is on fire. The stadiums are cult, but are now quite outdated. Plans for the future are in place for both stadiums, but will this jeopardize their legendary status?

The city duel between River Plate and Boca Juniors is one of the biggest derbies in the world. It is not only the duel of two clubs, it also symbolizes the struggle between the working class and the upper class. The “Superclásico” not infrequently causes riots and violence; in 2018, even the second leg of the Copa Libertadores final had to be moved to Madrid for security reasons. In 1968, 74 people died in a mass panic at El Monumental during the derby. The two clubs are different, their values are different, and their venues are different.

### Construction and opening

River Plate has been playing in the Estadio Monumental Antonio Vespucio Liberti since 1938. Construction took around two years. The circular bowl has been renovated several times since then, but the last major work took place before the 1978 World Cup. The stadium is still the largest in Ar-



La “Bombonera” (chocolate box): Architectural precision work in the La Boca district of Buenos Aires.

gentina. About three months before River’s stadium opened, construction began on the home of Boca. The Estadio Alberto Jacinto Armando was completed exactly two years to the day after the archrival’s stadium. Here, too, renovations have taken place since the opening, but the stadium is still largely outdated.

### Capacity

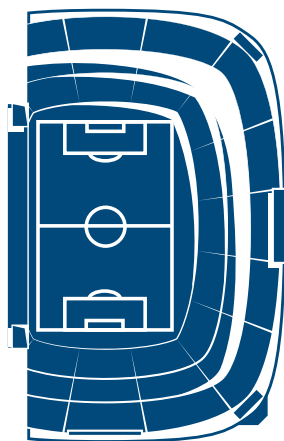
Up to 70,000 spectators can attend River Plate’s home games at the Monumental, about 16,000 more than Boca’s home games. However, this is also due to the fact that the home ground in La Boca only has three “proper” stands. Due to a lack of space, there is only a small stand with a vertical VIP tower on one straight.

### Name

The official name of the Boca Juniors stadium, Estadio Alberto Jacinto Armando, is largely unknown; the stadium is usually referred to as “La Bombonera”. The nickname refers to its shape, which resembles a box of chocolates. The official namesake, Alberto Amado, was president of the club for over 21 years and won the Copa Libertadores twice with the club during that time. In 2000, the stadium was named after him.

The Monumental is also named after a former club president. Antonio Vespucio Liberti led the club’s fortunes a total of four times, also for over 20 years. He also initiated the construction of the stadium, which was named after him eight years after his death.

### Sketch: La Bombonera



Picture: STADIUMWORLD



## Future

The Estadio Monumental has been modernised in recent years. After increasing the capacity to 83,198 by building a new tier close to the playing field and several improvements made to the lower stands, the Mâs Monumental has become the highest capacity stadium in South America. To realise these measures the pitch was lowered by 1.9 meters and the former athletics tracks had to be removed.

The next steps in the modernisation process include the merging of the centre stands, major progress on the new internal parking levels and the construction of a sensory room for an inclusive experience as well as building new Sívori-Boxes in the hospitality area and four new high stands to install even more seats. After finishing the construction measures the final capacity of the Mâs Monumental will reach 84,567.

As part of his presidential candidacy, the Argentine businessman George Reale presented plans for the construction of a “Nueva Bombonera” in the Isla Demarchi district, only 1.3 km away from the current Bombonera.

The plans include a stadium, that is to be more than twice as big (112,000) as the current one. The new venue will be symbolically linked to the old one by three streets, which are connected to the Isla Demarchi via three new bridges over the Matanza River. According to a feasibility study, in case of an emergency event, the stadium can be fully evacuated within one hour. This corresponds to an evacuation capacity of 30,000 people every 15 minutes, who can leave the stadium environment via the three bridges.

The stadium was designed by Enrique Lombardi, who also planned the home stadiums of the two Argentinian clubs Independiente and Estudiantes. According to Lombardi, it should be possible to realise the project within three to four years at an estimated cost of 275 million euros. In case of a realisation, the “Nueva Bombonera” would become the largest stadium in South America, overtaking the Mâs Monumental of the local rival.

The new construction at a different location would also preserve the traditional “La Bombonera”, which could be used for matches of Boca’s women’s and

## Sketch: Estadio Monumental



Picture: STADIOWORLD

youth teams. It is also conceivable that it could be transformed into an urban element of the district – like the Plaza Mayor in Madrid, for example. Whether the stadium project is feasible or was just part of the presidential election campaign, can probably only be determined when the plans are concretised.

## Conclusion

The two stadiums stand for emotion and atmosphere and are among the most legendary venues on the continent. However, with regard to modern stadium infrastructure, the Mâs Monumental was already improved and was brought up to the standards of modern stadiums. In contrast, the Bombonera is still waiting for a comprehensive modernisation. Argentina would like to apply for the 2030 World Cup together with Chile, Uruguay and Paraguay. Both stadiums are on the shortlist, but the city of Buenos Aires already has other venues under consideration. In any case, when the bid was announced in 2012, the Estadio Ciudad de La Plata in La Plata was named as the most important venue in Argentina. After becoming the highest capacity stadium in South America, the chances of the Estadio Monumental being selected should have increased. If the planned construction of the “Nuevo Bombonera” is not completed by the time the decision is made, one of the continent’s most prestigious stadiums may not be part of the World Cup’s host venues. ♦



Picture: STADIOWORLD

Estadio Mâs Monumental: The athletics track was removed two years ago.







# Arthur Ashe Stadium: A venue like no other

Arthur Ashe Stadium is the largest tennis stadium in the world. The venue in New York City hosts the US Open every year. But the operators of the facility also take care of several other stadiums. A look behind the scenes.

**F**lushing Meadows, for the sake of completeness actually “Flushing Meadows-Corona Park”, is on every tourist’s list once you visit the Big Apple. It is just as huge as Central Park in Manhattan – and at the same time the largest park in the New York borough of Queens. There is a lot to discover, especially the “Unisphere” is worth a visit. The structure – a 42-meter-high, 350-ton stainless steel globe with a diameter of 37 meters – was built for the 1964 world exhibition and still attracts many visitors today. Originally, Flushing Meadows was established for the 1939/40 world exhibition – but to this day tennis fans get their money’s worth here, as the site is also home to one of four Grand Slam tournaments.

The USTA Billie Jean King National Tennis Center – since 2006 named after the former American tennis player – has been home to the US Open Tennis Championships since 1978 and is operated by the United States Tennis Association. The site includes four stadium courts: Arthur Ashe Stadium (near 24,000 capacity), Louis Armstrong Stadium (14,000; built from 2016 until 2018), Grandstand (over 8,000; opened in 2016) and Court 17 (2,800). Plus, there are 13 additional field courts, five practice courts and a 12-court indoor facility inside its 42-acre footprint in Flushing Meadows. By the way, Citi Field, home of the New York Mets baseball franchise, is also just a stone’s throw away from the famous tennis courts. So is LaGuardia Airport, which consequently means you hear the hum of airplane engines at regular intervals.

## More than just tennis

The USTA does not only operate Arthur Ashe Stadium, but everything within the Tennis Center’s footprint. As a whole, it is one of the world’s largest public tennis facilities and is active throughout the year hosting players, programs and events on the grounds and at its Indoor Training Center.

“Outside of the US Open, the USTA Billie Jean King National Tennis Center is open year-round to the public as a full-service recreational tennis facility, offering teaching and programs for players of all ages, in addition to court rentals and other public tennis programming,” says Danny Zausner, Chief Operating Officer. “The NTC has also become a premier year-round home for major events outside of the tennis world, having played host to the Westminster Kennel Club →

### Key facts: Arthur Ashe Stadium

|                      |                         |
|----------------------|-------------------------|
| <b>City:</b>         | Flushing, New York City |
| <b>Country:</b>      | USA                     |
| <b>Main tenants:</b> | US Open                 |
| <b>Opening:</b>      | 1997                    |
| <b>Costs:</b>        | 229 million euros       |
| <b>Operator:</b>     | USTA                    |
| <b>Architects:</b>   | Rossetti Architects     |
| <b>Capacity:</b>     | 23,859                  |



Dog Show this year, several All Elite Wrestling events over the past three years, the Fortnite World Cup Finals in 2019, APP professional pickleball and a number of high school and college graduations and other ceremonies year-round. All of those non-tennis events we see as a wonderful opportunity to introduce new audiences to our grounds.”

### The biggest ever

The heart of the entire site is Arthur Ashe Stadium. The venue was opened in 1997 and it adds to the list of top international locations in the United States. “Arthur Ashe Stadium is and has been the largest tennis stadium in the world since its construction, and there’s certainly no venue like it in America, or in tennis,” says Danny Zausner. “Having two stadiums at the USTA Billie Jean King National Tennis Center with retractable roofs, in Arthur Ashe Stadium and Louis Armstrong Stadium, not only keeps us at the forefront of innovation among worldwide sports and events – we welcomed 888,044 fans over the three weeks of the US Open in 2022 – but it’s opened a number of possibilities for us as a year-round home for major events outside of the tennis world, especially in a market that so many iconic venues call home.”

The highest single-day attendance at the US Open was 72,065 – set in 2022. The tournament is played in August and September annually and requires upwards of 7,000 seasonal and full-time employees every year to operate the event. The tournament has already written many stories and broken records: Since the beginning of the Open Era in 1968, Jimmy Connors, Pete Sampras and Roger Federer have been the most successful with five victories, Federer even won his five titles in a row. Connors achieved the feat of being the only player to win the US Open on three different surfaces.

Nowadays, the games are played on a hard court made by Laykold, a leading

surface for major events in the USA and Canada, with eight of the 15 most important hard court events in their portfolio. After more than 40 years, the tournament got the new surface in 2020. “The US Open is known for being the fastest hard-court tournament in professional tennis, with tournament organizers and players demanding precise pace on both practice and competition courts – 43 courts in total,” the supplier and installer explains. “Laykold was chosen by the United States Tennis Association to provide a new court surface for their biggest tournament because they trusted our quality, consistency and our ability to meet their grand slam needs.” Laykold surfaces are also used at Miami Open, Canadian Open (Toronto), Dallas Open, San Diego Open as well as the WTA Finals (ladies), among others.



### New roof in 2016

However, the change of the sports floor was not the only investment made by the operators. Since no open tennis stadium is immune to bad weather, the decision was made in 2013 to spend about 150 million US dollars (138 million euros) to install a retractable roof. The construction work was completed in 2016. “The retractable roof over Arthur Ashe Stadium is the largest retractable roof for a tennis stadium in the world,” says Zausner. “So large, in fact, that Wimbledon’s entire Centre Court would fit through the 62,500-square-foot opening. More than 6,500 tons of steel form the superstructure, which contains 1,700 structural beams and 115,000 bolts. A total of 176 steel and concrete-filled pilings, driven 180 feet below the sur-

face, anchor the 24 steel columns that support the superstructure.”

Louis Armstrong Stadium also features a retractable roof. But it holds another highlight, as Zausner explains: “Louis Armstrong Stadium is the world’s first naturally ventilated tennis stadium with a retractable roof, eliminating the need for air conditioning, even with the roof closed. Thousands of angled, 16-inch-long louvers make up much of the north and south walls of the stadium, creating massive, open ends behind both baselines. These terra cotta louvers act like giant window blinds, pulling a natural breeze into the stadium.”

### A “responsibility to the game”

Similar to many other venues, the continuous improvement of the fan experience is also on Zausner’s agenda, even though the USTA Billie Jean King National Tennis Center is already a very special ensemble. Zausner formulates his objectives as follows: “Year over year we continue to elevate our on-site experience to new and in many ways unprecedented levels, so that hopefully any attendee of the US Open is inspired to either pick up a racket for the first time or keep on playing that much more. The sport has seen tremendous growth in America over the last three years, to the tune of 5.9 million new and returning players.” Their “ultimate responsibility,” says Zausner, “is to ensure that number keeps on growing, and the more fans we can deliver an amazing experience to at the US Open only increases our ability to do that.”

Zausner continues: “Above all we have a responsibility to the game of tennis and to the mission of the USTA, which is to grow and promote the game of tennis to new and diverse populations all across America. By continuing to make the US Open more successful through our facilities and the on-site experience, we also make tennis more successful and increase our ability to deliver on our mission.” ♦





## “Continue to enhance the US Open experience”

Danny Zausner, Chief Operating Officer, USTA Billie Jean King National Tennis Center, talks about the operation of Arthur Ashe Stadium, the fan experience at the US Open – and about the effects of bad weather.



Picture: USTA

Danny Zausner

**STADIAWORLD:** If you had to choose three words to describe Arthur Ashe Stadium – which would you pick?

**Zausner:** Iconic, electric, spectacular.

**STADIAWORLD:** The stadium's last major reconstruction took place in 2016, when a new retractable roof structure was installed. Are there any current or future major remodeling plans you can tell us about?

**Zausner:** While we don't have any major plans we would be ready to announce anytime soon, we're always reviewing

feedback and survey data from any number of our stakeholders to understand how we can continue to enhance the US Open experience for everyone and maintain our place at the forefront of worldwide sports and events.

“NEARLY 1,000 INDIVIDUAL MATCHES IN THREE WEEKS

**STADIAWORLD:** What are the biggest challenges in tennis currently – and specifically in operating Arthur Ashe Stadium?

**Zausner:** One challenge that no tennis or outdoor sports venue is immune from is unpredictable weather. While our two stadiums with retractable roofs position us nicely to continue play in front of nearly 40,000 on-site spectators and certainly many more on television no matter what, the US Open is still an outdoor event that stages nearly 1,000 individual matches throughout the course of three weeks, and 15 of our 17 competition courts are fully outdoors. We have tremendous scheduling and weather support teams on-site to help navigate the weather during the US Open, but significant interruptions to that overall schedule are never fun! ♦





*The Accor Arena near the Seine is one of the largest multifunctional arenas in France.*

## All-rounder near the Seine

With the Accor Arena in the Bercy district of Paris, those responsible are operating a true multi-talent. The multifunctional arena has already been the venue for a number of major international events – and more will soon follow. A look behind the scenes.

**B**asketball, figure skating, concerts, athletics, tennis – the list goes on. With the Accor Arena, a true multi-talent is located in Paris-Bercy directly near the Seine. Almost everything is possible here – the multifunctional arena has been the venue for a number of World and European championships. The building is located at the northern end of the “Parc de Bercy” directly on the right

bank of the river. The 14-hectare park was built between 1993 and 1997 in Bercy, a district in eastern Paris that was once one of the largest wine markets in the world.

After the neighborhood had become increasingly run-down, the decision was made at the beginning of the 1980s to undertake a fundamental transformation. Today, the centerpiece is the new Parc de Bercy, a garden ensemble

consisting of three sections. Wine, however, still plays a role today: In reminiscence of the past, grape varieties were planted there.

### On par with the elite

The Accor Arena, originally Palais Omnisports de Paris-Bercy (POPB) or simply Bercy, was built between 1981 and 1984 for the equivalent of a good





les, the O<sub>2</sub> Arena in London and the Mercedes-Benz Arena in Berlin,” Dupeux notes.

Just like London’s O<sub>2</sub> Arena or Berlin’s Mercedes-Benz Arena, the Accor Arena is also a member of the European Arenas Association (EAA). A total of 37 indoor arenas from 20 countries are part of the group, which was founded in 1991. “The EAA is the only organisation at the European level that unites pure arena players,” says Nicolas Dupeux. “So it’s a unique place where you can exchange ideas with like-minded people, because it’s not just people from our sector, but also people who do the same activity as we do. It is also very multicultural, so we can see how global issues are dealt with in different countries. But we also learn about local specifics.”

### Multiple names – one great strength

Palais Omnisports (1984 to 2014), Bercy Arena (2014/15), AccorHotels Arena (2015 to 2020) and, since February 2020, Accor Arena: The venue has already borne several names in its history – until at least 2025 plus an option for a further five years, it will remain with the current arena logo. However, those responsible have always remembered one strength: its versatility. “Adaptability, flexibility and our boldness are what set us apart,” says Nicolas Dupeux. Although there is a third-division ice hockey club as an anchor tenant with the Français Volants, the special feature of the location lies in its changeability. More than 130 sports and show dates have already been confirmed for the current season. Special highlights include an NBA basketball season game, a concert by world star Ed Sheeran, and tour stops by Madonna, Elton John, and several other international artists.

The control of the ecological footprint, sustainable value chains as well as the optimisation of processes: Environmental protection and digitisa- ➔

280 million euros. Jacques Chirac, then mayor of Paris and later president of the country, performed the opening ceremony. The “Scorpions” were the first band on stage at the time. Depending on the configuration – there are up to 30 different possibilities, according to the operators – there is space for between 8,000 and 20,300 people. The last major renovation took place on the occasion of the arena’s 30th birthday between March 2014 and October 2015, with a total of 135 million euros being spent.

The main objective at the time was to bring the location up to date in terms of safety and to improve accessibility for people with reduced mobility, explains Nicolas Dupeux, CEO Accor Arena.

Dupeux elaborates: “The focus was on the modularity and functionality of the redesigned structure. The building was opened up to the city: both on the Rue de Bercy side and on the Seine side. This was achieved by eliminating the stairs, extending the building, creating terraces, a promenade, an entrance on the Seine side and a 2,000 m<sup>2</sup> hall on the same level. New areas were created for athletes, artists, organisers, sports associations and media.”

In its peak configuration, the arena now seats up to 20,300 people, up from 17,000 previously. “This puts the Accor Arena in competition with the largest venues in the world: the Madison Square Garden in New York, the crypto.com Arena in Los Ange-



# “Iconic, mythical and audacious”

In this interview, Nicolas Dupeux, CEO of the Accor Arena as well as the adidas arena and the Bataclan, talks about the venue landscape in Paris, the preparations for the 2024 Summer Olympics and his goals for the future.



Picture: NICO GUHAI

Nicolas Dupeux

**STADIAWORLD:** If you were to describe the Accor Arena in three words, which would you choose?

**Dupeux:** Iconic, mythical, and audacious.

**STADIAWORLD:** How do you view the competitive situation in Paris concerning its sports venues?

**Dupeux:** In reality, there is room for everyone: Paris is a dynamic city that hosts a variety of sporting events.

The adidas arena will provide a new capacity of 8,000 pax that previously didn't exist in Paris, to host indoor competitions ranging from 7,000 to 9,000 spectators: the Paris Basketball Club, Handball, Rock climbing, Skateboarding, Badminton ... It will truly complement the Accor Arena.

**STADIAWORLD:** What do you do differently in comparison to other venues?

**Dupeux:** In order to meet the new consumption needs of the audience,

we created activities that enable the audience to have a comprehensive experience, before and after the actual main event.

**STADIAWORLD:** At the Olympic Games 2024 there are several competitions planned in the Accor Arena. How are the preparations going?

**Dupeux:** Exactly, the Accor Arena will host the finals of the men's and women's basketball tournaments, as well as the men's and women's wheelchair basketball tournament. But also

tion are among the mandatory tasks these days and are topics that are also high on the agenda at the Paris venue. To enhance the fan experience, the operators are always getting creative and coming up with something new. Examples of this include new B2B suites and a coworking space for networking, a brand-new after-show club on around 3,500 m<sup>2</sup>, a basketball court, and a wide variety of entertainment options around the actual event. Since July 2023, there is also performances in an open-air cinema. “We want to keep investing in the fan experience,” says Dupeux, “in order to keep up with the ever-increasing expectations of visitors.”

Dupeux describes Accor Arena's VIP strategy as “bold and innovative”. The CEO explains: “We want to rethink traditional hospitality codes by offering our customers a new and contemporary way of networking and enjoying an event full of emotion. For this reason, we offer three different VIP categories in the Accor Arena to allow maximum customisation to the different needs of our B2B clients.”

## Three venues in the portfolio

The Accor Arena is owned by the city. Nominally responsible for operating the Accor Arena is the Paris Entertainment Company, which since 2021 has also figuratively united the more than 150-year-old Bataclan concert venue and the adidas arena (under construction) under one roof. The company was only founded in 2022. According to Dupeux, “global communication across the three venues via the same channel was becoming increasingly complex. Therefore, it was necessary to have a group – an overarching brand – that talks about cross-company issues. In this way, we can serve as a reference through a unique model, increase our market share by covering a wide range of customer needs, and finally offer three additional ways to enjoy a unique experience. And all of this is achieved through the same point of contact. This is why we created Paris Entertainment Company in 2022.”

The Porte de la Chapelle arena (officially adidas arena) is still under

construction in the 18th arrondissement in northeast Paris. Primarily, the indoor venue – located about 2.5 km from the Olympic or Paralympic Village – will be used for the 2024 Olympic Games. The gates are scheduled to open in January 2024. The naming rights contract with Adidas was signed in 2022 and will run for five years. “This future central venue brings together sports, music, culture and lifestyle for all,” judges Nicolas Dupeux. “The capacity is unique and will meet a real need among producers and event organisers – especially in the 7,000 to 9,000 seat range.”

## “A partnership that makes sense”

Dupeux says he is “very proud of the historic naming.” It is “a partnership that makes sense because it is built on shared values such as inclusion and creativity, but also on the common desire to actively participate in the transformation of an entire neighborhood.” In addition to the Olympic Games, the programming focus in the new adidas arena will be



the events for floor exercise, team competition, vaulting, uneven bars, beam, rings, pommel horse, parallel bars and high bar. The Olympic Committee has decided to implement a new model for delivering the Games by relying on a few venues, including us. Our teams have unrivalled know-how and expertise in facilities and operations as we have experience in hosting international events. Our team is already fully mobilised with multiple people dedicated to the project and several recruitments are underway. We are already working with the various stakeholders.

**STADIAWORLD:** If you name three goals for the future: What are they?

**Dupeux:** We want to strengthen our position as the leading entertainment provider in France and Europe. Plus,



Basketball will also be played in the new adidas arena.

we want to keep hosting more and more major international events, as we have done with the NBA or UFC for exam-

ple. And we want to offer an increasingly innovative and powerful experience for spectators and organisers. ◆



The adidas arena is scheduled to open in early 2024 near the Accor Arena.

particularly on concerts and performances, national and international sports competitions, and eSports, which Dupeux says is “growing at a phenomenal rate” in France. For example, several eSports competitions have already been held at the Accor Arena in 2019, 2022 and 2023.

“The arena takes into account the technical and scenographic requirements of eSports. We will be able to offer an unprecedented capacity for eSports in Paris – between 6,000 and 9,000 seats.” The adidas arena will also serve as home to handball club Paris Saint-Germain Handball and first divi-

sion basketball team Paris Basketball (35 games). Next year, Paris will again be in the spotlight with the Accor Arena and the adidas arena, and will be able to demonstrate its expertise. The Olympic Games add to the long list of international sports and event highlights in the French capital. ◆





The Groupama Stadium is the third largest stadium in France with space for approximately 60,000 people.

## Stadium and arena in a double pack

The Groupama Stadium, home of Olympique Lyon, is not only the third largest stadium in France – it also impresses with technical and sustainable innovations. Directly next door, another venue is currently being built: the LDLC Arena.

At the beginning of 2016, the French stadium landscape was enriched by a new attraction. After construction had begun in July 2013, the ceremonial opening of Groupama Stadium took place on January 9, 2016. Jean-Michel Aulas, former president of Olympique Lyon, the main user of the stadium, was visibly moved on the day of the opening and spoke of “perhaps the best day of my life”.

The reason for the construction of the 410 million euro building was the 2016 European Football Championship – the venue was one of a total of ten stadiums for the tournament. The construction was financed by OL Groupe, which also owns the club Olympique Lyon. The first designs for the venue had already been published in 2007, and the result was one of the best sports venues in the country. The

choice fell on the design of the architectural office Populous, which was awarded the prize for the best architecture and design project for this construction by the British Expertise International Awards 2018. “We have a very modern stadium, equipped with the latest technologies,” says Deputy General Manager Xavier Pierrot. For instance, those responsible are relying on full LED lighting in the stadium, a





complete range of business events and private functions – it includes, among other things, a 4-star hotel, a leisure center with bowling, indoor surfing, padel or escape games, as well as a 300-seat theater and a wide variety of restaurants.

Groupama Stadium is also well located in terms of accessibility: There are three train stations and two airports nearby (less than 15 minutes away), and within just two hours you can reach Paris by train (the French “TGV”). There are a total of 6,700 parking spaces on the stadium grounds, and 8,800 more can be found outside, then with direct bus connections. Up to 500 bicycles can be parked at the stadium – there is also a dedicated tramway station. “The stadium’s central location, modern facilities and easy access make it a strategically important stadium for international events and competitions,” says Xavier Pierrot.

### Flexible location

More than 8 million people have attended public events at Groupama Stadium since it opened in January 2016. “The average attendance at Olympique Lyon home games last year was very good at 46,305 fans, which is in fact the third most spectators in the French championship,” says Pierrot. However, the Groupama Stadium has not yet been completely sold out for soccer matches: the attendance record for a home match is 58,230 spectators – set against Paris Saint-Germain last September. The overall record is 73,000 spectators who attended the concert of the French new wave rock group “Indochine” last summer. A central stage was set up in the middle of the pitch. So Groupama Stadium has experience not only in French club soccer. The flexible event location in southeastern France has already hosted rugby matches and many different concerts: World stars such as Rihanna, Cold- ➔

gigantic photovoltaic system, geothermal energy and rainwater collection. Apps and WiFi are also available.

With a capacity of 60,000 seats (including 6,000 VIP seats), Groupama Stadium is the third largest stadium in France. Around 10% of the capacity is dedicated to hospitality and VIP facilities, i.e. around 6,000 seats spread over two levels with exclusive access. On the lower level, there are seven different lounges, including the President Box, which houses VVIPs. Each of these lounges offers a different concept and special catering. There is also a Bocuse restaurant open for lunch on game day and weekdays. On the upper floor there are 105 private lounges with 12, 18 or 24 seats and 4 event lounges with 50 seats.

A unique selling point: Groupama Stadium is the only stadium in Ligue 1 that is 100% privately owned. “This is very unusual in the French system, where venues are often wholly or partly owned by local authorities,” Pierrot points out. “The club runs the venue entirely with its own staff and employees. This allows a high degree of flexibility and rapid intervention in operations,” Pierrot continues.

### OL Valley: No wishes remain unfulfilled

Located at Décines-Charpieu, in the eastern suburbs of Lyon, Groupama Stadium is part of the giant OL Valley entertainment district. The 23,000 square meter complex covers the



play, Céline Dion or the Rolling Stones have all played here. As part of the 2023 Rugby World Cup (September/October 2023), Groupama Stadium will host 5 matches – and at the next Olympic Games in 2024, Lyon will host the most soccer matches outside of Paris (11). In addition to Olympique Lyon's matches, Groupama Stadium has hosted major soccer competitions such as the Women's World Cup (semifinals and final), UEFA EURO 2016 and the UEFA Europa League (final), as well as international matches. In addition, the stadium was converted during the Corona pandemic: In partnership with the authorities, the building was used as a public vaccination center from April 2021 to February 2022. During this period, more than 350,000 vaccine doses were distributed.

OL Groupe employs around 500 people in the administration, commercial, technical and soccer departments. The venue also uses subcontractors for security, maintenance and catering. On match days,

#### Key facts: Groupama Stadium



|                            |                    |
|----------------------------|--------------------|
| <b>City:</b>               | Décines-Charpieu   |
| <b>Owner:</b>              | Olympique Lyonnais |
| <b>Main tenant:</b>        | Olympique Lyonnais |
| <b>Operator:</b>           | Olympique Lyonnais |
| <b>Costs:</b>              | 410 million euros  |
| <b>Construction:</b>       | 2013 - 2016        |
| <b>Capacity:</b>           | 60,000             |
| <b>Business seats:</b>     | 6,000              |
| <b>Boxes:</b>              | 105                |
| <b>Architect:</b>          | Populous           |
| <b>General contractor:</b> | Vinci SA           |

Pierrot says up to 2,000 additional people work at the venue – in security and food and beverage.

In December 2022, OL Groupe was acquired by Eagle Football Holdings Bidco Limited, a London-based group founded by digital entrepreneur John Textor. Among other things, investor John Textor already has a

stake in Premier League club Crystal Palace and other clubs in Brazil and Belgium. “John Textor is the new majority shareholder of OL Groupe, which includes the club and facilities such as the stadium, the professional training center, the soccer academy and the future LDLC Arena,” tells Xavier Pierrot. John Textor himself spoke of a “new beginning” for Olympique Lyonnais, a “historic club that deserves a global stage.”

#### Further attraction in the starting blocks

Just a stone's throw away from the Groupama Stadium, the LDLC Arena is currently being built as the next attraction in Lyon. This event arena is also fully privately financed and owned by OL Groupe. Xavier Pierrot summarizes the idea of the new venue as follows: “It is a complementary event venue that will host music events and concerts, but also Euroleague basketball games, futsal, tennis and many other indoor sports. Thanks to the U-concept, the capacity can be adapted to different configurations – from small shows to 12,000 seats for sports competitions and up to 16,000 seats for concerts thanks to retractable stands.”

With the LDLC Arena under construction, those responsible will benefit from the infrastructures that already exist, such as the tramway station that is already in place, the parking lots and so on.

According to Xavier Pierrot, the previously “polluted industrial wasteland” is currently being upgraded and rethought: The new LDLC Arena will be based on a comprehensive sustainability program, of which geothermal energy, LED lighting and solar cells are just a few components. The opening of the high-tech arena, which will cost around 141 million euros, is scheduled for the end of 2023. Xavier Pierrot is certain: “The experience of our organizational teams will pay off at this venue.” ♦



Picture: Populous

The LDLC Arena is scheduled to open in December 2023.



## “A number of innovative topics”

In this interview, Xavier Pierrot, Deputy General Director responsible for the Groupama Stadium and the LDLC Arena, talks about sustainable venue operations, the strategy in Lyon – and the upcoming 2024 Olympic Games.



Xavier Pierrot

### STADIAWORLD:

Nowadays, stadium operators must have sustainability and environmental protection on their agenda. How does the French sports facility landscape view this issue – and how is

Groupama Stadium in particular positioning itself?

**Pierrot:** We are currently developing a photovoltaic system on our parking lots and the roof of our training center. Today, we produce up to 10 GWh per year. Once the project is fully activated, the solar power plant will cover an area of 50,000 square meters – the entire parking lots, the roof of the training center and the roof of the future LDLC Arena. It is probably the largest power plant on sports facilities in Europe and will generate up to 12 GWh per year. This low-carbon electricity will be used both to power the stadium on event days and to feed the local grid.

As a next step, we are considering installing energy storage batteries, but the technology is not yet efficient enough. We are also thinking about additional



Concerts are also held in the multifunctional stadium (here Coldplay).

plants that suit our weather conditions. We are in a very windy region – and small wind turbines on the roofs could provide additional energy ...

**STADIAWORLD:** How are you staffed with regard to these topics?

**Pierrot:** OL Groupe, the company that owns the stadium, has a sustainability department and so we are working on a number of innovative topics. Energy is one of them. We have also installed a rainwater collection sys-

tem that is used for the turf. We are also working on waste collection and recycling with a dedicated sorting area inside the stadium. On event days, we collect unsold food and give it to local food charities. The restaurant for our employees has a permaculture garden that provides vegetables and creates compost with food waste. We have 12 beehives in the lower part of the stadium that produced a total of 232 kg of honey in 2022.

**STADIAWORLD:** Sustainability is certainly also on the agenda for major events such as the Olympic Games. The Groupama Stadium in Lyon is currently preparing for the 2024 Games. How is it going?

**Pierrot:** We already have regular meetings with the staff of the organisers of the Paris 2024 Games. Tony Estanguet, the president of the organising committee, visited the stadium in January. Groupama Stadium will host both the men's and women's games. It will be the stadium with the most matches outside Paris – eleven in total, including a women's semifinal. ♦



Huge photovoltaic system near the Groupama Stadium.



# Industry get-together with numerous highlights

Renowned speakers, exciting collaborations and diverse partners: The eps ARENA SUMMIT 2023 in Frankfurt promises two exciting days full of inspiration and innovation for the industry on September 13 and 14.

At the eps ARENA SUMMIT 2023 on September 13 and 14, 2023 in Frankfurt, participants can expect two days full of varied topics from the fields of management, infrastructure, entertainment and marketing. The congress is organized in cooperation by STADIOWORLD, the ESB Marketing Network and Deutsche Bank Park. In addition to the diverse topics, the eps ARENA SUMMIT 2023 will also feature the presence of some of Europe's most renowned stadiums and arenas.

## New and proven collaborations

With the new cooperation with the European Arenas Association (EAA), ARENA SUMMIT underlines its position as the leading platform for the venue and event industry. The cooperation with the EAA marks a significant milestone in the further development and internationalization of the congress. The EAA will enrich the event with an international panel of top-class speakers as

well as participants from the leading European arenas.

In addition to Olivier Toth, President of the EAA and Managing Director of the Rockhal in Luxembourg, as well as Mantas Vedrickas, Head of Events at Žalgiris Arena in Kaunas (Lithuania), and Julien Rongier, Director adidas arena and Chief Revenue Officer, Paris Entertainment, other renowned experts will share their experiences, insights and best practices in arena operations and marketing. The panel will look beyond national borders to address current industry challenges such as sustainability, human resources and many more.

In addition, the organizers of the eps ARENA SUMMIT 2023 in Frankfurt are pleased to announce the continuation of further important cooperations. The Association of German Stadium Operators ("VDS" for "Vereinigung deutscher Stadionbetreiber" in German) will again be a partner of the industry event. Dr. Christian Hockenjos, Chairman of the Board of VDS, emphasizes the importance of reliable

partnerships and the importance of maintaining them and making new contacts: "We are very pleased to continue to be an integral part of this successful and important event and are looking forward to the event in Frankfurt with great anticipation. The range of topics and the interesting personalities on site make the ARENA SUMMIT the most important meeting place for us stadium operators."

In addition to the managing directors of the VDS, members of the Events and Technology working groups will also participate in the eps ARENA SUMMIT. The cooperation with the Ticketing working group of the German Football League (DFL) has also been renewed. In addition to an internal meeting of the working group, Dr. Hendrik Weber, Director of Sports Technology & Innovation at the DFL, will provide insights into the league's activities.

## Program with numerous highlights

Looking at the program of the eps ARENA SUMMIT 2023, it is difficult to pick out individual highlights. With André Lieberberg, Managing Director of Live Nation, there will certainly be interesting insights into the entertainment business right at the beginning of the congress. The opening will be followed by numerous top contents with topics around data collection & digitization, ticketing & fan experience, sustainability & mobility, media technology & lighting as well as entertainment and major sports events. ♦



Picture: Griesenböck

Numerous key notes and discussion panels await visitors at the eps ARENA SUMMIT 2023.



Further information  
on the program is  
regularly available online.



## TITLE-SPONSOR



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# “Exchange between the different parties is crucial”

AEG is one of the leading sports and live entertainment groups with a global network. In January 2023, Sam Booth joined AEG Europe as Director of Sustainability. In this interview, he talks about his previous stations, his current role, personal goals – and the venue operation of the future.



Sam Booth

**STADIAWORLD:** Sam, please introduce yourself briefly.

**Booth:** I joined AEG Europe with a remit to accelerate the adoption of sustainable business practices across all of our venues, festivals and tours. It's a huge job, but I consider myself incredibly lucky to work in the most exciting industry in the world, on topics which I'm deeply passionate about.

**STADIAWORLD:** What were your previous stations? How did you become involved in the venue industry – and specifically with AEG Europe?

**Booth:** I started my career in the experiential production space, working in agencies for clients like adidas, Google and Samsung, producing their consumer facing events and

experiences; everything from fashion shows in New York and touring festival activations to floating wine bars on Clapham Common. As I progressed, I became concerned with the fast 'take, make, waste' nature of the industry. I saw extraordinary examples of this and began wondering if there was a better, less destructive way. When the pandemic hit, I took the opportunity to dive in and do some studying at the Cambridge Institute.

This was my springboard into sustainability. I joined a specialist ESG consultancy and was exposed to a plethora of vast and extremely complicated problems that needed solving. It was great, but I missed the world of 'live', so when the AEG role came up, I knew it was the perfect fit!

**STADIAWORLD:** AEG is one of the big players in the industry. Which ven-

ues are part of AEG Europe? To what extent is there an exchange between the parties involved?

**Booth:** Venues are at the core of our business, and we're proud to own and operate some of the most recognisable venues across Europe, including The O<sub>2</sub> and Eventim Apollo in London; Mercedes-Benz Arena and Verti Music Hall in Berlin; Barclays Arena in Hamburg; and the Accor Arena in Paris. Exchange between the different parties is crucial. We meet regularly and the venues share relevant updates and learnings which everyone can benefit from. This is one of the many benefits of being part of such a large organization.

**STADIAWORLD:** How do you define sustainability yourself?

**Booth:** In a literal sense, sustainability means the ability to maintain something indefinitely. This essence



Mercedes-Benz Arena, Berlin



is the basis of every natural system on earth, but something humans have become quite good at ignoring in the pursuit of pure profit. This may work for a while, but ultimately profit relies on people – to do the work and buy the things – and planet – to provide the resources and a place to work. If any of these priorities are out of kilter with the others, things will start falling apart. So, for me, sustainability is the optimum way of working that keeps things – people, planet and profit – in equilibrium.

**STADIAWORLD:** What synergies in terms of sustainability can be created through exchange in the industry?

**Booth:** Exchange and communication are absolutely central to the sustainability industry. Competition on an individual basis simply doesn't work because the issues are global, extremely complicated and deeply embedded in culture. For example, The O<sub>2</sub> can't address inherently unsustainable practices in the touring industry without other arenas cooperating to enact similar solutions and policies. Equally, issues around waste and recycling are societal and require industry-wide in-depth discussion to address.

**STADIAWORLD:** It certainly is one of the most urgent issues of all – and the fans' awareness is also growing. How do you perceive the recent rise in people's expectations?

**Booth:** Fans have been aware of the issues involved for a long time, but it's become a real focus recently as the relevance to them has become apparent. Covid exposed how interconnected we all are, while more extreme weather and natural disasters are proving that action is required.

## “A BIG SIGNAL TO THE MARKET AND THE GOVERNMENT

And people expect action. Yes, a net-zero commitment is important, but what are you actually doing to get there? As the Millennial and X generations gain in financial clout and political power, these expectations will only heighten, so it's imperative for businesses to get ahead of the curve now to avoid being left behind.

**STADIAWORLD:** By their very nature, sports facilities are resource

guzzlers. Where can we start to move the industry forward in general? And what has already been done?

**Booth:** Accurate measurement of your individual impact is essential. Without this you have no idea where you can make the biggest advances. From experience, the biggest impact will come from addressing travel. This will depend on the location of your venue, but perhaps public transport can be improved in collaboration with local government, or car parking costs increased to discourage driving and fund carbon removals. Fan education is key too – highlighting how their decisions can support the overall mission is a powerful motivator for change, for your venue, and the world beyond. Energy reduction and renewable energy generation should also be a focus. Energy audits can pay dividends in identifying where reductions can be made, and now it's possible to procure certified green energy to reduce your overall carbon footprint. We've been doing this for our venues since 2015 and it sends a big signal to the market – and to government – of our direction of travel. Equally, now that costs have plummeted, some venues may be able to generate their own →



Barclays Arena, Hamburg



energy on-site via rooftop and car park solar panels.

**STADIAWORLD:** Following on from this, how do you see the latest developments in the field of sustainability? What do you think is already good, where do you see potential for optimization?

**Booth:** Biodiversity: Venues can really help due to the sheer amount of space we cover. Green roofs, beehives, composting food waste – these can all improve the biodiversity of local areas and benefit society at large.

**Renewables:** The relative costs of new solar and wind projects look like good bets versus coal and gas, and this is crucial for the delivery of net-zero plans across our industry. The steady growth of electric and hybrid cars is also positive, but optimization is vital. Charging infrastructure is behind where it needs to be to cope with a fully electric car market, and venues can play their part by installing charging points in car parks.

**Recycling and reuse systems:** The vital Deposit Return Scheme for packaging in the UK will soon come online, resulting in greater public awareness of resource usage. Venues should be expanding this conversation by ensuring waste streams are accurately

segregated and look to trial new reuse schemes where possible.

**STADIAWORLD:** What do you currently consider to be best practice cases?

**Booth:** I'm biased of course, but many of our venues are exhibiting best practice. Our German venues have installed cup-washing units enabling them to dispense entirely with disposable cups. This has a huge impact on carbon emissions and waste generation, and encourages a reuse mindset amongst fans.

## BEST TODAY MIGHT ONLY BE GOOD TOMORROW

The team at The O<sub>2</sub> has employed an Energy Manager to drive down usage across the venue. Carbon calculations have been established for all food menu items, with data displayed on menus so customers can make informed decisions on what to eat. They are implementing a food redistribution scheme for unused edible food, and inedible food is processed in our wormery and Orca bio-digester.

Beyond our venues, Forest Green Rovers are a great example. They've gone entirely vegan, installed a football pitch which captures rainwater for irrigation, and even the toilet water is cleaned and reused for watering!

'Best practice' is constantly changing, and 'best' today might only be 'good' tomorrow. Tracking new developments and being open to change is crucial to achieving the ultimate goal of sustainability.

**STADIAWORLD:** Let's talk specifically about your activities: What noteworthy projects, topics and initiatives are you currently working on?

**Booth:** We're currently working to re-establish our baseline data across the business which we'll use to set a

new generation of global goals. Once complete, I'll be working with all our business units to set out specific sustainability roadmaps for each of them. We're also developing a company-wide training program to upskill all our staff on sustainability issues and arm them with the tools to make better choices in their job. Training is crucial to ensure we are pulling in the same direction and living up to our public commitments.

And there's other exciting initiatives in the pipeline for later this year, from ticketing to serveware and a major reuse project. Watch this space!

**STADIAWORLD:** And in the future? What are your long-term goals as a person and as a company?

**Booth:** Personally, I want to make as many industry connections as possible. It's the best way to learn and be inspired. I want to help as many people as possible at AEG to start their own sustainability journeys. This is the challenge of a lifetime, and we all need to muck in!

As a company, we're ambitious. Beyond all the usual net-zero commitments and waste-reduction drives, we want to invest in new technologies and find cutting edge partners to help us change the world for the better.

**STADIAWORLD:** What does the optimal, sustainable venue operation of the future look like? Which factors do stand out?

**Booth:** In the future, all venues will be built with sustainability at the very core of their design. Green roofs and spaces for nature will be commonplace. Rainwater will be conserved and re-used. Renewable energy generation will be built in and heat drawn from the air by industrial heat pumps. Drinks will be sold in containers which can be reused indefinitely and fans will travel in pollution-free public transport or electric vehicles. The crazy thing about this vision is that it's all realisable right now. ♦



The O<sub>2</sub> in London uses paper cups.

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# SPORTS VENUES 2023/24: Construction Report

The COVID crisis was followed by the war in Ukraine and with it the next bad news for many construction projects: rising prices in all areas and additional challenges in supply chain management. STADIAWORLD's comprehensive construction report shows developments in stadium projects worldwide and where schedules had to be adjusted.

**O**ne trend is clearly evident: It is obvious that in many places mainly modernisation measures and optimisation works are being carried out; only in a few cases are new structures actually being built. One reason for this is certainly that the next major football events, the World Cup 2026 (in the USA) and the EURO 2024 (in Germany), will take place in traditionally well-positioned football and stadium markets. In the USA, the NFL stadiums serve as the main venues. In some cases, capacities will be increased somewhat, but the majority of the requirements can be met by the existing infrastructure.

The situation is similar in Germany, where mainly VfB Stuttgart carries out a major construction project; no other venue expects costs of more than 30 million euros for necessary construction measures. This is in stark contrast to the 2022 World Cup

in Qatar, which, with costs of around 220 billion euros, continues to sit at the top of the list of the most expensive World Cups ever and where, even 12 months after the final match, nothing has changed in regard to the situation of the many stadiums described as "deconstructable and reusable".

The 2024 Summer Olympic and Paralympic Games in Paris will also rely mainly on existing infrastructure and temporary construction solutions. 28 of the 37 venues already exist, and Paris is planning only three new buildings to host the world's largest multisport event. With the Porte de La Chapelle Arena (adidas arena), which is being built for around 125 million euros and almost 9,000 spectators, Paris is nevertheless providing one of the most exciting arena projects in Europe. In the heart of the French capital, Place de la Concorde, the iconic public square that connects the Tuileries Gardens and the Champs-Élysées, will be transformed into an urban park for the duration of the Olympic Games in 2024. Organisers are hopeful, the temporary venue, which will host breaking, BMX freestyle, skateboarding and 3x3 basketball, will attract up to 37,000 visitors daily.

## Billion-euro-projects everywhere

Of course, all this is not to say that there are no other major projects worth billions of euros. In the USA, the Intuit Dome is about to open in 2024, where the Los Angeles Clippers (NBA) have created a new home for themselves worth over 1.5 billion euros and will leave the crypto.com arena they previously shared with the LA Lakers

(also NBA) and LA Kings (NHL). The construction projects for the stadiums of the Buffalo Bills and the Tennessee Titans (both NFL), which have already been signed off on, also easily break the billion euro mark. Potential new ballparks for the Oakland A's (possibly relocating to Las Vegas) and Kansas City Royals may follow suit.

In Asia, the Kai Tak Sports Park in Hong Kong is scheduled to open in 2024, where an investment of a staggering 3.5 billion euros was due for the construction of a 50,000-seat stadium, a 10,000-seat arena, a 5,000-seat stadium for the public as well as public parks and retail space. The last construction element for the retractable roof has already been delivered by ship in July.

In Europe, Real Madrid's new Estadio Santiago Bernabéu is scheduled to open at Christmas 2023, the new Everton Stadium is already working on the construction of the roof and demolition work has also begun on Barca's Spotify Camp Nou.

Australia also has two billion-euro-projects on the horizon with the construction of The Gabba, which will be the country's new national stadium and is due to host the opening and closing ceremonies of the 2032 Olympics, and Brisbane Live, a 17,000-seat multi-use arena. For the 2032 Summer Olympic and Paralympic Games in Brisbane, the Queensland Government already approved a total stadium-infrastructure budget of over 4.3 billion euros.

STADIAWORLD also takes a look at the South American bid for the Jubilee World Cup 2030, which would have to start a real building boom in many countries, if they hope to host the biggest single-sport event in the

## CONSTRUCTION REPORT



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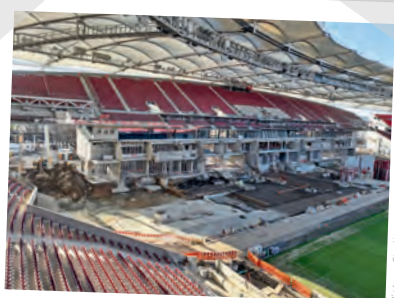
The Gabba, Brisbane, Australia.



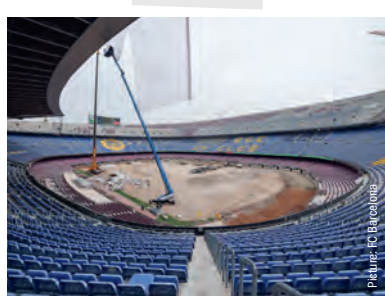
Kai Tak Sports Park, Hong Kong, China.



Miami Freedom Park, Miami, USA.



MHPArena, Stuttgart, Germany.



Spotify Camp Nou, Barcelona, Spain.



New Everton Stadium, Liverpool, England.

world. Saudi Arabia meanwhile is due to host its first major national team tournament, the Asian Cup 2027, which is considered the dress rehearsal for subsequent, further tournament bids. And the Major League Soccer in the USA is preparing for the newly arrived world star Lionel Messi, who has to make do to with a temporary stadium, while

Inter Miami starts construction on their permanent home.

How the worldwide stadium and arena market will continue to develop, whether the ever-increasing costs can be recouped, whether the boundary between “stadium” and “arena” will continue to blur thanks to multi-functional use, and whether/when football will really take off in the

USA remains to be seen. As always, STADIAWORLD will accompany this process and try to cover all developments. Always up-to-date: The online construction report. ♦



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# Construction report: Stadium and arena projects in Europe

Whether it's Manchester, Milan or Madrid – Europe has a lot to offer in terms of stadium and arena infrastructure. The trend towards increased multifunctional use of venues continues unabated.

**T**he European stadium landscape is, of course, still dominated by the projects of the clubs from the top leagues. In Madrid, the Estadio Santiago Bernabéu is due to be completed before the turn of the year, while the Spotify Camp Nou is in the middle of demolition mode. In England, Manchester City are planning to modernise and expand their home ground, Chelsea FC is facing a total re-

ready getting ready for the future. With the Merck Stadium at Böllenfalltor in Darmstadt and the BBBank Wildpark in Karlsruhe, two ultra-modern stadiums already saw the light of day in 2023. The next in line is 1. FC Nürnberg, which wants to launch an ambitious redesign project for the stadium and its surroundings – the cost of the total reconstruction of the Max Morlock Stadium alone: 230 million euros.

ue to be lit and even sprinkled with water. In Madrid, one can thus imagine that tennis, American football or concerts will also take place in Real's stadium in the future.

The demarcation between stadium and arena is becoming increasingly blurred. The obvious loser seems to be athletics, which is often “kicked out” due to the high space requirements. Where athletes used to regularly share a stadium with football, running tracks are disappearing more and more from the typical stadium infrastructure. Above all, those responsible are hoping for an optimised atmosphere and an improved view of the pitch. Athletics, on the other hand, must henceforth hope even more that its own infrastructure is not lost even further. A focus on specialisation (for example in Berlin's Friedrich-Ludwig-Jahnsporthpark, which is fully committed to inclusion) and temporary additional solutions (such as in Budapest's new athletics centre, which can almost triple its capacity for major events) could be the way of the future.

Speaking of the future: As always, the upcoming major events determine the sports venue landscape. In Europe, these are likely to be the next European Football Championships in 2028 and 2032, for which the joint bid from the UK and Ireland and Italy respectively are considered favourites. The former wants to include the whole of the British Isles and is taking care of ambitious new construction and renovation projects in Belfast (Casement Park) and Glasgow (Hampden Park), among others. Italy has adopted the slogan “Nuovo Rinascimento” (“new renaissance”) for EURO 2032 and is



Picture: Budapest 2023

*Budapest's Nemzeti Atlétikai Központ is one of a few newly opened Athletics stadiums.*

build of Stamford Bridge and in Liverpool, both LFC and Everton FC are in the middle of the construction phase of their respective projects. In Italy, both Milan and Rome clubs presented advanced stadium projects, but are now back in the stage of uncertainty. Germany, on the other hand, is concentrating primarily on the upcoming EURO 2024, but in the “second row” the next generation of stadiums is al-

## Multifunction without athletics?

What all the stadium projects (especially the big ones) have in common is that they are to be used even more as multifunctional venues in the future. As is well known, the Santiago Bernabéu is getting its own flexible turf system especially for this purpose, which can stow the pitch in the basement for non-football use, where it can contin-





Proposed new look for Hampden Park.

planning a nationwide wave of modernisation. At the presentation of the preliminary bid dossier, the Italian federation and the government had already stated that they hoped that a European Championship would above all provide the necessary boost for investment in the country's own stadium infrastructure. Equally, this could streamline the bureaucratic requirements for such renovation processes

– a large proportion of Italy's first and second division stadiums have not been comprehensively modernised since the 1990 World Cup.

Meanwhile, Paris is preparing for the 2024 Summer Olympic and Paralympic Games. In times of sustainability focus and escalating costs, France is mainly relying on existing infrastructure or temporary buildings (increasingly also in public spaces).

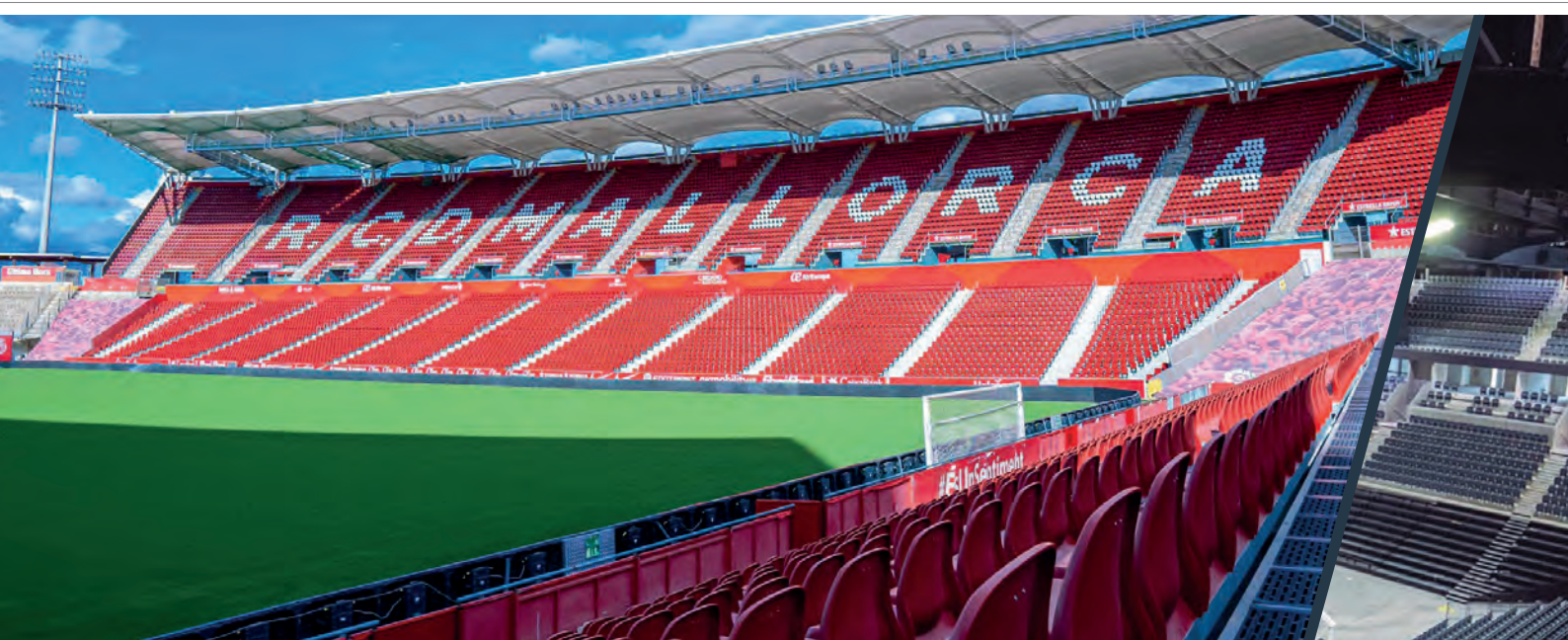
With the Porte de La Chapelle Arena (adidas arena), which is being built for around 125 million euros and almost 9,000 spectators, Paris is nevertheless providing one of the most exciting arena projects in Europe. Badminton and rhythmic gymnastics are to take place in the new building during the Olympics, afterwards the hall will be available for the basketball players and the handball players of Paris Saint-Germain, and other top sporting competitions and live events are also planned.

### "Must-play arena" in Vienna

Around 400 kilometres to the south-east, the LDLC Arena is being built in Lyon. With a capacity of 16,000 seats, the new state-of-the-art multifunctional arena will strengthen the city's portfolio of events and concerts. With an investment volume of around 141 million euros, the arena is not even among the top 10 most expensive arena projects currently being planned or already implemented in Europe. In England alone, arena modernisations and new buildings are planned for almost 1 billion euros with The Sage in Gateshead, the YTL Arena in Bristol as well as Co-op Live and the AO Arena in Manchester.

One of the most expensive projects was the Wien Holding Arena, which recently found a strategic partner after a year and a half of searching. The awarding process, in which the →

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Oak View Group came out on top, primarily served to define the parameters of the arena so that it would become one of the “must-play arenas” worldwide. The venue will host concerts, big shows, action-packed special events and sporting events, as well as trade fairs and eSports events. Oak View’s tasks as strategic partner now range from the planning, construction and operation to the financing of the project. The submitted concept foresees a start of construction of the 20,000-seat arena in 2025 and has been budgeted at a total of 384 million euros.

Things are only a little smaller in Valencia and in Munich. In the port city in the south-east of Spain, the country’s largest arena is being built at a cost of 280 million euros – capacity: 18,600 seats. It will be the new home of the basketball team, but will also host concerts and other cultural events. In Munich, the FC Bayern basketball players can also look forward to a new arena, but the main users of the SAP Garden, which is expected to be completed in 2024, will be the Red



Zurich's Swiss Life Arena can rival modern NHL venues.

Bull ice hockey players. The new arena is being built directly in the Olympic Park at a cost of around 150 million euros and will expand the range of available sports facilities there. The Swiss Life Arena in Zurich was already completed at the end of 2022. After 13 years of planning and three

and a half years of construction, the ZSC Lions (ice hockey) were able to move into their new home. The new temple has a capacity of 12,000 people, the stands are steeply built and give a clear view of the ice from all seats. There is also a standing-room fan section directly behind the goal.

Picture: ZSC Lions AG

#### Construction report: Arena projects in Europe (selection)

| Type | Country        | City       | Venue                            | Main tenant                                               | Status       | Project type     | Design                                        | Start | Opening   | Costs<br>(in million euro) | Capacity        |
|------|----------------|------------|----------------------------------|-----------------------------------------------------------|--------------|------------------|-----------------------------------------------|-------|-----------|----------------------------|-----------------|
| A    | Austria        | Vienna     | Wien Holding Arena               | Events                                                    | Planning     | New Construction | Kronaus/Mitterer/Gallister                    | 2025  | 2029      | 384                        | 20,000          |
| A    | Czech Republic | Brno       | ARENA BRNO                       | Events                                                    | Planning     | New Construction | A PLUS, Arch.Desing                           | 2023  | 2025/2026 | 180                        | 13,300          |
| A    | Czech Republic | Jihlava    | Jihlava Multipurpose Arena       | HC Dukla Jihlava                                          | Planning     | New construction | Chybik + Kristof Architects & Urban Designers | 2023  | 2025      | 30                         | 5,600           |
| A    | England        | Bristol    | YTL Arena                        | Events                                                    | Planning     | New Construction | Grimshaw Architects                           | tba   | 2025/2026 | 100                        | 19,000          |
| A    | England        | Gateshead  | Gateshead Quays Arena - The Sage | Events                                                    | Planning     | New construction | HOK, ASK PATRIZIA                             | 2023  | 2027      | 396                        | 12,500          |
| A    | England        | Manchester | AO Arena                         | Events                                                    | Construction | Reconstruction   | tba                                           | 2022  | 2025      | 58                         | 24,000          |
| A    | England        | Manchester | Co-op Live                       | Events                                                    | Construction | New construction | Populous                                      | 2020  | 2024      | 409                        | 23,500          |
| A    | France         | Lyon       | LDLC Arena                       | Events                                                    | Construction | New construction | Populous, Citinea                             | 2022  | 2023      | 141                        | 16,000          |
| A    | France         | Paris      | Porte de La Chapelle Arena       | Olympics 2024, afterwards: Handball, basketball, concerts | Construction | New construction | SCAU, NP2F                                    | 2021  | 2024      | 125                        | 6,500 - 9,000   |
| A    | Germany        | Frankfurt  | New Arena                        | tba                                                       | Planning     | New construction | Albert Speer + Partner (AS+P)                 | 2025  | 2027      | 230                        | 13,500          |
| A    | Germany        | Frankfurt  | TheDome                          | Löwen Frankfurt                                           | Planning     | New Construction | tba                                           | tba   | tba       | 300                        | 23,000          |
| A    | Germany        | Freising   | Munich Convention Center         | Event                                                     | Planning     | New Construction | Populous                                      | tba   | tba       | 300                        | 20,000          |
| A    | Germany        | Hamburg    | Elbdome                          | Events, Hamburg Towers                                    | Planning     | New Construction | tba                                           | tba   | tba       | 80                         | 9,000           |
| A    | Germany        | Munich     | SAP Garden                       | EHC Red Bull München, FC Bayern Basketball                | Construction | New construction | 3XN                                           | 2020  | 2024      | 150                        | 12,500          |
| A    | Italy          | Bologna    | New Virtus Arena                 | Virtus Baskets                                            | Planning     | New construction | Mario Cucinella Architects                    | tba   | 2025      | 55                         | 10,000          |
| A    | Italy          | Milan      | Arena Santa Giulia               | Olympics 2026, Events                                     | Construction | New construction | Arup, David Chipperfield Architects           | 2023  | 2025      | 180                        | 16,000          |
| A    | Spain          | Barcelona  | Nou Palau Blaugrana              | FC Barcelona                                              | Planning     | New construction | tba                                           | 2023  | 2026      | 200                        | 10,000 - 15,000 |
| A    | Spain          | Valencia   | Roig Arena                       | Valencia Basket                                           | Construction | New Construction | HOK, ERRE arquitectura                        | 2020  | 2024      | 280                        | 18,600          |
| A    | Sweden         | Stockholm  | Avicii Arena                     | Concerts, ice hockey                                      | Planning     | Reconstruction   | HOK                                           | 2024  | 2025      | 59                         | 16,000          |
| A    | Switzerland    | Kriens     | Pilatus-Arena                    | HC Kriens                                                 | Construction | New construction | Giuliani Hönger Architekten AG                | 2022  | 2026      | 40                         | 4,000           |
| A    | Switzerland    | Zurich     | Swiss Life Arena                 | ZSC Lions                                                 | Completed    | New Construction | Caruso St John Architects                     | 2019  | 2022      | 190                        | 12,000          |
| A    | Wales          | Cardiff    | Arena Caerdydd                   | Multi-purpose                                             | Planning     | New construction | HOK International                             | 2023  | 2026      | 280                        | 17,000          |

Type of sports venue: A = Arena

Status: 7/2023 Source: Clubs, operators, venues

| Construction report: Stadium projects in Europe (selection) |                  |            |                                         |                                          |              |                      |                                                                   |         |           |                            |                    |
|-------------------------------------------------------------|------------------|------------|-----------------------------------------|------------------------------------------|--------------|----------------------|-------------------------------------------------------------------|---------|-----------|----------------------------|--------------------|
| Type                                                        | Country          | City       | Venue                                   | Main tenant                              | Status       | Project type         | Design                                                            | Start   | Opening   | Costs<br>(in million euro) | Capacity           |
| S                                                           | Austria          | Linz       | Donauparkstadion                        | FC Blau-Weiß Linz                        | Completed    | Re-/New construction | Atelier Mauch                                                     | 2022    | 2023      | 40                         | 6,000              |
| S                                                           | Austria          | Linz       | Raiffeisen Arena                        | LASK                                     | Completed    | Re-/New construction | RAUMKUNST ZT                                                      | 2021    | 2023      | 65                         | 19,080             |
| S                                                           | Denmark          | Aarhus     | Skovens Arena                           | Aarhus GF                                | Planning     | New Construction     | Zaha Hadid Architects; Sweco Danmark A/S                          | 2024    | 2026      | 87                         | 24,000             |
| S                                                           | England          | Birmingham | Alexander Stadium                       | UK Athletics/<br>Commonwealth Games 2022 | Completed    | Reconstruction       | Arup                                                              | 2020    | 2022      | 80.4                       | 40,000             |
| S                                                           | England          | Birmingham | Villa Park                              | Aston Villa                              | Planning     | Reconstruction       | Trivandi and Grimshaw Architects                                  | 2023    | 2025      | tba                        | 50,185             |
| S                                                           | England          | Liverpool  | Anfield                                 | Liverpool FC                             | Construction | Reconstruction       | KSS Architects                                                    | 2021    | 2023      | 70                         | 61,000             |
| S                                                           | England          | Liverpool  | Bramley-Moore-Dock-Stadium              | Everton FC                               | Construction | New construction     | MEIS architects, Sheppard Robson                                  | 2021    | 2024      | 600                        | 52,888             |
| S                                                           | England          | London     | Selhurst Park                           | Crystal Palace                           | Planning     | Re-/New construction | tba                                                               | tba     | tba       | 117                        | 34,259             |
| S                                                           | England          | London     | Stamford Bridge                         | Chelsea FC                               | Planning     | Reconstruction       | Herzog & de Meuron                                                | tba     | tba       | tba                        | 60,000             |
| S                                                           | England          | London     | Twickenham Stoop                        | Harlequins FC                            | Planning     | Reconstruction       | Populous                                                          | tba     | tba       | 56                         | 25,000             |
| S                                                           | England          | Manchester | Etihad Stadium                          | Manchester City FC                       | Planning     | Reconstruction       | tba                                                               | 2023    | 2026      | 340                        | 61,000<br>- 63,000 |
| S                                                           | France           | Brest      | Espace Froutven                         | Stade Brestois                           | Planning     | New Construction     | Groupe François de La Serre                                       | 2025    | 2027      | 107                        | 15,000             |
| S                                                           | France           | Nîmes      | Stade Nemausus                          | Nîmes Olympique                          | Planning     | New Construction     | Valode & Pistre Architectes                                       | 2023    | 2026      | 250                        | 15,100             |
| S                                                           | France           | Strasbourg | Stade de la Meinau                      | Racing Club de Strasbourg Alsace         | Planning     | Reconstruction       | Populous                                                          | 2023    | 2026      | 160                        | 32,000             |
| S                                                           | Germany          | Berlin     | Friedrich-Ludwig-Jahn-Sportpark         | Various                                  | Planning     | New Construction     | O + M Architekten; Landschaftsarchitekten Otto + Richter, Dresden | 2024    | 2027      | 97                         | 20,000             |
| S                                                           | Germany          | Berlin     | New Hertha Stadium                      | Hertha BSC                               | Planning     | New Construction     | Albert Speer + Partner                                            | tba     | tba       | 250                        | 45,000             |
| S                                                           | Germany          | Berlin     | Stadion An der Alten Försterei          | 1. FC Union Berlin                       | Planning     | Reconstruction       | tba                                                               | 2023    | 2026      | 150                        | 37,700             |
| S                                                           | Germany          | Darmstadt  | Merck-Stadion am Böllenfalltor          | SV Darmstadt 98                          | Completed    | Reconstruction       | 1100 Architekten                                                  | 2018    | 2023      | 50                         | 17,800             |
| SR                                                          | Germany          | Frankfurt  | Deutsche Bank Park                      | Eintracht Frankfurt                      | Construction | Reconstruction       | tba                                                               | 2020    | 2023      | 60                         | 60,000             |
| S                                                           | Germany          | Karlsruhe  | BBBank Wildpark                         | Karlsruher SC                            | Completed    | Re-/New construction | AGN                                                               | 2018    | 2023      | 155                        | 34,000             |
| S                                                           | Germany          | Nuremberg  | Max-Morlock-Stadion                     | 1. FC Nürnberg                           | Planning     | Reconstruction       | tba                                                               | tba     | 2030      | 230                        | 45,160             |
| S                                                           | Germany          | Stuttgart  | Mercedes-Benz Arena                     | VfB Stuttgart                            | Construction | Reconstruction       | asp Architekten                                                   | 2022    | 2024      | 98.5                       | 60,449             |
| S                                                           | Gibraltar        | Gibraltar  | New Gibraltar National Stadium          | National Team                            | Planning     | New construction     | ALJ Design Ltd.                                                   | 2023    | tba       | 116                        | 8,000              |
| S                                                           | Greece           | Athens     | New Panathinaikos Stadium               | Panathinaikos                            | Planning     | New Construction     | A&S Architects                                                    | 2023    | 2026/2027 | 72                         | 42,000             |
| S                                                           | Greece           | Athens     | OPAP Arena                              | AEK Athens                               | Completed    | New construction     | AK & Associates Architects                                        | 2017    | 2022      | 81                         | 33,000             |
| S                                                           | Hungary          | Budapest   | National Athletics Centre               | 2023 World Athletics Championships       | Completed    | New construction     | NAPUR Architects                                                  | 2021    | 2023      | 310                        | 15,000<br>- 40,000 |
| S                                                           | Italy            | Bergamo    | Gewiss Stadium                          | Atalanta Bergamo                         | Construction | Reconstruction       | Mauro Piantelli (De8 Architetti)                                  | 2019    | 2024      | 40                         | 25,000             |
| S                                                           | Italy            | Cagliari   | Novo Sant'Elia                          | Cagliari Calcio                          | Planning     | New Construction     | MANICA, Sportium                                                  | 2023    | 2025      | 130                        | 30,000             |
| S                                                           | Italy            | Florence   | Stadio Artemio Franchi                  | AC Fiorentina                            | Planning     | Reconstruction       | Arup                                                              | 2024    | 2026      | 138                        | 40,000             |
| S                                                           | Italy            | Milan      | La Cattedrale                           | AC & Inter Milan                         | Planning     | New Construction     | Populous                                                          | 2024    | 2028      | 1,200                      | 60,000             |
| S                                                           | Italy            | Rome       | AS Rome stadium                         | AS Rome                                  | Planning     | New Construction     | Populous                                                          | 2024    | 2027      | 400                        | 55,000             |
| S                                                           | Italy            | Rome       | Stadio Flaminio                         | Lazio Rom                                | Planning     | Reconstruction       | tba                                                               | tba     | tba       | tba                        | 40,000             |
| S                                                           | Italy            | Venice     | Stadio della Venezia                    | Venezia FC                               | Planning     | New construction     | tba                                                               | tba     | 2026      | 87.4                       | 16,000             |
| S                                                           | Italy            | Verona     | Nuovo Stadio Verona                     | Hellas Verona, Chievo Verona             | Planning     | New Construction     | Populous                                                          | tba     | tba       | 130                        | 30,000             |
| S                                                           | Lithuania        | Vilnius    | National Stadium                        | National team                            | Construction | New construction     | Cloud Architektai                                                 | 2023    | 2025      | 156                        | 15,000             |
| S                                                           | Northern Ireland | Belfast    | Casement Park                           | Antrim GAA                               | Planning     | Reconstruction       | Populous                                                          | 2023    | 2025      | 110                        | 34,500             |
| S                                                           | Poland           | Szczecin   | Stadion Miejski im. Floriana Krygiera   | Pogon Szczecin                           | Completed    | Re-/New construction | Pracownia Projektowa Janusz Pachowski                             | 2019    | 2022      | 84                         | 20,500             |
| S                                                           | Romania          | Bucharest  | Stadionul Dinamo                        | Dinamo Bucuresti                         | Planning     | New construction     | tba                                                               | tba     | tba       | 100                        | 33,000             |
| SR                                                          | Scotland         | Glasgow    | Hampden Park                            | National team                            | Planning     | Re-/New construction | Holmes Miller Architects                                          | tba     | tba       | tba                        | 65,000             |
| S                                                           | Serbia           | Belgrade   | New national stadium                    | National team                            | Planning     | New Construction     | tba                                                               | 2023    | 2026      | 350                        | 55,000             |
| S                                                           | Spain            | Barcelona  | Spotify Camp Nou                        | FC Barcelona                             | Construction | Reconstruction       | Manica, Nikken Sekkel, Pascual i Ausió Arquitectes                | 2019    | 2025      | 960                        | 105,000            |
| SR                                                          | Spain            | Madrid     | Estadio Santiago Bernabéu               | Real Madrid                              | Construction | Reconstruction       | gmp, L35, Ribas                                                   | 2019    | 2023      | 1,000                      | 84,000             |
| S                                                           | Spain            | Sevilla    | Estadio Benito Villamarín               | Betis Sevilla                            | Planning     | Reconstruction       | tba                                                               | 2024    | 2026      | tba                        | 60,000             |
| S                                                           | Spain            | Seville    | Estadio Ramón Sánchez Pizjuán           | FC Sevilla                               | Planning     | Reconstruction       | IDOM                                                              | 2026    | tba       | 300                        | 55,000             |
| S                                                           | Spain            | Valencia   | Nou Mestalla                            | Valencia CF                              | Construction | New construction     | Fenwick Iribarren, Arup                                           | 2007    | tba       | tba                        | tba                |
| S                                                           | Spain            | Zaragoza   | Estadio La Romareda                     | Real Zaragoza                            | Planning     | New Construction     | IDOM                                                              | tba     | tba       | 120-140                    | tba                |
| S                                                           | Switzerland      | Basel      | St. Jakob-Park                          | FC Basel                                 | Planning     | Reconstruction       | Herzog & de Meuron                                                | 2026    | 2027      | 52                         | tba                |
| S                                                           | Switzerland      | Zurich     | Credit Suisse Arena/<br>Hardturmstadion | Grasshopper Club Zürich                  | Planning     | New construction     | Caruso St John, Boltshauser, pool                                 | 2025/26 | tba       | 90                         | 18,000             |

Type of sports venue: S = Stadium, SR = Stadium with retractable roof

Status: 7/2023 Source: Clubs, operators, venues

The standing room for home and guest fans reminds us that the venue is in Switzerland, apart from that the building can keep up with the NHL arenas. Both the LED cube (the largest video cube in an ice hockey arena in Europe) above the field and the dressing room for the home team could probably also be located in the USA. The arena is planned as the main venue for the 2026 Ice Hockey World Championship.

The Arena Santa Giulia in Milan is also expecting a major event in 2026. Planned as a venue for the 2026 Winter Olympics, the go-ahead was given in May 2023 for the construction of what operator CTS EVENTIM describes as “Italy’s largest and most modern multifunctional hall”. Construction is about to start on the ARENA BRNO, whose funding support was confirmed by the European Commission in July. With a capacity of

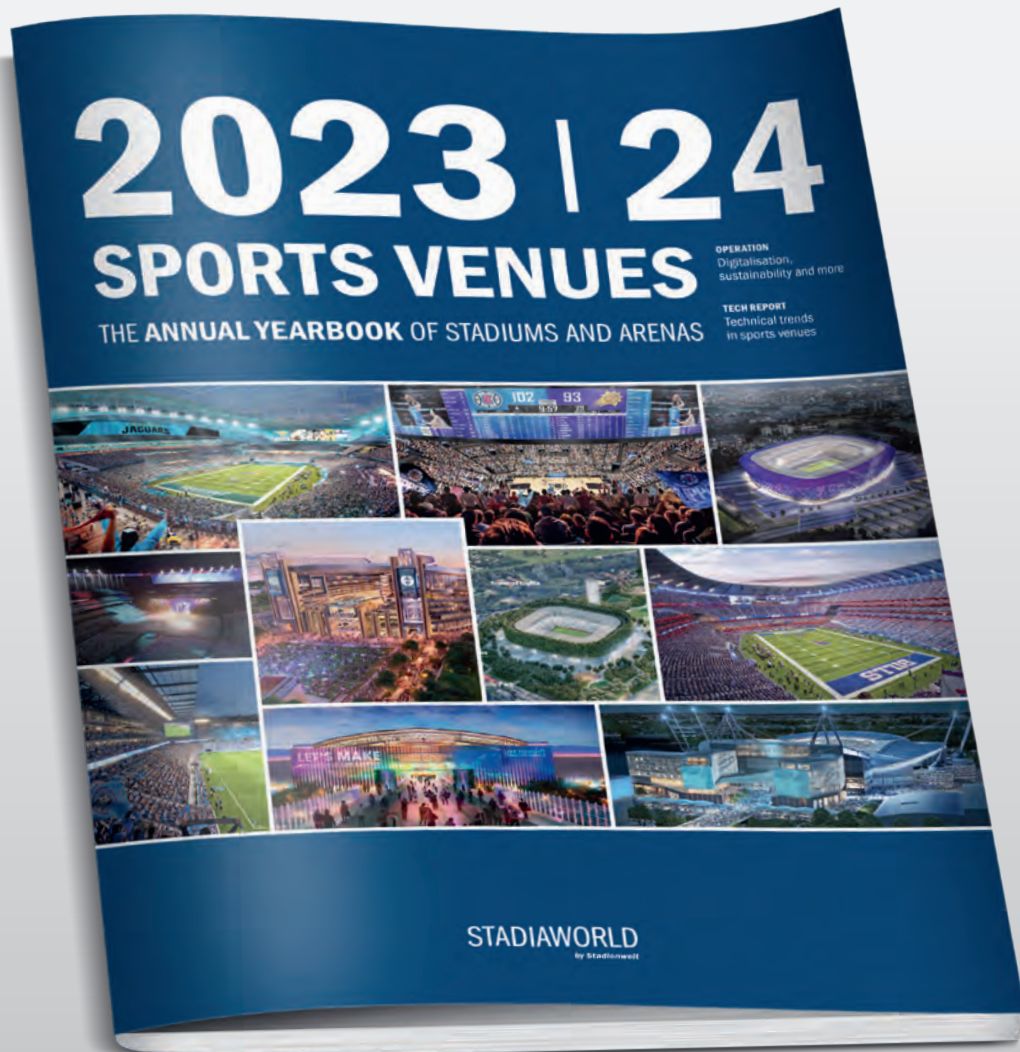
12,174 seats in the ice hockey configuration, it will be the largest arena in the city. Those in charge also hope that the flexible usage options (concerts, boxing, futsal, conferences, volleyball, tennis, basketball ...) will allow the venues to be used all year round. In addition to ice hockey, however, the focus is clearly on concerts, for which the arena wants to attract international stars by offering another alternative for the area between Vienna and Prague. ◆



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# Construction report: UEFA EURO 2024

The UEFA EURO 2024 in Germany is casting its shadow ahead. After the 2006 World Cup, the last international tournament caused a veritable – and necessary – stadium construction boom in the country, this time mainly modernisation work is on the agenda.

The year 2000 can certainly be seen as a decisive year for the German stadium infrastructure. Even though some of the stadiums had already been built and modernised in the run-up to the World Cup bid, the actual award of the contract to host the world's largest single sporting event on 6 July 2000 marked a turning point for the stadium landscape.

construction of the twelve World Cup host stadiums alone.

A look at the current situation in the host cities less than twelve months before the start of UEFA EURO 2024 shows that both the clubs and the cities benefited from this construction boom in the long term: In most cases, it is mainly modernisation work that is pending. Comparatively afford-

## Stuttgart's great rebuild

By far the biggest construction project in the run-up to EURO 2024 is seen in Stuttgart. The last component of the stadium, which dates back to 1974, is the renovation of the main stand. In addition, the stadium will receive a PV system on the roof, new floodlights and modernisation of the hospitality areas. Around 130 million euros are estimated for the entire project – the VfB, the city of Stuttgart and the stadium operating company will share the expenses. The club's responsibility includes the costs for the expansion of the business area including the media technology, the new tunnel club, the renewal of the stadium and box seating in the main stand area, the kitchen expansion and the public catering areas as well as costs for the modernisation of the front buildings and the interim measures for the ongoing stadium operation (e.g. VIP tent).

In total, almost 55 million euros (30 million for the interior fittings of the main stand and 25 million for the share of the refurbishment costs) will go to VfB. The stadium operating company "Stadion NeckarPark GmbH & Co. KG" pays about 36.25 million euros and the share of the state capital Stuttgart amounts to about 37.5 million euros. In addition, the city will pay about 9 million euros for various security measures in defence against terrorism around the stadium and the Neckarpark. This mainly involves the upgrading of 13 neuralgic points where the stadium and its access routes have to be specially protected. The first fans should be able to take their seats in the new main stand at the start of the 2023/24 season. The first seats will be



Picture: Stadion NeckarPark/Armin Klugus

Stadium modernisation for around 130 million euros at the newly named MHPArena Stuttgart.

In the following five years, almost every major football venue in the country built new stadiums, following the trend: remove the track, add the boxes, put a roof on the house. The construction boom reached its peak in the spring of 2004, when six Bundesliga clubs had to keep their matches on a construction site. In addition, three clubs were simultaneously building a new stadium. A total of around 1.5 billion euros is said to have gone into the

ble investments to bring the venues up to date in terms of technology, equipment and comfort. With the exception of Düsseldorf, all cities have already hosted the German "summer fairy tale", and stadiums such as the Allianz Arena, SIGNAL IDUNA PARK and the Red Bull Arena have also regularly hosted international matches in recent years and have therefore never fallen victim to the ravages of time.

installed in the side areas, the middle section of the lower tier will probably have to remain empty, and a few seats will also be temporarily lost in the upper tier. “We plan to be ready for the start of the Bundesliga by 18 August. The main stand will then be 90 % usable for the public area,” the stadium operator explains.

Hamburger SV had a little less work to do, yet the modernisation measures at the Volksparkstadion initially developed into something of a problem child. In the meantime, HSV board member Dr. Eric Huwer can speak in the club’s own media of a “somewhat bumpy start”, only to state with satisfaction “that all work has started, and we will complete all essential measures by the end of the year despite the great time pressure.”

In fact, the start was so “bumpy” that a stadium closure and, for a short time, even a withdrawal of the EURO was threatened. The problem stemmed from the situation that HSV sold the stadium property back to the city in 2021 for cost reasons – and contrary to its promises, did not put the 23.5 million euros received for it into stadium renovation, but into covering running costs. Afterwards, the money was used up, the stadium was still in need of renovation – and the city was not willing to subsidise money again.

In the meantime, HSV has been able to find an alternative solution for the financing and the modernisation measures are in full swing. The installation of new pitch and event lighting has already been completed and celebrated its inauguration at the city derby against FC St. Pauli. The reinforcement of the pylons of the roof structure is followed by the most extensive measure: the replacement of the entire roof membrane.

Dr Huwer emphasises above all the long-term benefits of the measures: “I am particularly pleased that we are only carrying out sustainable and permanent construction measures here at the Volksparkstadion. Whether the already

completed floodlights with new event lighting or the new sound system, the expanded sanitary capacities, the replacement of the roof membrane as well as the new air conditioning for our VIP guests in the east – all these measures will contribute to HSV fans having a better stadium experience in the future and will thus benefit directly from the EURO 2024. I would particularly like to highlight the expansion of the seats for wheelchair users, which will also be optimised in terms of sight lines. This will ensure that we enable all HSV fans to attend our home matches.” Hamburger SV is calculating a total budget of 25 to 30 million euros for all permanent and temporary measures.

### Infrastructural investments

A similar cost framework is expected for the Olympiastadion Berlin. 24 million euros have been earmarked for various permanent renovation works, with the focus on improvements for visitors with limited mobility. Additional barrier-free supply facilities are to be created, the number, comfort and visibility of wheelchair spaces are to be improved, and general signage and wayfinding are to be optimised.

Sustainability projects such as the installation of e-charging columns and heat recovery systems will also be implemented. The modernisation of the camera technology has already been completed, as has the conversion to new turnstiles at the entrance. In addition, the expansion of the fibre optic network and the installation of a stadium-wide WLAN network is said to have cost around 4 million euros alone. Investments in the stadium’s connectivity are also on the agenda in Munich. A comprehensive 5G network is to be in place there by the start of the tournament, after partial areas have already been covered. In general, the Allianz Arena is once again in increased construction mode, even if most of the work is not directly related to EURO 2024. The home dress-

ing room area is being completely redesigned; a new lounge area for the Bayern players is being built as well as a modernised kitchen and extended changing rooms and offices for the coaching staff. All in all, the space available for players and coaches in the stadium is to be doubled.

Construction work is also planned in the spectator area: In the lower tier of the north curve, the standing and seating areas will be redistributed. Whereas up to now there have been almost 6,600 standing places in front of retractable seats, a real standing area will now be created in the outer blocks of the curve. There will then be room for around 4,000 spectators in this area. In future, there will be no standing in front of the folding seats, which will remain in the middle of the curve, so that these 2,500 tickets can be sold at a higher price than seats. Contrary to media reports, the overall capacity of the stadium will not change as a result of these measures.

Dortmund Borussia is currently busy with modernisation work in the largest national stadium. An amount in the double-digit millions is being invested in the creation of a new kitchen and logistics centre, which is being built as an extension to the west stand of SIGNAL IDUNA PARK. On a total of five levels (including the stadium’s first basement) of 500 m<sup>2</sup> each, BVB will then once again have state-of-the-art facilities with its new kitchen, logistics and catering area. The construction work is scheduled for completion in April 2024, i.e. in good time before the start of the EURO, even if – as in Munich – the work would have taken place independently of the tournament. The situation is different for the installation of a new LED floodlight system. BVB is obliged to supply this as part of the tournament requirements – a conversion measure whose necessity is shared with the MERKUR SPIEL-ARENA, the Deutsche Bank Park, the Volksparkstadion, the MHPArena and the RheinEnergieSTADION. ➔



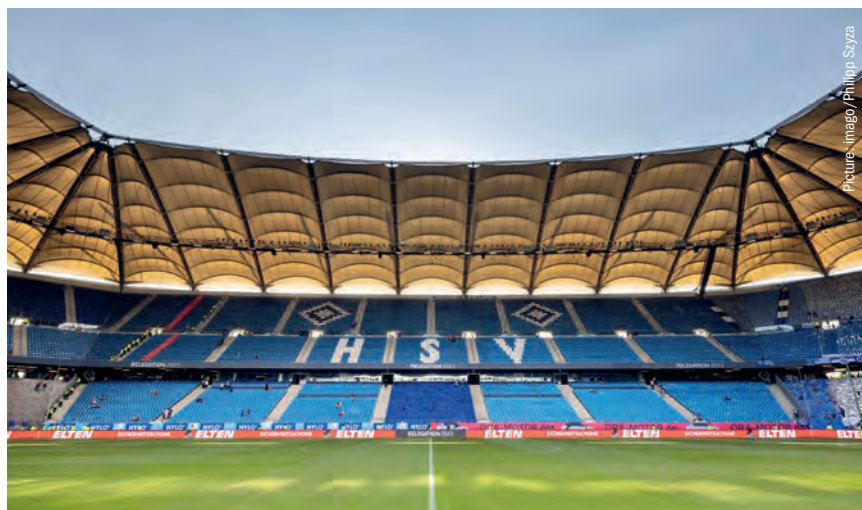
Meanwhile, a restructuring of current spaces or the creation of new ones is on the agenda in Frankfurt and Düsseldorf. The MERKUR SPIEL-ARENA will receive a completely new press and media centre – albeit in a somewhat adapted form. In 2021, a 1,000 m<sup>2</sup> extension called “The Box” was originally planned as a media centre and reception building for the VIP and business area, but the project had to be shelved a year later. New premises for the press representatives are nevertheless to be built, now inside the stadium.

In Frankfurt, an “interdisciplinary crisis room for the authorities” will be created in the Deutsche Bank Park, which will serve as a “Venue Coordination Centre” during the European Championship, according to the stadium. In general, some security improvements are planned at the stadium in Frankfurt’s “Stadtwald” (literally translating to “city forest”): The lighting at the entrances will be revised and equipped with LEDs, some turnstile systems will be upgraded and the camera surveillance in the outdoor areas of the stadium grounds will also be renewed.

The largest construction measure at the Frankfurt stadium is the expansion of the northwest curve, which has already been underway since the end of 2022, by converting the upper tier (analogous to the lower tier) into a standing-room-only curve. Eintracht thus intends to expand the stadium’s total capacity to 60,000 seats, while at the same time increasing the number of the cheapest tickets available and creating the second-largest standing-room section in the country.

### Temporary measures and standing areas

Traditionally, for the major international tournaments of a European or World Cup, these standing areas have to be converted back to seats. For the German stadiums, which apart from the Olympiastadion Berlin are traditionally equipped with standing



Volksparkstadion, Hamburg: Coordination is “a great challenge” here.

areas, this would mean temporary reconstruction measures everywhere. In fact, even one year before the start of the tournament, it has not yet been finally clarified how this issue will proceed. After UEFA had allowed standing room for the continental club competitions in a pilot phase, the fans were hoping for such a decision for EURO 2024 as well. A final decision could possibly only be made at the start of ticketing in early October. However, due to many imponderables (impact of an increase in capacity on mobility planning; same ticket allotments at the same prices for fans of both teams; changed security requirements, etc.), implementation seems unlikely. Transitional adjustments will therefore have to be made by the stadiums for the weeks of the tournament, and not only with regard to their standing/seating configurations. Mostly, increases in press seats (both inside and outside the stadium), additional security rings around the stadium and expanded hospitality areas are on the agenda.

All venues see themselves well positioned to meet the requirements of the UEFA. Based on the construction boom of the early 2000s and the professionalisation of the entire industry, no stadium is significantly behind the state of the art. Therefore, if you ask the stadium managers about the big-

gest challenges that still lie ahead in the preparation for the tournament, they are mainly in coordination as well as event and interface management. Depending on the scope of the stadium modernisation measures, cooperation with a large number of partners is necessary. The Hamburg Volksparkstadion therefore states: “Comprehensive modernisation work had to and still has to be implemented at the Volksparkstadion in Hamburg. Coordinating these construction measures in parallel and realising them under time pressure alongside the ongoing match and work operations is a great challenge for all planners, trades and employees of HSV Fußball AG involved.”

The situation is similar at the Olympiastadion Berlin, where “the coordination and logistics of the construction/preparations for UEFA EURO 2024 parallel to the Bundesliga matches and the DFB Cup final” is the biggest construction site. The time factor between the end of the season and the takeover by UEFA is an issue in many places – in view of the last matchday on 18 May (Bundesliga) and 19 May (2nd Bundesliga), with possible relegation second legs on 27/28 May. In all likelihood, however, nothing more than that will stand in the way of a successful UEFA EURO 2024 from the stadium’s point of view. ♦



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# Billions for buildings

In recent years, a real trend has developed in the USA to build new stadiums and arenas worth billions. A look at current new construction and renovation projects in the United States shows that this trend does not seem to be abating.

Whether Mercedes-Benz Stadium in Atlanta, SoFi Stadium in Inglewood, Allegiant Stadium in Las Vegas, UBS Arena in New York or Climate Pledge Arena in Seattle: the list of projects that have cost more than 1 billion euros is long. As the list is only a selection, such expensive projects are by no means unique in the USA. While in Europe only very few construction projects break the magic billion-euro mark, in the land of unlimited possibilities numerous such stadiums and arenas are currently being planned or even under construction.

## NBA with new mega arena

With the Intuit Dome, a mega-project is already nearing completion in Inglewood. The new home of the Los Angeles Clippers is scheduled to open in autumn 2024. The cost of the new 18,500-seat multifunctional arena

is approximately 1.68 billion euros. A total of five basketball courts are planned for the Intuit Dome – two for training, one promo court, one outdoor court and the court for the Clippers' home games. The promo court is an exact replica of the playing field inside the arena. Another highlight of the new arena is what is claimed to be the largest halo board ever built in an indoor arena. The LED surface extends to just over 3,565 m<sup>2</sup>.

The Clippers are scheduled to move into their new arena for the start of the 2024/25 season. This would give them only a short time to enjoy the modernised Crypto.com Arena. By 2024, the Clippers', Lakers' and Kings' current home will undergo extensive modernisation. When the work is completed, the LA Clippers will be on the verge of moving out. In three stages, the Crypto.com Arena will undergo more than 100 million euros worth of work, including the installation of new LED screens

and boards, improvements to the spectator stands and restaurants in the arena, and a refresh of the home teams' locker rooms. The hospitality areas are also being extensively refurbished.

The Dallas Cowboys' AT&T Stadium is also about to undergo a refurbishment of the VIP areas, among other things, in view of the upcoming FIFA Men's World Cup. The design of the suites, including new media technology, is to be redesigned. Inside the stadium, the video board is to be converted to 4K. All the renovation work – which also includes the expansion of the concession stands – will cost more than 260 million euros.

## Big projects in the NFL

While the Dallas Cowboys' AT&T Stadium is just 14 years old and thus still comparatively new, the Buffalo Bills, Tennessee Titans, Jacksonville Jaguars and Chicago Bears each want a

| City                       | Country | Venue                     | Type | Status       | Project type     | Main tenant                         | League  | Design                  | Start | Opening | Costs               | Capacity |
|----------------------------|---------|---------------------------|------|--------------|------------------|-------------------------------------|---------|-------------------------|-------|---------|---------------------|----------|
| Calgary, Alberta           | Canada  | Calgary Arena             | A    | Planning     | New construction | Calgary Flames                      | NHL     | Dialog/HOK              | tba   | tba     | 1,087 <sup>1)</sup> | 19,377   |
| Chicago, Illinois          | USA     | New Chicago Bears Stadium | S    | Planning     | New construction | Chicago Bears                       | NFL     | tba                     | tba   | tba     | 1,783               | tba      |
| Cincinnati, Ohio           | USA     | Paycor Stadium            | S    | Planning     | Reconstruction   | Cincinnati Bengals                  | NFL     | Gensler Sports          | tba   | tba     | tba                 | 58,500   |
| Dallas, Texas              | USA     | AT&T Stadium              | S    | Planning     | Reconstruction   | Dallas Cowboys                      | NFL     | tba                     | tba   | 2025    | 280                 | 80,000   |
| Inglewood, California      | USA     | Intuit Dome               | A    | Construction | New construction | Los Angeles Clippers                | NBA     | AECOM                   | 2021  | 2024    | 1,680               | 18,500   |
| Jacksonville, Florida      | USA     | TIAA Bank Field           | S    | Planning     | Reconstruction   | Jacksonville Jaguars                | NFL     | HOK                     | 2024  | 2027    | 560 – 745           | 62,000   |
| Kansas City, Missouri      | USA     | Kansas City Ball Park     | BS   | Planning     | New construction | Kansas City Royals                  | MLB     | tba                     | tba   | 2030    | 1,930               | tba      |
| Las Vegas, Nevada          | USA     | New Oakland A's Ballpark  | BS   | Planning     | New construction | Oakland Athletics                   | MLB     | Schrock KC Architecture | tba   | 2028    | 1,335               | 30,000   |
| Los Angeles, California    | USA     | crypto.com Arena          | A    | Construction | Reconstruction   | LA Clippers, LA Lakers/<br>LA Kings | NBA/NHL | tba                     | 2022  | 2024    | >100                | 20,000   |
| Memphis, Tennessee         | USA     | FedEx Forum               | A    | Planning     | Reconstruction   | Memphis Grizzlies                   | NBA     | tba                     | 2024  | tba     | 311                 | 18,200   |
| Nashville, Tennessee       | USA     | New Titans Stadium        | S    | Planning     | New construction | Tennessee Titans                    | NFL     | MANICA, TVS             | 2024  | 2027    | 1,950               | 60,000   |
| New Orleans, Louisiana     | USA     | Caesars Superdome         | SR   | Construction | Reconstruction   | New Orleans Saints                  | NFL     | Trahan Architects       | 2020  | 2025    | 403                 | 73,208   |
| Orchard Park, New York     | USA     | Highmark Stadium          | S    | Construction | New construction | Buffalo Bills                       | NFL     | Populous                | 2023  | 2026    | 1,250               | 62,000   |
| Philadelphia, Pennsylvania | USA     | 76 Place                  | A    | Planning     | New construction | Philadelphia 76ers                  | NBA     | Gensler Sports          | 2028  | 2031    | 1,280               | 18,500   |
| Portland, Oregon           | USA     | Portland Diamond Ballpark | BS   | Planning     | New construction | tba                                 | MLB     | Populous                | tba   | tba     | 890                 | 34,000   |

Type of sports venue: A = Arena, BS = Baseball Stadium, S = Stadium, SR = Stadium with retractable roof 1) For the entire Event Centre, where the arena will be located.

Status: 7/2023 Source: Clubs, operators, venues

new stadium. The closest to a new stadium, meanwhile, are the Tennessee Titans and Buffalo Bills, in fact.

Both NFL franchises have already received the green light from the authorities for stadium construction. In Buffalo, ground was even broken in June 2023. The new stadium will have a seating capacity of 60,000 to 62,000 and will be built on a nearly one-square-kilometre site opposite the current Highmark Stadium in Orchard Park in New York State. A roof, which will cover about 65% of all seats, will protect spectators from the sometimes extreme weather conditions. The façade of the new stadium is to be designed to protect the playing field from direct wind impact. Nashville's NFL franchise also received the green light from the city council for a new building in April 2023. Groundbreaking is expected to take place in early to mid-2024, with opening planned for 2027. The Titans' new stadium is also in the region of 60,000 seats.

Meanwhile, the Jacksonville Jaguars are still waiting for approval, but at least they already have quite concrete plans for the complete renovation of TIAA Bank Field. In total, Jaguars President Mark Lamping expects costs of 1.2 to 1.4 billion euros for the modernisation and reconstruction of the stadium. In addition, there would be further costs of between 510 million and 620 million euros for the construction of a new sports quarter. Added together, the investment framework for the "Stadium of the Future" project is thus between 1.6 billion and 1.9 billion euros. Highlights of the new venue are supposed to be, for example, the possibility of increasing capacity from 62,500 to 71,500 seats for college football games (even more for concerts) as well as the open-air character of the stadium, whose canopy is supposed to lower the outside temperatures by 10-15 degrees Celsius and protect the fans from the weather. According to Peter Broeder, head of design at →



The Tennessee Titans already got planning approval for their new stadium.



The TIAA Bank Field is to be completely rebuilt under the title "Stadium of the Future".



The City of Chicago wants to redevelop Soldier Field.



the architectural firm HOK, the conversion affects “every inch of the existing stadium”.

Whether there will be a complete rebuild or a new building in Chicago is still unclear. The Bears have long been dissatisfied with their current home, Soldier Field. The stadium, built in 1924 and last renovated in 2003, is too old, too small for the NFL (lowest capacity in the league) with around 61,500 seats, and – above all – the

team, as tenants and not owners of the stadium, has too few design options. Therefore, the franchise used the option to buy the property, which they have held for several years, to put pressure on the city of Chicago. The city, in turn, is willing to extensively renovate and modernise Soldier Field, but not to give up its status as landlord. The club is therefore planning to build a 2-billion-euro stadium on the former site of Arlington International

al Racecourse. Although the lease on Soldier Field runs until 2033, it is said to contain an exit clause. However, as there are still financing issues for the new building project, the purchase of the land is to be understood as a move and not as a final decision. The Bears themselves stated in an open letter on the subject: “The signing of the contract is not a guarantee that the property will actually be developed, but it is an important next step in our ongoing evaluation of this opportunity.”



Picture: LA Clippers

*The Intuit Dome is to receive the largest halo board in an indoor arena worldwide.*



Picture: Oakland Athletics

*Located directly on the Las Vegas Strip, a new ballpark is to be built.*

### New ball parks for the MLB

The Oakland Athletics from Major League Baseball also have their eye on a new location. Currently – as the name indicates – still based in Oakland, the franchise is planning a move to Las Vegas. Located directly on the Las Vegas Strip, a new ballpark is to be built. The A's say it will have a capacity of 30,000 fans, making it one of the smallest parks in Major League Baseball. The project is currently estimated to cost 1.4 billion euros, and the A's could move in by 2028.

Other new ballparks are also in the planning stages. The Kansas City Royals, for example, want to present a location for their new construction project “at the end of the summer”. Two potential locations are being considered: one in East Village near the city centre and one in the north of the city. The Royals are planning to move to the new home by 2030, which is expected to cost almost 2 billion euros. At around 890 million euros, on the other hand, the project in Portland is almost “inexpensive”. With the Portland Diamond Ballpark, the city is aiming to bring a new MLB team to the city. However, the project is still at the planning stage.

While the planned baseball stadium in Portland is below the magic billion mark, there are several projects planned or even underway that will cost far more than 1 billion euros. This means that the already long list of projects will continue to grow in the future. ◆





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# How NFL Stadiums prepare for the World Cup

More than a third of all NFL stadiums will host FIFA World Cup games in 2026. In preparation for the tournament, numerous modernisations are already being planned or implemented. STADIAWORLD provides an overview.

**F**IFA World Cup 2026 will begin in about three years. With venues in Mexico, Canada and the USA, the edition will be one of the largest in World Cup history in terms of area, and the tournament also aims to set new standards in terms of stadiums. In the USA, the games will be played in the modern NFL stadiums in particular, which for their part are taking the opportunity to modernize the venues once again. What's coming up, and where?

Already in construction mode are the New England Patriots. Gillette Stadium in Foxborough, near Boston, is scheduled to be ready as early as September 2023. At the same time, work is also underway in preparation for the 2026 World Cup. The project, worth around 210 million euros, involves completely redesigning the south end of the stadium. The previously open end of Gillette Stadium will be closed. A hospitality

and functional area will be created, which will be covered on the outside with 50,000 square meters of glass. As a result, all levels of the stadium will then have 360-degree connectivity.

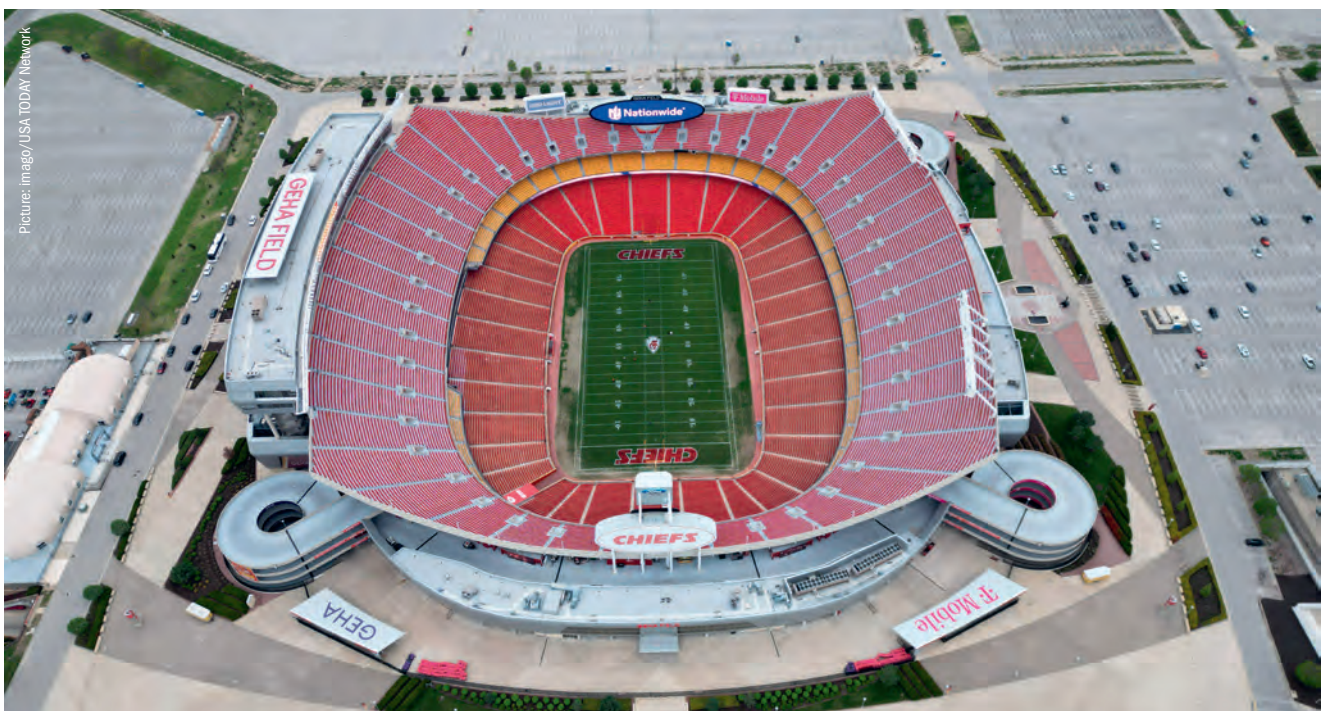
The prominent lighthouse on the same side will be replaced by a new 66-meter tower. This is to continue to serve as a characteristic feature of the stadium. In addition, the lighthouse is to have a 360-degree viewing platform that will guarantee a sweeping view of and over the stadium. The platform is to be accessible to fans throughout the year, and private events can also be held there.

Opposite, a new 2,044-square-foot HD video board is planned to be installed at the north end of the stadium. Once installed the new video board will be one of the largest in the United States. Also on the horizon is a playing surface change. The existing artificial turf will be replaced with a layer of soil on

which a natural grass will grow. This would then also comply with FIFA rules for stadiums wishing to host World Cup matches.

Another stadium from the American Football Conference (AFC) that will host games at the 2026 World Cup is the Kansas City Chiefs' GEHA Field at Arrowhead Stadium. A total of 47 million euros from government funding and private donations is to be invested in upgrades. For what exactly, however, is not yet clear. Separate from the stadium investments – and in addition to the estimated budget – the plan is to improve public transportation and connectivity in and around Arrowhead Stadium. Work is on schedule to begin in the summer of 2025.

The San Francisco 49ers' Levi's Stadium is also due for modernisation work. At a cost of 110 million euros, the plan is to increase the number of suites from 170 to 179. New video screens are also



GEHA Field at Arrowhead Stadium in Kansas City: One of the venues of the FIFA World Cup 2026.

to be installed. This will be financed in part by borrowing from the NFL Stadium Fund, which is intended to help teams implement stadium projects. The money comes from a pool of all 32 teams and acts as a low-interest loan. Back in 2022, Lumen Field, home of the Seattle Seahawks, underwent minor renovations. A 585-square-meter fan zone was built, as were two new video screens in the north of the stadium. Hospitality areas will be improved this year and next in preparation for the FIFA World Cup. A Tunnel Club is planned that will allow fans to watch players as they walk from the locker room to the field. The Seahawks are also planning numerous renovations to the lounges, as well as the construction of two open-air standing areas overlooking the field and the installation of a new premium bar.

### Three stadiums shortlisted for the Final

Three candidates were originally considered favorites to host the tournament's Final: MetLife Stadium in New Jersey, home of the New York Giants and New York Jets, SoFi Stadium in Inglewood, home of the LA Rams and Chargers, and AT&T Stadium of the Dallas Cowboys.

However, the layout of the field at SoFi Stadium probably ruins their Final dream – it is simply too narrow in the current configuration. Designed for the main tenants and thus the NFL games specifically, the field currently measures 110 meters long and 49 meters wide. This means that the width is almost 20 meters short of the standard FIFA dimensions (105 x 68 meters). In principle, a temporary widening of the field at SoFi Stadium would of course not be an insurmountable obstacle.

The problem, however, is that this would inevitably entail the loss of seating capacity in the lower tier, which would create a new conflict with FIFA regulations. These stipulate a minimum capacity of 80,000 seats for the Final stadium of the World Cup; according



AT&T Stadium: In regular operation, home to the Dallas Cowboys and their NFL games.

to reports, the minimum number of 70,000 seats would also have been accepted for the Californian stadium (capacity: 70,240) by way of an exemption. A further loss of seats due to the inevitable enlargement of the playing field would thus be the almost certain end for the 4.9 billion euro stadium.

Meanwhile, the MetLife Stadium, which opened in 2010, is scheduled for only minor work. At a cost of around 27.5 million euros, the main focus will be on design upgrades in and around the stadium. The money will also be used to make adjustments to the pitch (mainly: installing natural grass, adjusting the pitch size) in order to meet FIFA requirements. The financing will be provided by taxpayers' funds. Considering the prestige factor of the city of New York, the more advantageous time zone and the stadium's experience in hosting soccer matches, MetLife is the clear favorite to host the Final.

The Dallas Cowboys' AT&T Stadium is a promising competitor. The Cowboys want to upgrade their stadium for around 276 million euros and make it suitable for the finals. The general appearance of the stadium is not to

change and the work can probably be carried out while the game is in progress. The plan is to upgrade the large video board hanging in the middle to 4K, refresh all seven fan stores located in the stadium, and invest once again in the modernisation of many displays.

However, the biggest visual changes are to take place in the suites and premium areas. Above all, the corridors between the suites are to be given a new coat of paint. New suites are also to be built and older ones renovated. New wellness areas are planned, too. The renovation work is scheduled to be completed in the fall of 2025, in time for the World Cup the following year. At the NFL's annual winter meeting in December 2022, NFL owners approved the Dallas Cowboys' remodeling plan. The project will be funded entirely by the ownership family, according to the franchise.

The remaining four stadiums have yet to announce renovations in preparation for the 2026 FIFA World Cup. They include NRG Stadium (Houston), Mercedes-Benz Stadium (Atlanta), Lincoln Financial Field (Philadelphia) and Hard Rock Stadium (Miami). ♦



# MLS: The stadiums in 2023

The introduction of Lionel Messi as a newcomer has given both Inter Miami and the entire Major League Soccer an extreme boost in international perception. Reason enough to take a look at the stadiums of the US league.

A closer look at the structure of the MLS reveals fundamental differences to the top European leagues. As is typical in the United States, soccer is also played in two regionally divided conferences. 15 teams in the East (from Soldier Field in Chicago to Gillette Stadium in Foxborough) and 14 teams in the West (from CITYPARK in St. Louis to PayPal Park in San Jose) play for a champion in the playoffs that follow the regular season.

The new home of the world footballer – Messi – is the league's southernmost

stadium, the DRV PNK Stadium. Due to its modular construction, the stadium opened in July 2020 after only 14 months of construction and has been named in support of AutoNation's Drive Pink initiative – which raises funds for cancer research and treatment – since 2021.

Whether the arrival of “La Pulga” (literally translating to “the flea”) will have a positive effect on spectator numbers can at least be cautiously assumed. Regardless of this, the league is already enjoying growing interest. As recently as July 2023, a new MLS attendance

record was set with 82,110 spectators at “El Tráfico”, the city derby in Los Angeles. That this was set at Rose Bowl Stadium (not a regular stadium on the fixture list) highlights a potential future problem for the league: The discrepancy in available capacity between soccer-specific stadiums and stadiums shared with other major league teams. While Bank of America Stadium (home of Charlotte FC and the NFL franchise Carolina Panthers) or Mercedes-Benz Stadium in Atlanta (Atlanta United FC and Atlanta Falcons, NFL) can seat up to 75,000

| Major League Soccer: Stadiums 2023 |                        |                                     |                      |                    |                                                |                             |
|------------------------------------|------------------------|-------------------------------------|----------------------|--------------------|------------------------------------------------|-----------------------------|
| Stadium                            | Team                   | City                                | Capacity             | Opening            | Design                                         | Costs<br>(in million euros) |
| Allianz Field                      | Minnesota United FC    | Saint Paul, Minnesota               | 19,600               | 2019               | Populous                                       | 178                         |
| America First Field                | Real Salt Lake         | Sandy, Utah                         | 20,213               | 2008               | Rossetti Architects                            | 98                          |
| Audi Field                         | D.C. United            | Washington, D.C.                    | 20,000               | 2018               | Populous                                       | 400                         |
| Bank of America Stadium            | Charlotte FC           | Charlotte, North Carolina           | 38,000 <sup>1)</sup> | 1996 <sup>2)</sup> | Wagner Murray Architects, Populous             | 221                         |
| BC Place                           | Vancouver Whitecaps FC | Vancouver, British Columbia, Canada | 22,120 <sup>1)</sup> | 1983 <sup>3)</sup> | Studio Phillips Barratt                        | 85                          |
| BMO Field                          | Toronto FC             | Toronto, Ontario, Canada            | 28,351               | 2007 <sup>4)</sup> | BBB Architects                                 | 56                          |
| BMO Stadium                        | Los Angeles FC         | Los Angeles, California             | 22,000               | 2018               | Gensler                                        | 312                         |
| Children's Mercy Park              | Sporting Kansas City   | Kansas City, Kansas                 | 18,467               | 2011               | Populous                                       | 178                         |
| CITYPARK                           | St. Louis City SC      | St. Louis, Missouri                 | 22,500               | 2022               | HOK                                            | 407                         |
| Dick's Sporting Goods Park         | Colorado Rapids        | Commerce City, Colorado             | 18,061               | 2007               | Populous                                       | 58                          |
| Dignity Health Sports Park         | LA Galaxy              | Carson, California                  | 27,000               | 2003               | Rossetti Architects                            | 134                         |
| DRV PNK Stadium                    | Inter Miami CF         | Fort Lauderdale, Florida            | 19,100               | 2020               | MANICA                                         | 53                          |
| Exploria Stadium                   | Orlando City SC        | Orlando, Florida                    | 25,500               | 2017               | Populous                                       | 138                         |
| GEODIS Park                        | Nashville SC           | Nashville, Tennessee                | 30,000               | 2022               | Populous                                       | 298                         |
| Gillette Stadium                   | New England Revolution | Foxborough, Massachusetts           | 20,000 <sup>1)</sup> | 2002 <sup>5)</sup> | Populous                                       | 290                         |
| Lower.com Field                    | Columbus Crew          | Columbus, Ohio                      | 20,000               | 2021               | HNTB                                           | 280                         |
| Lumen Field                        | Seattle Sounders FC    | Seattle, Washington                 | 37,722 <sup>1)</sup> | 2002               | Ellerbe Becket, LMN                            | 383                         |
| Mercedes-Benz Stadium              | Atlanta United FC      | Atlanta, Georgia                    | 42,500 <sup>1)</sup> | 2017               | HOK                                            | 1,425                       |
| PayPal Park                        | San José Earthquakes   | San José, California                | 18,000               | 2015               | HOK                                            | 89                          |
| Providence Park                    | Portland Timbers       | Portland, Oregon                    | 25,218               | 1926 <sup>6)</sup> | A. E. Doyle, Morris H. Whitehouse & Associates | 0.44                        |
| Q2 Stadium                         | Austin FC              | Austin, Texas                       | 20,738               | 2021               | Gensler                                        | 232                         |
| Red Bull Arena                     | New York Red Bulls     | Harrison, New Jersey                | 25,000               | 2010               | Rossetti Architects                            | 178                         |
| Saputo Stadium                     | CF Montréal            | Montreal, Québec, Canada            | 19,619               | 2008               | Zinno Zappitelli Architectes                   | 35                          |
| Shell Energy Stadium               | Houston Dynamo FC      | Houston, Texas                      | 22,039               | 2012               | Populous                                       | 85                          |
| Soldier Field                      | Chicago Fire FC        | Chicago, Illinois                   | 24,955 <sup>1)</sup> | 1924 <sup>7)</sup> | Holabird & Roche, Wood + Zapata                | 11                          |
| Subaru Park                        | Philadelphia Union     | Chester, Pennsylvania               | 18,500               | 2010               | Rossetti Architects                            | 107                         |
| Toyota Stadium                     | FC Dallas              | Frisco, Texas                       | 19,096               | 2005               | HKS                                            | 71                          |
| TQL Stadium                        | FC Cincinnati          | Cincinnati, Ohio                    | 26,000               | 2021               | Populous                                       | 222                         |
| Yankee Stadium                     | New York City FC       | Bronx, New York                     | 30,321 <sup>1)</sup> | 2009               | Populous                                       | 2,050                       |

1) Standard reduced capacity for soccer; can be increased.

5) Comprehensive renovations started in 2022, ongoing.

2) Comprehensive renovations in 2014-17, 2020-21.

6) Comprehensive renovations in 2010, 2018-19

3) Comprehensive renovations in 2009-11.

7) Comprehensive renovations in 2002-03.

4) Comprehensive renovations in 2014-16.

■ Venue for FIFA World Cup 2026

Status: 7/2023

Source: STADIAWORLD

## Proposed and future MLS stadiums



## Miami Freedom Park

|                                  |                |
|----------------------------------|----------------|
| <b>Team:</b>                     | Inter Miami FC |
| <b>Location:</b>                 | Miami, Florida |
| <b>Capacity:</b>                 | 25,000         |
| <b>Opening:</b>                  | 2025           |
| <b>Design:</b>                   | MANICA         |
| <b>Costs (in million euros):</b> | 890            |

Costs for whole project including entertainment spaces, a public park, hotel and "technology hub". Construction start imminent.



## NYCFC Stadium

|                                  |                  |
|----------------------------------|------------------|
| <b>Team:</b>                     | New York City FC |
| <b>Location:</b>                 | Queens, New York |
| <b>Capacity:</b>                 | 25,000           |
| <b>Opening:</b>                  | 2027             |
| <b>Design:</b>                   | HOK              |
| <b>Costs (in million euros):</b> | 695              |

Part of bigger development plan including affordable housing and hotel. No date for construction start yet.



## Snapdragon Stadium

|                                  |                          |
|----------------------------------|--------------------------|
| <b>Team:</b>                     | San Diego expansion team |
| <b>Location:</b>                 | San Diego, California    |
| <b>Capacity:</b>                 | 35,000                   |
| <b>Opening:</b>                  | 2022                     |
| <b>Design:</b>                   | Gensler                  |
| <b>Costs (in million euros):</b> | 277                      |

Stadium already completed in 2022, will be a MLS venue from 2025. To be shared with college football. Hosted the 2023 CONCACAF Gold Cup.

spectators, the largest soccer-specific stadium in the league in Nashville, GEODIS Park, has only 30,000 seats. For regular match operations, however, even the "big" divided stadiums reduce their capacity for football matches, so that on average the league has a capacity of 24,159 seats.

Due to the continuous increase in interest in MLS, more and more teams have nevertheless opted and are still opting for their own stadiums. Since

2018 alone, nine clubs have moved into a new venue of their own. However, the fact that an older stadium is not necessarily a disadvantage is shown by the example of Providence Park in Portland, which opened in 1926 and is generally considered (one of) the best stadium in the league due to its atmosphere and loud fans.

With Miami Freedom Park, which is to be the new home of Inter Miami from 2025, NYCFC Stadium, whose

completion is planned for 2027, and Snapdragon Stadium in San Diego, which was already opened in 2022 and will be the home venue of the San Diego team joining the league from 2025, there are already three more venues in the pipeline. While the venues in Miami and New York with a planned capacity of 25,000 spectators represent the league average, Snapdragon Stadium will be able to accommodate 35,000 visitors. ♦

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# South America: Building boom due to World Cup bid?

Four South American countries are bidding to host the FIFA World Cup 2030. A look at the current stadium infrastructure in those countries reveals that they would have some catching up to do.

Although there are prominent stadium projects in South America, such as the planned construction of the new Vila Belmiro for Santos FC, the Arena MRV (Atlético Mineiro), which was completed in April, and the modernisation measures at River's Más Monumental, a real construction boom could be in store for the continent due to a commitment to host the FIFA World Cup in 2030. The bidding group of Uruguay, Argentina, Chile and Paraguay is counting on 14 to 16 stadiums to host the event – so at the official presentation of the bid on 31 March 2023, they presented a shortlist of 18 stadiums to be considered. The vast majority of the venues are in need of modernisation, and in view of the additional infrastructure required in terms of team base camps and training facilities, a World Cup bid

would probably also mean some major construction work. Where would the games be played?

Under the motto “Juntos 2030” (“Together 2030”), the South American Quadrilateral presented its intention to host the 2030 Jubilee World Cup. The official announcement was made in the final stadium of 1930, the Estadio Centenario in Montevideo, where the officials gathered in the museum at the same table where the South American football association CONMEBOL was founded in 1916. Just in time for the anniversary (in 1930, the Uruguayans became the first world champions), the Centenario would once again be the venue for the final, a corresponding modernisation of the stadium had already been announced and would receive a further boost from the bid.



Estadio Defensores del Chaco, Paraguay.

Uruguay, as the initiator and head of the bid, is leading the Estadio Centenario as the flagship of the bid. Out of the 18 stadiums on the shortlist, seven are from Argentina, five from Paraguay and three each from Chile and Uruguay. If a country wants to enter two stadiums from one city, FIFA regulations require that exemptions be obtained. Since Montevideo is to host all the stadiums for the Uruguay event, it is likely that the Gran Parque Central will be removed from the list, despite its rich history (including hosting the opening match in 1930).

Both the infrastructure and the structural conditions of the stadium, which is located in the middle of the city, do not meet FIFA requirements. Things look better for CA Peñarol's stadium: the Campeón del Siglo was only inaugurated in 2016 and was built completely according to FIFA standards. Meanwhile, considerations about the possibility of rebuilding a deconstructable stadium of the Qatari World Cup 2022 in Uruguay have not (yet?) manifested themselves.

In Chile, the stadium situation is somewhat more difficult. Andrés Otero, former Secretary of State for Sport,



Estadio Centenario, Uruguay: Finals stadium in 1930 and 2030?

| World Cup 2030: Proposed venues South America bid |                                                         |                     |                                                                       |                 |         |                                                         |
|---------------------------------------------------|---------------------------------------------------------|---------------------|-----------------------------------------------------------------------|-----------------|---------|---------------------------------------------------------|
| Country                                           | Stadium                                                 | Location            | Main tenant                                                           | Capacity for WC | Opening | Architect                                               |
| Argentina                                         | Estadio Más Monumental                                  | Buenos Aires        | C.A. River Plate                                                      | 83,000          | 1938    | José Aslan, Héctor Ezcurra                              |
| Argentina                                         | Estadio Mario Alberto Kempes                            | Córdoba             | -                                                                     | 57,000          | 1978    | Hugo Oviedo y Alberto Ponce                             |
| Argentina                                         | Estadio Único Diego Armando Maradona                    | La Plata            | -                                                                     | 53,000          | 2003    | Roberto Ferreira                                        |
| Argentina                                         | Estadio Libertadores de América-Ricardo Enrique Bochini | Avellanada          | Independiente                                                         | 48,000          | 1928    | Ezequiel Dorado                                         |
| Argentina                                         | Estadio Presidente Perón                                | Avellanada          | Racing Club de Avellanada                                             | 42,000          | 1950    | Eduardo E. Baumeister                                   |
| Argentina                                         | Estadio Malvinas Argentinas                             | Mendoza             | -                                                                     | 42,000          | 1978    | Rafael Viñoly                                           |
| Argentina                                         | Estadio Único Madre de Ciudades                         | Santiago del Estero | Club Atlético Central Córdoba                                         | 30,000          | 2021    | Luciano Asociados Arquitectos                           |
| Chile                                             | Estadio Nacional Julio Martínez Prádanos                | Santiago            | National team                                                         | 48,000          | 1938    | Ricardo Muller, Anibal Fuente-Alba y Alberto Cormatches |
| Chile                                             | Estadio Monumental                                      | Santiago            | Colo-Colo                                                             | 43,000          | 1975    | Mario Recordón, Alberto Sartori                         |
| Chile                                             | Estadio Municipal Alcaldesa Ester Roa Rebolledo         | Concepción          | Deportes Concepción, Universidad de Concepción, Arturo Fernández Vial | 33,000          | 1962    | Mario Recordón                                          |
| Paraguay                                          | Estadio CONMEBOL                                        | Luque               | -                                                                     | 60,000          | tba     | tba                                                     |
| Paraguay                                          | Estadio Defensores del Chaco                            | Asunción            | National team                                                         | 45,000          | 1917    | n.n.                                                    |
| Paraguay                                          | Estadio General Pablo Rojas                             | Asunción            | Club Cerro Porteño                                                    | 45,000          | 1970    | n.n.                                                    |
| Paraguay                                          | Estadio Villa Alegre                                    | Encarnación         | Encarnación FC                                                        | 45,000          | 2022    | n.n.                                                    |
| Paraguay                                          | Estadio Antonio Aranda                                  | Ciudad del Este     | Club Atlético 3 de Febrero                                            | 28,000          | 1972    | Tonino Cascio                                           |
| Uruguay                                           | Estadio Centenario                                      | Montevideo          | National team                                                         | 60,000          | 1930    | Juan Antonio Scasso                                     |
| Uruguay                                           | Estadio Campeón del Siglo                               | Montevideo          | CA Peñarol                                                            | 40,000          | 2016    | Luis Rodríguez Tellado & Asoc.                          |
| Uruguay                                           | Estadio Gran Parque Central                             | Montevideo          | Club Nacional de Football                                             | 34,000          | 1900    | Gómez Platero Arquitectos                               |

Status: 7/2023

Source: STADIAWORLD

has already stated that the country does not currently have a single World Cup-capable stadium and that it will need to be (re)built. Nevertheless, Chile has three venues planned: the National Stadium in Santiago, the Estadio Monumental (also in Santiago) and the Estadio Municipal Alcaldesa

Ester Roa Rebolledo in Concepción, 500 km south of the capital. Built in 1937, the last renovation of the national stadium was more than ten years ago. In 2009, a comprehensive modernisation was scheduled to, among other things, completely roof the stadium. Due to an earthquake

and a subsequent lack of funds, however, the project was only completed in part – the roof is still missing today. A modernisation for the World Cup is as good as certain.

The Monumental, where Colo-Colo currently plays its home games and is also its owner, would also need it. As the second largest stadium in the country, it has a capacity of 43,667, but has not been extensively renovated since its (re-)opening in 1989. Colo-Colo has already announced its intention to do so in view of the World Cup. The stadium in Concepción, built in 1962, was modernised in 2015 according to FIFA guidelines and is already completely covered. It has already hosted the Copa América and FIFA World Youth Championships.

In Paraguay, too, the national stadium is the most likely option for a 2030 World Cup venue: the Estadio Defensores del Chaco in the capital Asunción. Initial renovation work has already been carried out for the “Juegos Suramericanos de 2022”, the South American Games, which took place in the stadium in October 2022. Further modernisations are →



Estadio Único Diego Armando Maradona, Argentina: Due to host the 2023 FIFA U-20 World Cup final.



planned in view of the World Cup. The Estadio General Pablo Rojas (popularly known as La Nueva Olla), which was reopened in August 2017, is also located in Asunción and can accommodate 45,000 spectators. It is considered one of the most modern stadiums in South America.

As part of the bid presentation, however, the South American football association also announced a new building. Under the name Estadio Conmebol, a stadium for the football association is to be built in Luque, Paraguay. To ensure that the project can be realised as quickly as possible, the federation has pledged approximately 50 million euros. For the time being, the plans envisage a stadium with 45,000 spectator seats. Should the 2030 World Cup take place in South America, the Estadio Conmebol would be expanded to 60,000 seats.

As the largest country in the host group, Argentina is expected to provide the most venues for the World Cup. Some cities have already expressed interest, and various clubs also want to use the opportunity to push ahead with stadium projects. River Plate already has the country's largest stadium, the Estadio Más Monumental, and is also in the midst of extensive modernisation. The 40-million-euro project is to be completed by mid-2024 and will make the stadium the largest in South America with a capacity of 84,567. To finance



Estadio Más Monumental, Argentina.



Estadio Único Madre de Ciudades: One of Argentina's most modern stadiums.

this, River sold the naming rights to the stadium for the first time in its history. It is preferred in Buenos Aires to Boca's Bombonera and is scheduled to host the opening match.

The Estadio Madre de Ciudades is also considered a safe venue. Located in the province of Santiago del Estero in the northwest of the country, it is one of Argentina's newest stadiums and was only officially opened in March 2021 with the Supercopa Argentina match. Already at the start of construction, the president of the Argentine Football Federation, Claudio Tapia, declared that the stadium was seen as part of the bid for the 2030 World Cup.

From the Mendoza region in the west of the country, the Estadio Malvinas Argentinas is in the race. The 42,000-seat stadium also hosted the 1978 World Cup and is a traditional tournament and national team stadium in Argentina. The last renovation work took place in 2011, during which, among other things, a state-of-the-art video screen was installed.

The Estadio Mario Alberto Kempes and the Estadio Único Ciudad de La Plata are favoured for further hosting slots. The former, also known simply as Estadio Córdoba due to its location in

the province of the same name, was the venue for the Copa Sudamericana final as recently as the end of June 2022. Since 2011, it has offered 57,000 completely covered seats, making it one of the few stadiums that would meet most FIFA specifications even without renovations. For the current status of the World Cup bid, it is even considered the best-equipped of all four countries. The second stadium, which has been called Diego Armando Maradona since the end of 2020, is known as a multifunctional venue. It regularly hosts major concerts and would have been the venue for Copa America matches in 2021, before the tournament was moved to Brazil at short notice due to the Covid pandemic.

The complete application documents must be submitted to FIFA by October 2023 at the latest. By then, at the latest, it will be clear which stadiums the South American quartet could agree on as host cities. The decision on the 2030 World Cup bid will be made in the fourth quarter of 2024. Competition for the South American bid comes from a trio of Spain, Portugal and Morocco. A joint bid by Saudi Arabia with Greece and Egypt was withdrawn in June. ♦

## Construction report

Status filter:

All projects

Planning

Construction

Completed

Cancelled

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Show 50

| Continent               | Country                | City                  | Venue                                         | Type | Status       | Start     | Opening | Costs (mln €) | Capacity        | Last Update |
|-------------------------|------------------------|-----------------------|-----------------------------------------------|------|--------------|-----------|---------|---------------|-----------------|-------------|
| Europe                  | France                 | Strasbourg            | Stade de la Meinau                            | S    | Planning     | 2021      | 2025    | 198           | 32,000          | 2023/6/20   |
| Europe                  | Germany                | Darmstadt             | Merck-Stadion am Böllenföhren                 | S    | Completed    | 2016      | 2023    | 90            | 17,800          | 2023/6/20   |
| Europe                  | Germany                | Karlsruhe             | BBBank Wildpark                               | S    | Completed    | 2016      | 2023    | 155           | 34,000          | 2023/6/20   |
| South & Central America | Mexico                 | Morelia               | New stadium                                   | S    | Construction | 2023      | 2025    | 433           | 65,000          | 2023/6/19   |
| Asia                    | Japan                  | Osaka                 | Tokai Arena                                   | A    | Construction | 2023      | 2025    | 88            | 30,000          | 2023/6/19   |
| Europe                  | Spain                  | Seville               | Estadio Ramón Sánchez Pizjué                  | S    | Planning     | 2026      | 88      | 88            | 45,000-55,000   | 2023/6/19   |
| Asia                    | Philippines            | Davao City            | Ku-City Dome                                  | A    | Construction | 2012      | 2023    | 212           | 10,000          | 2023/6/18   |
| Oceania                 | Australia              | Brisbane              | The Gabba                                     | CS   | Planning     | 2026      | 2030    | 1637          | 50,000          | 2023/6/18   |
| Oceania                 | New Zealand            | Auckland              | Eden Park                                     | S    | Planning     | 88        | 88      | 88            | 50,000          | 2023/6/18   |
| Oceania                 | New Zealand            | Auckland              | Waterfront Stadium                            | S    | Planning     | 88        | 88      | 1001 - 1500   | 50,000 - 70,000 | 2023/6/14   |
| Europe                  | England                | Manchester            | Etihad Stadium                                | S    | Planning     | 2023      | 2025    | 130           | 55,000          | 2023/6/13   |
| Africa                  | Morocco                | Tetouan               | Le Grand Stade de Tetouan                     | S    | Cancelled    | 2016      | 88      | 88            | 88              | 2023/6/13   |
| Africa                  | Morocco                | Casablanca            | Grand Stade de Casablanca                     | S    | Planning     | 88        | 2025    | 88            | 88              | 2023/6/13   |
| South & Central America | Argentina              | San Isidro de Lules   | Tucuman WC Stadium                            | S    | Cancelled    | 88        | 88      | 88            | 88              | 2023/6/13   |
| North America           | USA                    | San Diego             | Michoud Stadium / San Diego Arena Complex     | A    | Planning     | 88        | 2025/26 | 88            | 88              | 2023/6/13   |
| North America           | Canada                 | Toronto               | Rogers Centre                                 | BS   | Construction | 2002      | 2004    | 88            | 88              | 2023/6/13   |
| Asia                    | China                  | Hangzhou              | International Sports Center Hangzhou          | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Asia                    | Uzbekistan             | Tashkent              | Avroscener-Tashkent                           | O    | Construction | 2022      | 88      | 88            | 88              | 2023/6/13   |
| North America           | Canada                 | Toronto               | PMO Field                                     | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Asia                    | Bangladesh             | Purbachal, Chittagong | Shahid Shamsuddin Durrani Stadium / The Borec | CS   | Planning     | 2023      | 2025    | 88            | 88              | 2023/6/13   |
| Europe                  | Bulgaria               | Varna                 | Arena Varna                                   | S    | Construction | 2008      | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Italy                  | Venice                | Stadio della Venezia                          | S    | Planning     | 88        | 2025    | 88            | 88              | 2023/6/13   |
| Asia                    | Saudi Arabia           | Riyadh                | Prince Faisal bin Fahd Stadium                | S    | Planning     | 88        | 2025    | 88            | 88              | 2023/6/13   |
| Asia                    | Saudi Arabia           | Riyadh                | Khalifa International Stadium                 | S    | Planning     | 2020      | 2025    | 88            | 88              | 2023/6/13   |
| Asia                    | Saudi Arabia           | Dammam                | New Dammam Stadium                            | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Germany                | Nürnberg              | Max-Morlock-Stadion                           | S    | Planning     | 88        | 2030    | 88            | 88              | 2023/6/13   |
| Asia                    | India                  | Jalandhar             | Amleek International Cricket Stadium          | CS   | Construction | 2022      | 2023/24 | 88            | 88              | 2023/6/13   |
| Asia                    | China                  | Wuhan                 | Wuhan FC Stadium                              | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Northern Ireland       | Belfast               | The Oval                                      | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| South & Central America | Mexico                 | Mexico                | Estadio Sustentable de Yucatán                | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | France                 | Nîmes                 | Stade Nîmés                                   | S    | Planning     | 2021      | 2025    | 88            | 88              | 2023/6/13   |
| Europe                  | Denmark                | Copenhagen            | Parken                                        | S    | Planning     | 88        | 2025    | 88            | 88              | 2023/6/13   |
| Europe                  | Netherlands            | Nijmegen              | De Veste                                      | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Ireland                | Dublin                | Aviva Stadium                                 | S    | Planning     | 2022      | 2025    | 88            | 88              | 2023/6/13   |
| Europe                  | Bosnia and Herzegovina | Sarajevo              | Bih Bihać                                     | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Wales                  | Cardiff               | Cardiff City Stadium                          | A    | Planning     | June 2022 | 2025    | 88            | 88              | 2023/6/13   |
| Europe                  | France                 | Paris                 | Parc des Princes                              | S    | Planning     | 88        | 2024    | 88            | 88              | 2023/6/13   |
| Africa                  | Morocco                | Al Hoceima            | Grand Stade d'Al Hoceima                      | S    | Completed    | 2020      | 88      | 88            | 88              | 2023/6/13   |
| South & Central America | Brazil                 | Rio de Janeiro        | Novo Estádio Flamengo                         | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Romania                | Timisoara             | New Stadium Timisoara                         | S    | Planning     | 88        | 88      | 88            | 88              | 2023/6/13   |
| Europe                  | Czech Republic         | Jihlava               | Jihlava Multipurpose Arena                    | A    | Planning     | 2023      | 2025    | 88            | 88              | 2023/6/13   |

## STADIAWORLD

## New norm defines future shock pad and e-layer performance



CEN has adopted EN 15330-4 for the minimum requirements for the performance and durability of elastic layers in artificial turf systems. Manufacturer Schmitz Foam provides information on the significance and implications of the new standard. [Read more](#)

## New grow lighting system added to product line



After last year's introduction of the LED50, SGL now adds another energy efficient LED lighting unit to its existing product line. The introduction of the LED120 aligns with the company's goal to



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# Construction report: Stadium and arena projects in Asia

In Asia, China and Japan are traditionally the focus of stadium and arena projects. But things are also picking up the pace in Saudi Arabia, where the desert state prepares for its first major national team tournament.

In China, there is once again a lot going on in terms of sports facility construction. The Kai Tak Sports Park in the Hong Kong Special Administrative Region is one of the most expensive sports facilities in the world, and a stadium costing billions of euros is currently being built in Xi'an. In addition, the New Workers' Stadium was recently completed in Beijing.

In the former British colony of Hong Kong, the construction of a sports complex is currently underway. Around the centrepiece of the project, the 50,000-seat Main Stadium, there will also be an indoor sports centre, a park, an event village, a



Kunshan Football Stadium

health and wellness centre as well as Kai Tak Sports Avenue and a public sports facility. At a cost of 3.5 billion euros, the Populous-designed complex will be an "urban oasis" to meet the needs of the population, profes-

sional athletes and amateurs. The sports complex is scheduled to open its doors as early as 2024.

Another billion-euro project is under construction in Xi'an, the capital of Shaanxi province. Originally planned for the Asian Cup 2023, the Xi'an International Football Centre (China had to withdraw later because of ongoing covid issues) is visually distinguished above all by its curved lines on the façade, which are intended to make the stadium less susceptible to north winds. The roof structure was designed to be not only relatively light, but also to protect spectators from the weather due to its translucent membrane,

| Construction report: Venue projects in Asia (selection) |             |                  |                                            |                                           |              |                      |                                                            |       |           |                          |          |
|---------------------------------------------------------|-------------|------------------|--------------------------------------------|-------------------------------------------|--------------|----------------------|------------------------------------------------------------|-------|-----------|--------------------------|----------|
| Type                                                    | Country     | City             | Venue                                      | Main tenant                               | Status       | Project type         | Design                                                     | Start | Opening   | Costs (in million euros) | Capacity |
| CS                                                      | Bangladesh  | Purbachal, Dhaka | Sheikh Hasina Cricket Stadium / "The Boat" | Bangladesh national cricket team          | Planning     | New construction     | Populous                                                   | 2023  | 2026      | tba                      | 50,000   |
| S                                                       | China       | Beijing          | New Workers' Stadium                       | Beijing Guoan FC                          | Completed    | Re-/New construction | Beijing Institute of Architectural Design                  | 2020  | 2023      | tba                      | 68,000   |
| S                                                       | China       | Chongqing        | Chongqing Longxing Football Stadium        | tba                                       | Completed    | New construction     | tba                                                        | 2020  | 2023      | 352                      | 60,000   |
| S                                                       | China       | Dalian           | Dalian Baracuda Stadium                    | Dalian Yifang                             | Construction | New construction     | Pattern Design                                             | 2021  | 2023      | tba                      | 63,000   |
| S                                                       | China       | Hangzhou         | International Sports Center Hangzhou       | tba                                       | Planning     | New construction     | Zaha Hadid Architects                                      | tba   | tba       | tba                      | 60,000   |
| SR                                                      | China       | Hong Kong        | Kai Tak Sports Park                        | National Stadium                          | Construction | New construction     | Populous                                                   | 2019  | 2024      | 3,500                    | 50,000   |
| S                                                       | China       | Jinan            | Yellow River Sports Center Stadium         | Mixed-use                                 | Planning     | New construction     | HPP Architekten; Beijing Institute of Architectural Design | 2023  | 2025      | tba                      | 61,000   |
| S                                                       | China       | Kunshan          | Kunshan Football Stadium                   | tba                                       | Construction | New construction     | gmp Architekten                                            | 2020  | 2023      | tba                      | 45,000   |
| S                                                       | China       | Qingdao          | Qingdao Youth Football Stadium             | tba                                       | Completed    | New construction     | China Southwest Architecture Design and Research Institute | 2020  | 2023      | 440                      | 50,000   |
| S                                                       | China       | Wuhan            | Wuhan FC Stadium                           | Wuhan FC                                  | Planning     | New construction     | CITIC Architectural Design and Research Institute          | tba   | tba       | 326                      | 60,000   |
| S                                                       | China       | Xiamen           | Xiamen Egret Stadium                       | tba                                       | Construction | New construction     | China Architecture Design and Research Institute           | 2020  | 2023      | tba                      | 60,041   |
| S                                                       | China       | Xi'an            | Xi'an International Football Centre        | tba                                       | Construction | New construction     | Zaha Hadid Architects; iDEA                                | 2020  | 2023      | 1,000                    | 60,000   |
| A                                                       | China       | Yunnan           | UIPM Asia-Pacific Development Centre       | tba                                       | Planning     | New construction     | tba                                                        | tba   | 2025      | tba                      | 10,000   |
| CS                                                      | India       | Jaipur           | Anil Agarwal International Cricket Stadium | Indian national cricket team, IPL matches | Construction | New construction     | GRAS                                                       | 2022  | 2023/2025 | >44                      | 75,000   |
| SR                                                      | Indonesia   | Jakarta          | Jakarta International Stadium              | Persija Jakarta                           | Completed    | New construction     | PDW Architects                                             | 2019  | 2022      | 307                      | 82,000   |
| BS                                                      | Japan       | Kitahiroshima    | Es Con Field Hokkaido                      | Nippon-Ham Fighters Baseball              | Completed    | New construction     | HKS                                                        | 2020  | 2023      | 467                      | 35,000   |
| A                                                       | Japan       | Tokyo            | Tokyo A-Arena                              | Alvark Tokyo                              | Construction | New construction     | tba                                                        | 2023  | 2025      | tba                      | 10,000   |
| CS                                                      | Pakistan    | Karachi          | Rafi Cricket Stadium                       | National team                             | Completed    | New construction     | gmp                                                        | 2017  | 2023      | tba                      | 50,000   |
| BS                                                      | South Korea | Seoul            | New Jamsil Ballpark                        | LG Twins                                  | Planning     | New construction     | Populous                                                   | 2023  | tba       | 236                      | 35,000   |
| A                                                       | Thailand    | Bangkok          | Bangkok Arena                              | Events                                    | Construction | New construction     | Scenoplus; [au]workshop; D103                              | 2018  | 2023      | 191                      | 16,000   |
| O                                                       | Uzbekistan  | Tashkent         | Sportscenter Tashkent                      | Asian Youth Games 2025                    | Construction | New construction     | CAMCE                                                      | 2022  | tba       | 261                      | tba      |

Type of sports venue: A = Arena, BS = Baseball Stadium, CS = Cricket stadium, O = Other, S = Stadium, SR = Stadium with retractable roof

Status: 7/2023 Source: STADIAWORLD

**Asian Cup 2027: Proposed venues Saudi Arabia bid**

| Host city | Stadium                                          | Project type          | Design            | Capacity | Costs (in million euros) | Main tenant/use after tournament                                       |
|-----------|--------------------------------------------------|-----------------------|-------------------|----------|--------------------------|------------------------------------------------------------------------|
| Dammam    | Dammam Stadium                                   | New construction      | Foster + Partners | 47,271   | 403                      | tba                                                                    |
| Dammam    | Prince Mohammed bin Fahd Stadium <sup>1)</sup>   | Reconstruction        | Populous          | 25,226   | 138                      | Al Ettifaq F.C.; Al Nahda F.C.                                         |
| Dammam    | Prince Saud Bin Jalawi Sports City <sup>1)</sup> | Reconstruction        | Populous          | 24,440   | 162                      | Al Qadsyah F.C.                                                        |
| Jeddah    | King Abdullah Sports City                        | Reconstruction        | Arup              | 61,582   | 12                       | Al Ahli F.C.; Al Ittihad F.C.                                          |
| Jeddah    | Prince Abdullah Al Faisal Stadium                | Reconstruction        | tba               | 27,000   | 12                       | Al Ahli F.C.; Al Ittihad F.C.                                          |
| Riyadh    | King Fahd International Stadium                  | Re-/ New construction | Populous          | 80,015   | 322                      | Al Hilal F.C.; Al Shabab F.C.; national team; cultural events/concerts |
| Riyadh    | King Saud University Stadium                     | Reconstruction        | HOK               | 27,220   | 7                        | Al Nassr F.C.                                                          |
| Riyadh    | Prince Faisal bin Fahd Stadium                   | Reconstruction        | Populous          | 43,912   | 253                      | Al Hilal F.C.; Al Shabab F.C.                                          |
| Riyadh    | Qiddiya Stadium                                  | New construction      | Populous          | 22,163   | 321                      | Part of new "Qiddiya City"                                             |
| Riyadh    | Riyadh New Stadium                               | New construction      | tba               | 21,082   | 88                       | tba                                                                    |

1) Backup stadium

Status: 7/2023 Source: STADIAWORLD

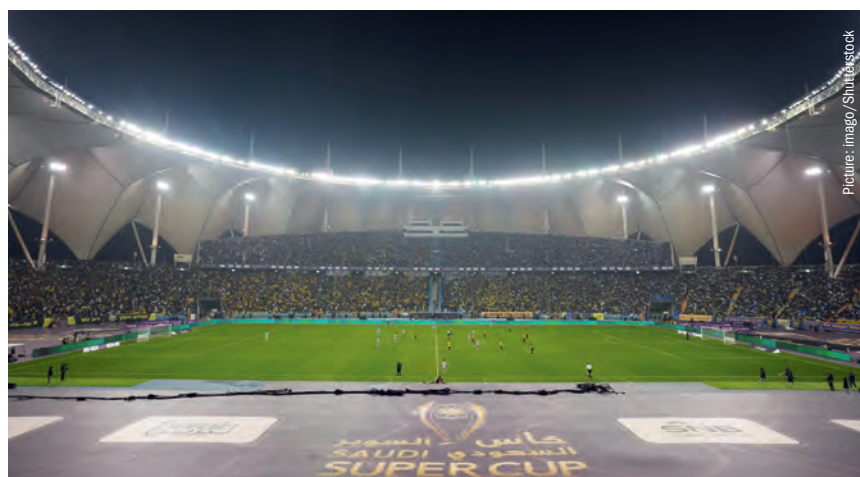
while allowing enough natural light to shine to the pitch.

The New Workers' Stadium (68,000 seats), colloquially known as "Gongti", was rebuilt over a period of two years and in its old form was already one of the venues for the Olympic Games in 2008. Since the exterior façade was not the subject of the reconstruction, it was mainly the interior of the stadium that was modernised. Like the stadium in Xi'an, it was originally planned for the Asian Cup 2023, but since the reconstruction it has been equipped with air conditioning and, after the removal of the running track, it is now purely a football stadium.

### Asia Cup 2027: New stadium projects in Saudi Arabia

Away from the People's Republic, too, various sports facilities are in the planning or construction phase. In addition to the Sheik Hasina Cricket Stadium in Bangladesh and the Es Con Field Hokkaido in Japan, Saudi Arabia is the main focus when it comes to construction projects on the Asian continent. The country, located on the Arabian Peninsula, will host the AFC Asian Cup in 2027, the first major international football tournament at national team level. Many see it as a kind of dress rehearsal for a future World Cup. A joint bid with Egypt and Greece was already planned for 2030, but was put on hold later again. Several construction projects are currently being planned for the Asian Cup to provide the necessary stadium infrastructure.

Saudi Arabia applied with a total of eight stadiums and two back-up stadiums. With the King Fahd International Stadium, the King Saud University Stadium, the Prince Faisal bin Fahd Stadium, the Riyadh New Stadium and the Qiddiya Stadium, five of the selected sports venues are located in the capital Riyadh or shall be built there in the future.



The King Fahd International Stadium in Riyadh is set for a capacity increase.

The desert state's strategy is primarily to modernise existing venues and, according to its own statements, aims to "build a series of world-class stadiums for the sports and entertainment industry". The construction projects focus on both the conversion of the King Fahd International Stadium from 58,398 to 80,015 seats and the Dammam Stadium (42,271 seats), which is already under construction. The reconstruction of the King Fahd International Stadium mainly concerns the removal of the

running track, a lowering of the pitch and the construction of new stands. The Dammam Stadium is particularly impressive due to its adaptation to the local environmental influences. In addition to a façade that can absorb moisture from the air for cooling purposes, special panels can be aligned to control air flows to generate the best possible spectator experience.

Saudi Arabia is implementing a total of ten projects (including two backup stadiums) for around 1.7 billion euros, with the construction of the new Qiddiya Stadium (321 million euros) being the largest cost item apart from the two projects mentioned above. The stadium is to be part of the newly created "Qiddiya City" and is to be built between 2021 and 2024. To date, no significant progress has been made on either the stadium or the city project itself. ♦



# Brisbane prepares for Olympics – “stadium wars” in New Zealand

In Australia and New Zealand, various major projects are currently either in the planning phase or have already been started. With a view to the 2032 Olympic Games, the city of Brisbane in particular is facing promising construction projects.

New Zealand is, just like Australia, facing billion-euro-investments in stadium infrastructure. In Auckland, for example, the debate is currently raging about whether to go ahead with a comprehensive conversion and expansion of Eden Park (under the project name Eden Park 2.0) or the construction of a new waterfront stadium in Waitematā Harbour with a capacity of up to 70,000 people. In view of the scope and dimensions of both projects (in connection with the stadium construction in Christchurch), the New Zealand Herald already ran the headline of imminent “stadium wars”.

With Eden Park having just been upgraded for the Women’s World Cup, the national stadium could be expanded to 60,000 seats through the construction of two new grandstands, plus a retractable roof so that events could be held year-round regardless of the weather. The project also includes the option of an adaptive pitch, which can be adjusted in shape depending on the sport. Finally, the construction of a pedestri-

an bridge over Sandringham Road is also planned. The costs of a conversion have not yet been determined, but it is assumed that several hundred million euros would be due.

As a counterpart, a design by architect Phil O’Reilly was already published in 2017 that envisages the construction of a new stadium along Bledisloe Wharf in Auckland Harbour. The plans, which have since been revised, envisage building a stadium costing around 1 billion euros, with the interior to be recessed so far into the seabed that it will subsequently lie a full 28m below sea level. The costs are to be refinanced through the construction of flats as well as commercial and public buildings on the 90,000-square-metre Eden Park site, thus allegedly not burdening the taxpayer. If the project goes ahead as planned, the Waterfront Stadium would be a unique selling point for the city of Auckland.

Another major project in the country is already in the implementation phase in Christchurch. Based on a design by the Kōtui Consortium, a new multi-

functional stadium, Te Kaha, is being built for over 600 million euros. The city hopes the stadium will “add to the vitality of the city centre, boost further development, make Christchurch a sporting and cultural capital once again and boost the city’s economy by attracting visitors from across New Zealand and the world.” The target capacity is 30,000 seats for sporting events and 36,000 seats for major music events, with a completion date in 2026.

## Olympics 2032 casts its shadow ahead

In Australia, the focus is already on the 2032 Summer Olympic and Paralympic Games in Brisbane. The coastal city in the east of the country won the bid to host the Games in 2021 and will therefore receive some new highlights in terms of its sports infrastructure. The Games are scheduled to take place from 23 July until 8 August 2032 in three different areas, with the city of Brisbane as the focal point with 21 venues. Another six venues will be located on the Gold Coast, 65 km away, and competitions will be held in three venues on the Sunshine Coast.

In addition to the two Olympic Villages in the city, the plans include the construction of five sports facilities and the modernisation and expansion of two other venues. The largest and by far the most cost-intensive construction project concerns the new building of The Gabba. The stadium will not only be the site of the ceremonial honours during the Games, but will also serve as the venue for the athletics competitions. At a total cost of around 1.64 billion euros, the plan is to demolish the existing home of



The new Allianz Stadium in Moore Park, a suburb of Sydney, officially opened in August 2022.

## Construction report: Venue projects in Australia and New Zealand (selection)

| Type | City              | Venue                                  | Main tenant                                    | Status       | Project type     | Design                                                      | Start | Opening | Costs<br>(in million euro) | Capacity        |
|------|-------------------|----------------------------------------|------------------------------------------------|--------------|------------------|-------------------------------------------------------------|-------|---------|----------------------------|-----------------|
| S    | Auckland (NZ)     | Eden Park                              | Auckland Rugby Football Union / Auckland Blues | Planning     | Reconstruction   | tba                                                         | tba   | tba     | tba                        | 60,000          |
| S    | Auckland (NZ)     | Waterfront Stadium                     | New Zealand Warriors                           | Planning     | New construction | Phil O'Reilly                                               | tba   | tba     | 1,000                      | 30,000 – 50,000 |
| A    | Brisbane (AUS)    | Brisbane Indoor Sports Center          | Olympics 2032: Basketball                      | Planning     | New construction | tba                                                         | 2025  | tba     | tba                        | 12,000          |
| A    | Brisbane (AUS)    | Brisbane Live Entertainment Arena      | Olympics 2032: Aquatics                        | Planning     | New construction | ASM Global                                                  | 2027  | 2030    | 1,500                      | 17,000          |
| A    | Brisbane (AUS)    | Chandler Indoor Sports Centre          | Olympics 2032: Gymnastics                      | Planning     | Reconstruction   | tba                                                         | 2025  | tba     | tba                        | 10,000          |
| S    | Brisbane (AUS)    | Ipswich Stadium / Brighton Homes Arena | AFL, Olympics 2032: Modern Pentathlon          | Planning     | Reconstruction   | tba                                                         | tba   | tba     | tba                        | 10,000          |
| A    | Brisbane (AUS)    | Moreton Bay Indoor Sports Centre       | Olympics 2032: Boxing                          | Planning     | New construction | tba                                                         | 2025  | tba     | tba                        | 7,000           |
| CS   | Brisbane (AUS)    | The Gabba                              | Brisbane Lions, Olympics 2032: Athletics       | Planning     | New construction | tba                                                         | 2026  | 2030    | 1,643                      | 50,000          |
| S    | Christchurch (NZ) | Te Kaha                                | Canterbury Crusaders                           | Construction | New construction | Warren and Mahoney, Populous                                | 2022  | 2026    | 620                        | 30,000 – 36,000 |
| S    | Hobart (AUS)      | New Tasmania Stadium                   | New AFL Team                                   | Planning     | New construction | tba                                                         | 2025  | 2029    | 651                        | 23,000          |
| A    | Kawana (AUS)      | Sunshine Coast Indoor Sports Centre    | Olympics 2032: Basketball                      | Planning     | New construction | tba                                                         | 2025  | 2027    | tba                        | 6,000           |
| S    | Kawana (AUS)      | Sunshine Coast Stadium                 | Olympics 2032: Football                        | Planning     | Reconstruction   | tba                                                         | 2024  | tba     | tba                        | 20,000          |
| S    | New Plymouth (NZ) | Yarrow Stadium                         | Taranaki Rugby Football Union                  | Construction | Reconstruction   | tba                                                         | 2021  | 2025    | 71                         | 25,000          |
| S    | Perth (AUS)       | Optus Stadium                          | West Coast Eagles                              | Completed    | New construction | Weststadium Consortium (Cox Architects, Hassell, HKS, Arup) | 2014  | 2018    | 1,000                      | 60,000          |
| S    | Sydney (AUS)      | Allianz Stadium                        | Sydney Roosters, Sydney FC                     | Completed    | New construction | Cox Architecture, John Holland                              | 2019  | 2022    | 555                        | 45,000          |
| S    | Townsville (AUS)  | North Queensland Stadium               | North Queensland Cowboys                       | Completed    | New construction | Cox Architecture                                            | 2017  | 2020    | 158                        | 25,000          |

Type of sports venue: A = Arena, CS = Cricket stadium, S = Stadium

Status: 7/2023 Source: STADIAWORLD

the Brisbane Lions AFL team and build a new 50,000-capacity stadium that will form the core of a new and comprehensive urban regeneration.

Another project with regard to the 2032 Olympics is the construction of the Brisbane Live Entertainment Arena. The multi-functional arena, which will be the centre of attention in the first week of the Games due to the hosting of the Olympic swimming competitions, will have 17,000 seats and is being built in cooperation with Cross River Rail. The construction of the state-of-the-art arena on Roma Street, in conjunction with a new underground railway station, is expected to breathe new life into the entire district around the Central Business District, while creating 600 new jobs during the operational phase. The pool installed for the Olympic swimming competitions will be dismantled after the Olympic Games, similar to what was done at the World Championships in the Rod Laver Arena in Melbourne in 2007. The arena is scheduled to open in 2030, and this project also requires an investment of around 1.5 billion euros.

The master plan for the organisation of the Olympic Games was also developed in regard to the sustainable use of the sports facilities. In addition to the construction projects presented, both of

which are to be constructed with a view to long-term use in the sports and entertainment sector, existing venues at the three different locations of the Summer Games in the state of Queensland will also be used. The Sunshine State already has 90% of the infrastructure needed to host the Games. Thus, 30 different venues will be used during the competitions, of which only six will be newly built, three will be modernised or expanded and another six venues will only be used temporarily during the Games.

For the State of Queensland and the City of Brisbane, the 2032 Olympics, according to Queensland Premier Anastasia Palaszczuk, “present a unique opportunity to accelerate the infrastructure and housing we need for a growing Queensland.” The demolition and rebuilding of The Gabba is central to this. “The Gabba Stadium will be fully demolished and rebuilt and will anchor major urban renewal including delivering more housing including social and affordable housing.”

Palaszczuk continues: “The Gabba is not up to scratch. It must be upgraded to maintain our competitiveness for international sport and events. When it’s done, this stadium will shine for Queensland, and so will the area surrounding it.”

## AFL expansion and Allianz Stadium

In addition to the projects in the Olympic city of Brisbane, a stadium project is also in the planning phase on Tasmania, which is one of the most expensive projects on the continent with a cost framework estimated at 651 million euros. The island, located about 250 kilometres south of the Australian continental mass, is to receive an expansion team from the AFL. However, the league is linking this project to a commitment to build a corresponding stadium. The stadium planned for Macquarie Point will have a capacity of 23,000 and, like Eden Park 2.0, will have an automatically closable roof to protect athletes and spectators from adverse weather conditions. Construction is initially scheduled to start in 2025 and completion is not expected before 2029.

Already completed, however, is the Allianz Stadium in Sydney. The home of the Sydney Roosters (rugby) and Sydney FC has a total capacity of 42,512 spectators and was built at a cost of 555 million euros. During the FIFA Women’s World Cup 2023, a total of seven matches are played in the stadium designed by Cox Architects. ♦





The Sphere, Las Vegas: Revolutionary venue concept.

# Tech Report: Ongoing innovation

Behind the curtains, all technologies involved in venues are moving on. Yet the obvious and visually perceptible ones are always in the foreground. And new milestones are set continuously.

A gigantic auditorium with 17,600 seats (and capacity for 20,000 spectators with standing room) – the monumental grandstand rises far above the small scene area. All of this is under a dome that is used as a projection surface, and this in turn is within a 112 m high spherical façade that

provides 53,900 m<sup>2</sup> of exterior LED surface. “The Sphere” in Las Vegas is set to be the most spectacular new opening of 2023. The experiences offered to the audience will not only be spectacular on the 10,000 immersive seats. This architecture is only partially suitable for sports, but some formats that

take place in a small area are conceivable and will certainly be implemented in the course of time. The Summer League of the NBA 2023 will make its debut, whereby the players will have to get used to the fact that the audience is only seated on one side of the court, but up to a height that would be unthinkable in any conventional arena. Boxing could also offer a unique constellation with a dense atmosphere, and eSports is also already being considered. For the time being, we cannot include the dome construction in our lists as a sports venue. But this groundbreaking and inspiring project must of course be included wherever there is talk of innovations in media and event technology around sports and event venues. The Sphere is still a singular event. But it could offer extremely interesting approaches for new venues in the coming years. One, however, has already been

## TECH REPORT



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anticipated: The multifunctional glass sports floor, which is also an LED display and can show the markings of all pre-configured sports at the touch of a button, is virtually predestined for such an environment (but has also proven its usefulness in quite normal multi-purpose halls).

In the conventional venues of the sport, meanwhile, a lot has happened again in the past year, even if only selectively in projects that set entirely new standards, such as some architectural solutions with integrated 360° displays in previous years. US Sport continues to use every opportunity to further expand display space – in the large end zone displays, but also outside the buildings and at all strategically important points indoors. As a result, more and more content is being distributed to more and more viewing locations and flexibly fed according to current demand.

This performance of technologies under the heading of digital signage is now also becoming more and more widespread in the smaller European stadiums and halls. Often, upgrades are carried out here in several steps until monitors and display areas are available in two to three-digit numbers. At the same time, the topics of networks, connectivity and digitalisation are advancing across the board. Ten years ago, people were just start-



*The dome's surface enables gigantic projections.*

ing to think about the benefits of public WiFi in venues; today, not only is this a matter of course, but full 5G mobile network coverage is also a given.

Depending on the orientation of the respective house, such investments can still possibly be regarded as optional and postponed. Clear guidelines from sports associations, on the other hand, are binding. UEFA's regulations, for example, are providing a development boost for German football stadiums. A good part of the venues have to invest to meet the requirements of UEFA Elite Level A. This is not only about sheer brightness, but also about meeting the growing number of fixed and moving camera positions in the stands and on the sidelines. Colour re-

production is also an issue. The reproduction of sponsor logos, but also that of the pitch green, is becoming more and more consistent.

This very pitch green is almost impossible to keep intact in some places. Despite practices and technologies that today enable the highest standards even on natural grass, such as in the British Premier League, it is apparently not always and everywhere possible to achieve satisfactory results. On the other hand, artificial turf has more friends among operators than among grass sports professionals. Will more stadiums implement innovative solutions with interchangeable pitches in the future? This is one of many exciting questions that will continue to occupy us. ♦

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# Floodlight: Germany ahead of UEFA EURO 2024

The European Championship is currently causing a wave of retrofitting and new installations in the host country Germany. The trend towards coloured light and show compatibility continues here and everywhere.

For a long time, the biggest sporting events in the world were also the biggest drivers of stadium landscape development in host countries. With the turn towards sustainability, this has changed. Those who host a World or European Championship alone or together with other countries do not immediately start 10 new construction projects or more as soon as the contract is ceremoniously announced. But this should not obscure the fact that the venues still have to work through extensive catalogues of updates in order to meet the current criteria of the IOC, FIFA or UEFA, for example. And the more the major events became TV events, the more weight was given to the visual impression that the event with its sponsors makes around the globe – and which, as we know, is worth a lot of money. Floodlighting is thus a more important interface from what happens on

site in the stadium to its global reception and marketing. Accordingly, pitch lighting is always one of the points where a stadium absolutely needs to make a target-performance comparison when bidding for an international event.

The requirements in the Premiere League were very high early on and still are, with  $E_h > 1,650$  lux (for comparison: in the Bundesliga it is  $E_h > 1,500$  lux). This is only one characteristic value of many, but the minimum horizontal luminous intensity symbolises the general requirement level quite well. In British football, which is marketed at a high price, new installations and retrofits are continuously taking place; here, high requirements can obviously be represented well.

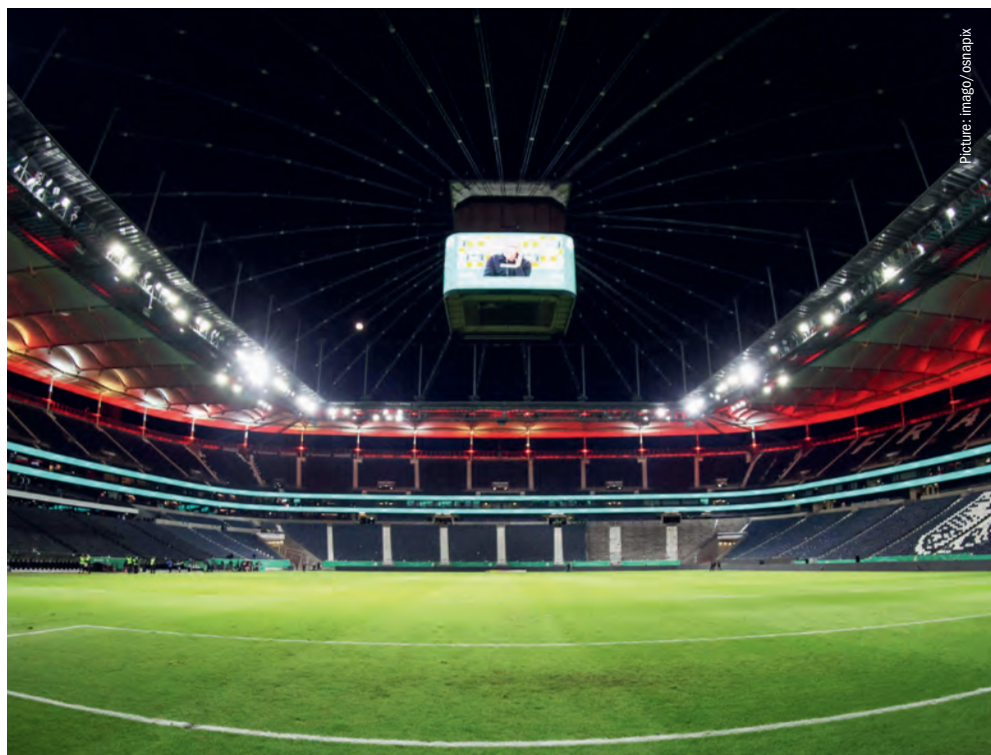
The fact that UEFA Elite Level A was raised to 2,000 lux for the top stadiums of the final rounds and finals of European competitions occasionally

caused question marks among experts. Not only is a lot of brightness to be achieved, but other parameters of high illumination and colour rendering quality also apply. The increased number of camera positions means that the edges of the pitch are now also important; orthogonal measurement specifications have been included in the catalogue of criteria. Floodlight planning and installation work has thus become more complicated.

Although a new system had, among others, already been installed in Dortmund in 2019 with a view to the UEFA Elite Level of EURO 2024, other final round stadiums have now followed with their updates to the peak values of  $E_h > 2,000$  lux. Some new constructions outside the circle of UEFA EURO venues ensured that Germany has recently seen a particu-

| UEFA Elite Level A requirements                       |                      |                            |
|-------------------------------------------------------|----------------------|----------------------------|
| Variable                                              | Requirements         |                            |
| $E_h$                                                 | > 2,000 lux          |                            |
| Uniformity U1h                                        | > 0.50               |                            |
| Uniformity U2h                                        | > 0.70               |                            |
| $E_v -0^\circ$<br>( $0^\circ$ to reference layer)     | $\emptyset$          | > 1,500 lux<br>> 1,000 lux |
| Uniformity U1v- $0^\circ$                             | > 0.50               |                            |
| Uniformity U2v- $0^\circ$                             | > 0.60               |                            |
| $E_v -90^\circ$<br>( $90^\circ$ to reference layer)   | $\emptyset$          | > 1,500 lux<br>> 1,000 lux |
| Gleichmäßigkeit U1v- $90^\circ$                       | > 0.50               |                            |
| Gleichmäßigkeit U2v- $90^\circ$                       | > 0.60               |                            |
| $E_v -180^\circ$<br>( $180^\circ$ to reference layer) | $\emptyset$          | > 1,500 lux<br>> 1,000 lux |
| Uniformity U1v- $180^\circ$                           | > 0.50               |                            |
| Uniformity U2v- $180^\circ$                           | > 0.60               |                            |
| $E_v -270^\circ$<br>( $270^\circ$ to reference layer) | $\emptyset$          | > 1,500 lux<br>> 1,000 lux |
| Uniformity U1v- $270^\circ$                           | > 0.50               |                            |
| Uniformity U2v- $270^\circ$                           | > 0.60               |                            |
| Flicker factor (FF)                                   | $\emptyset$          | < 3 %                      |
|                                                       | max                  | < 3 %                      |
| Minimum adjacent uniformity ratio (MAUR)              | > 0.60               |                            |
|                                                       | ≤ 10 deviation       |                            |
| Colour temperature (Tc)                               | 5,000 – 6,200K       |                            |
| Colour rendering (Re)                                 | ≥ 80 Re              |                            |
| Glare rating (RG)                                     | < 50                 |                            |
| Maintenance factor (MF)                               | 0.90 LED<br>0.80 HID |                            |

$E_h$  = Average horizontal illuminance  $E_v$  = Average vertical illuminance Source: UEFA



Deutsche Bank Park, Frankfurt: The lighting contract was not awarded to one of the world market leaders.

larly high dynamic in terms of pitch lighting. When it comes to awarding contracts, old patterns have long since broken down.

With the switch to LED technology, new suppliers are entering the market and the cards are being reshuffled. It is true that traditional roles and networks still function in the background. But there are always surprises. In November 2022, for example, it was announced in Frankfurt: “Lumosa GmbH will be the new partner of Deutsche Bank Park.” The provider Lumosa was basically no stranger and had already equipped some professional stadiums in different countries. However, the focus was rather on the municipal sector with its sports fields. The construction of the project was carried out by F-S-B, a well-known specialist company in Germany. The two managing directors of Lumosa, Martin Leidl and Tim Schneider, were particularly pleased about the project in Frankfurt: “The partnership with Deutsche Bank Park is an important milestone in our corporate development. (...) We are pleased to accompany the club and this fantastic venue in their consistent efforts with regard to sustainability and energy efficiency. With our LED floodlight, we will make a significant contribution to this. Both in the stadium and on the training pitches.”

An eye-catching lighting trend in recent years, in which German venues such as Berlin, Frankfurt and Munich have also played a major role, has been the use of coloured lighting as architectural lighting, but above all as elements of live entertainment that can be integrated into show concepts related not only to sport. This idea has now been followed by Hamburg, another major German stadium, which will also be one of ten venues for UEFA EURO 2024. In addition to the new floodlighting system according to UEFA specifications, grandstand and event lighting was installed. The system, consisting of a total of 160 luminaire heads, was installed on ➔

**Floodlight installations in pro sports venues in Europe (selection)**

| Type | Country          | City                 | Venue                             | Main tenant                 | Technology | Manufacturer  | Year |
|------|------------------|----------------------|-----------------------------------|-----------------------------|------------|---------------|------|
| S    | Austria          | Klagenfurt           | Wörthersee Stadion                | Austria Klagenfurt          | HID        | Signify/STICH | 2020 |
| S    | Belgium          | Liège                | Stade de Roucourt                 | RFC Liège                   | LED        | Lumosa        | 2022 |
| S    | Denmark          | Helsingør            | Helsingør Stadion                 | FC Helsingør                | LED        | AAA-LUX       | 2021 |
| S    | England          | Birmingham           | Alexander Stadium & warm up track | Athletics                   | LED        | Musco         | 2021 |
| S    | England          | Birmingham           | Aston Villa FC                    | Aston Villa FC              | LED        | Musco         | 2021 |
| S    | England          | Leeds                | Elland Road                       | Leeds United                | LED        | Musco         | 2020 |
| S    | England          | Liverpool            | Anfield                           | Liverpool FC                | LED        | Musco         | 2023 |
| S    | England          | London               | London Stadium                    | West Ham United FC          | LED        | Musco         | 2020 |
| S    | England          | London               | Selhurst Park                     | Crystal Palace FC           | LED        | Musco         | 2021 |
| S    | England          | London               | Tottenham Hotspur Stadium         | Tottenham Hotspur           | LED        | Musco         | 2019 |
| S    | England          | London               | Wembley Stadium                   | The FA                      | LED        | Musco         | 2019 |
| S    | England          | Manchester           | Etihad Stadium                    | Manchester City FC          | LED        | Musco         | 2020 |
| S    | England          | Manchester           | Old Trafford                      | Manchester United FC        | LED        | Musco         | 2021 |
| S    | England          | Wrexham              | Racecourse Ground                 | Wrexham AFC                 | LED        | Musco         | 2023 |
| S    | Faroe Islands    | Gundadalur           | Tórsvøllur                        | National team               | LED        | Musco         | 2023 |
| S    | France           | Auxerre              | Stade de l'Abbé-Deschamps         | AJ Auxerre                  | LED        | AAA-Lux       | 2020 |
| A    | France           | Boulogne-sur-Mer     | Palais des sports Damrémont       | misc.                       | LED        | Signify       | 2021 |
| A    | France           | Metz                 | Metz Arena                        | Metz Handball               | LED        | Signify       | 2019 |
| A    | France           | Paris                | Accor Arena                       | Mixed use                   | LED        | Musco         | 2023 |
| S    | Germany          | Aschaffenburg        | Stadion am Schönbusch             | Viktoria Aschaffenburg      | LED        | Lumosa        | 2022 |
| S    | Germany          | Bayreuth             | Hans-Werner-Wild-Stadion          | Spvgg Bayreuth              | LED        | Lumosa        | 2022 |
| A    | Germany          | Berlin               | Max-Schmeling-Halle               | Füchse Berlin/BR Volleys    | LED        | LANZ          | 2021 |
| A    | Germany          | Berlin               | Mercedes-Benz Arena               | ALBA Berlin/Eisbären Berlin | LED        | LANZ          | 2021 |
| S    | Germany          | Berlin               | Olympiastadion Berlin             | Hertha BSC                  | LED        | LANZ          | 2020 |
| S    | Germany          | Berlin               | Poststadion                       | Mixed use                   | LED        | Lumosa        | 2022 |
| A    | Germany          | Bietigheim-Bissingen | EgeTransArena                     | Steelers/SG BBM Bietigheim  | LED        | Signify       | 2021 |
| S    | Germany          | Cologne              | RheinEnergieSTADION               | 1. FC Köln                  | LED        | n/a           | 2023 |
| S    | Germany          | Dortmund             | SIGNAL IDUNA PARK                 | Borussia Dortmund           | LED        | THORN         | 2019 |
| A    | Germany          | Düren                | ARENA Kreis Düren                 | SWD Powervolleys            | LED        | Signify       | 2022 |
| SR   | Germany          | Düsseldorf           | MERKUR SPIEL-ARENA                | Fortuna Düsseldorf          | LED        | n/a           | 2023 |
| SR   | Germany          | Frankfurt            | Deutsche Bank Park                | Eintracht Frankfurt         | LED        | Lumosa        | 2022 |
| S    | Germany          | Freiburg             | Europa-Park Stadion               | SC Freiburg                 | LED        | Signify       | 2020 |
| S    | Germany          | Hamburg              | Volksparkstadion                  | Hamburger SV                | LED        | LANZ          | 2023 |
| S    | Germany          | Jena                 | Ernst-Abbe-Sportfeld              | FC Carl Zeiss Jena          | LED        | Musco         | 2021 |
| S    | Germany          | Karlsruhe            | BBBank Wildpark                   | Karlsruher SC               | LED        | Signify       | 2023 |
| A    | Germany          | Krefeld              | YAYLA ARENA                       | Krefeld Pinguine            | LED        | Musco         | 2020 |
| S    | Germany          | Leipzig              | Red Bull Arena                    | RB Leipzig                  | LED        | Signify       | 2020 |
| S    | Germany          | Mainz                | MEWA ARENA                        | FSV Mainz 05                | LED        | THORN         | 2019 |
| S    | Germany          | Mönchengladbach      | SparkassenPark                    | Hockey/Mixed use            | LED        | Lumosa        | 2023 |
| S    | Germany          | Munich               | Stadion an der Grünwalder Straße  | TSV 1860                    | LED        | Lumosa        | 2022 |
| A    | Germany          | Nuremberg            | Kia Metropolis Arena              | Mixed use                   | LED        | LANZ          | 2021 |
| A    | Germany          | Oldenburg            | EWE Arena                         | EWE Baskets                 | LED        | Signify       | 2023 |
| BS   | Germany          | Regensburg           | Armin-Wolf-Baseball-Arena         | Regensburg Legionäre        | LED        | Musco         | 2021 |
| S    | Germany          | Sinsheim             | Dietmar-Hopp-Stadion              | TSG 1899 Hoffenheim (W)     | LED        | AAA-LUX       | 2021 |
| A    | Germany          | Stuttgart            | Hanns-Martin-Schleyer-Halle       | n/a                         | LED        | AAA-LUX       | 2022 |
| S    | Germany          | Stuttgart            | MHPArena                          | VfB Stuttgart               | LED        | THORN         | 2020 |
| S    | Ireland          | Dublin               | Aviva Stadium                     | National team               | LED        | Musco         | 2019 |
| S    | Italy            | Legnago              | Stadio Mario Sandrini             | FC Legnago Salus            | LED        | Lumosa        | 2021 |
| S    | Italy            | Milan                | Stadio Giuseppe Meazza            | AC Milan/Inter              | LED        | Musco         | 2020 |
| S    | Italy            | Seregno              | Stadio Ferruccio                  | Seregno Calcio              | LED        | Lumosa        | 2021 |
| S    | Italy            | Trento               | Stadio Briamasco                  | A.C. Trento                 | LED        | Lumosa        | 2021 |
| S    | Italy            | Verona               | Stadio Marcantonio Bentegodi      | Hellas Verona               | LED        | Lumosa        | 2021 |
| S    | Monaco           | Fontvieille          | Stade Louis II                    | AS Monaco                   | LED        | Musco         | 2019 |
| S    | Netherlands      | Alkmaar              | AFAS-Stadion                      | AZ Alkmaar                  | LED        | Musco         | 2020 |
| S    | Netherlands      | Almelo               | Erve Asito                        | Heracles Almelo             | LED        | AAA-LUX       | 2021 |
| S    | Netherlands      | Oss                  | Frans Heesen-Stadion              | Top Oss                     | LED        | Lumosa        | 2020 |
| S    | Netherlands      | Velsen               | Rabobank IJmond Stadion           | Telstar 1963                | LED        | AAA-LUX       | 2021 |
| S    | Netherlands      | Zwolle               | MAC³PARK Stadion                  | PEC Zwolle                  | LED        | AAA-LUX       | 2022 |
| A    | Northern Ireland | Belfast              | SSE Arena                         | Belfast Giants              | LED        | Musco         | 2022 |
| S    | Norway           | Tønsberg             | Tønsberg Gressbane                | FK Tønsberg                 | LED        | AAA-LUX       | 2022 |
| S    | Portugal         | Lisbon               | Estádio da Luz                    | SL Benfica                  | LED        | Musco         | 2022 |
| S    | Romania          | Arad                 | Stadionul Francisc von Neuman     | UTA Arad                    | LED        | Signify       | 2020 |
| SR   | Romania          | Bucharest            | Arena Nationala                   | National Team               | LED        | Musco         | 2021 |
| S    | Slovakia         | Bystrica             | Štadión SNP                       | Banská Bystrica             | LED        | AAA-LUX       | 2020 |
| S    | Spain            | Madrid               | Cívitas-Metropolitano             | Atlético de Madrid          | LED        | Signify       | 2019 |
| S    | Switzerland      | Bern                 | Stadion Wankdorf                  | Young Boys Bern             | LED        | Signify       | 2021 |
| S    | Switzerland      | Lausanne             | Stade de la Tuilière              | FC Lausanne                 | LED        | Signify       | 2020 |
| S    | Turkey           | Istanbul             | Atatürk Olympic Stadium           | TFF                         | LED        | Signify       | 2019 |
| S    | Wales            | Newtown              | Latham Park                       | Newtown A.F.C.              | LED        | Lumosa        | 2023 |

Type of sports venue: A = Multifunctional arena, BS = Baseball stadium,  
S = Stadium, SR = Stadium with (retractable) roof

Status: 7/2023  
Source: STADIAWORLD, suppliers



the catwalk as well as on the upper edge of the grandstand. Additional luminaires were mounted on the pylons for colour accentuation. With the help of the new installation, both the roof membrane and the interior of the stadium – including the stands – can be illuminated in different colours. According to the club, the aim of the installation was “to set the scene for the defining architectural element with the membrane roof and the support structure”.

Of course, development around the globe did not stand still in the meantime. The US market leader Musco Lighting probably had the most extensive list of large projects in renowned sports facilities to work through. And here, too, some clients were inspired by the possibilities of coloured lighting. In the Boston Red Sox' Fenway Park a new LED lighting system was installed replacing the ballpark's HID lights, which had been in place since 1982. Due to the venue's setting in a tightly-knit neighborhood, the luminaire assemblies were lifted into place via helicopter. The new Musco system includes colour-changing technology for cutting-edge special effects. In the Chicago Cubs' Wrigley Field Musco installed a custom LED system to replace the ballpark's 35-year-old HID lights. The new system's fixtures and structural components were painted white to blend with the ballpark's classic light towers, and the system's special effects controls enable each luminaire assembly to “Light the W” after wins. As a big project in Europe, SL Benfica's Estadio da Luz, known as the “Stadium of Light,” had a new LED system from Musco installed. The new LED system complements the stadium's sleek, modern architecture including its unique polycarbonate roof, designed to let sunlight shine through. The system includes Musco's special effects technology creating custom light shows with colour-changing fixtures. ◆

**Floodlight installations in pro sports venues worldwide (selection)**

| Type  | Country      | City                | Venue                              | Main Tenant                                  | Technology | Manufacturer | Year |
|-------|--------------|---------------------|------------------------------------|----------------------------------------------|------------|--------------|------|
| S     | Argentina    | Buenos Aires        | Estadio Alberto J. Armando         | Boca Juniors                                 | LED        | THORN        | 2019 |
| S     | Argentina    | Córdoba             | Estadio Mario Alberto Kempes       | CA Talleres                                  | LED        | Signify      | 2019 |
| S     | Australia    | Brisbane            | Suncorp Stadium                    | Brisbane Broncos                             | LED        | Signify      | 2020 |
| S     | Australia    | Kawana Waters       | Sunshine Coast Stadium             | Sunshine Coast Falcons/<br>Sunshine Coast FC | LED        | Signify      | 2019 |
| S     | Australia    | Melbourne           | Melbourne Cricket Ground           | CA                                           | LED        | Signify      | 2019 |
| S     | Australia    | South Townsville    | Queensland Country Bank Stadium    | North Queensland Cowboys                     | LED        | Signify      | 2019 |
| TS    | Australia    | Sydney              | Ken Rosewell Arena                 | Pro Tennis                                   | LED        | Musco        | 2019 |
| RT    | Bahrain      | as-Sachir           | Bahrain International Circuit      | Formula 1                                    | LED        | Musco        | 2021 |
| S     | Brazil       | Rio de Janeiro      | Estádio São Januário               | CR Vasco da Gama                             | LED        | Signify      | 2019 |
| S     | Chile        | Iquique             | Estadio Tierra de Campeones        | Club de Deportes Iquique S.A.D.P.            | LED        | Musco        | 2020 |
| S     | Chile        | Santiago            | Estadio Monumental                 | CSD Colo-Colo                                | LED        | Signify      | 2019 |
| A     | China        | Beijing             | Cadillac Arena                     | Beijing Ducks                                | LED        | Signify      | 2021 |
| A     | China        | Beijing             | Capital Indoor Stadium             | misc.                                        | LED        | Signify      | 2021 |
| S     | China        | Hangzhou            | Hangzhou Stadium                   | Zhejiang Professional F.C.                   | LED        | Musco        | 2021 |
| S     | China        | Shanghai            | Shanghai Hongkou Stadium           | Shanghai Shenhua Liansheng                   | LED        | Signify      | 2019 |
| S     | China        | Shanghai            | Shanghai Stadium                   | Shanghai Port FC                             | LED        | Musco        | 2020 |
| A     | Egypt        | Kairo               | Cairo Stadium Indoor Halls complex | misc.                                        | LED        | Signify      | 2019 |
| S     | India        | Ahmedabad           | Sardar Patel Stadium               | Gujarat Cricket Association                  | LED        | Signify      | 2020 |
| S     | Japan        | Aichi               | Toyota Stadium                     | Toyota Verbitz                               | LED        | Signify      | 2019 |
| RT    | Japan        | Izuka               | Izuka Auto                         | Car Racing                                   | LED        | GigaTera     | 2020 |
| S     | Japan        | Kobe                | Noevir Stadium Kobe                | Vissel Kobe                                  | LED        | Signify      | 2019 |
| S     | Japan        | Nagasaki            | Nagasaki Stadium City              | V-Varen Nagasaki                             | LED        | Musco        | 2023 |
| A     | Japan        | Saitama             | Saitama Super Arena                | misc.                                        | LED        | Signify      | 2019 |
| A     | Japan        | Tomakomai           | Hakuocho Ice Arena                 | Red Eagles Hokkaido                          | LED        | Signify      | 2022 |
| S     | Japan        | Yokohama            | Nissan Stadium                     | Yokohama F. Marinos                          | LED        | Musco        | 2019 |
| S     | Malaysia     | Iskandar Puteri     | Sultan Ibrahim Stadium             | Johor Darul Ta'zim                           | LED        | Signify      | 2020 |
| S     | Mexico       | Guadalupe/Monterrey | Estadio BBVA Bancomer              | C.F. Monterrey                               | LED        | Musco        | 2023 |
| S     | Mexico       | Mexico City         | Estadio Azteca                     | Club América                                 | LED        | Signify      | 2020 |
| S     | Mexico       | Tijuana             | Estadio Tijuana                    | Tampico Madero FC                            | LED        | Musco        | 2019 |
| CS    | New Zealand  | Canterbury          | Hagley Oval                        | Canterbury Cricket                           | LED        | Musco        | 2020 |
| S     | New Zealand  | Whangarei           | Semenoff Stadium                   | Northland Rugby Union                        | LED        | Musco        | 2020 |
| S     | Paraguay     | Asunción            | Estadio Defensores del Chaco       | APF                                          | LED        | Signify      | 2019 |
| S     | Paraguay     | Asunción            | Estadio Manuel Ferreira            | Club Olimpia                                 | LED        | Signify      | 2019 |
| S     | Qatar        | Doha et al.         | all 8 FIFA WC stadiums 2022        | Qatar Football Association                   | LED        | Signify      | 2021 |
| RT    | Qatar        | Losail              | Losail International Circuit       | n/a                                          | LED        | Musco        | 2021 |
| S     | San Salvador | El Salvador         | Estadio Magico Gonzalez            | National stadium                             | LED        | Musco        | 2023 |
| RT    | Saudi Arabia | Jeddah              | Jeddah Corniche Circuit            | Car Racing                                   | LED        | Musco        | 2021 |
| S     | South Korea  | Asan                | Yi Sun Shin Stadium                | Chungnam Asan FC                             | LED        | Signify      | 2020 |
| S     | South Korea  | Goyang              | Goyang Stadium                     | Misc.                                        | LED        | GigaTera     | 2021 |
| S     | USA          | Baltimore           | M&T Bank Stadium                   | Baltimore Ravens                             | LED        | Musco        | 2020 |
| BS    | USA          | Boston              | Fenway Park                        | Boston Red Sox                               | LED        | Musco        | 2023 |
| A     | USA          | Charlotte           | Spectrum Center                    | Charlotte Hornets                            | LED        | Musco        | 2020 |
| S     | USA          | Cincinnati          | Paul Brown Stadium                 | Cincinnati Bengals                           | LED        | Musco        | 2021 |
| S     | USA          | Cincinnati          | TQL Stadium                        | FC Cincinnati                                | LED        | Musco        | 2021 |
| S     | USA          | Cleveland           | FirstEnergy Stadium                | Cleveland Browns                             | LED        | Musco        | 2020 |
| S     | USA          | Columbus            | Lower.com Field                    | Columbus Crew FC                             | LED        | Musco        | 2021 |
| A     | USA          | Columbus            | Nationwide Arena                   | Columbus Blue Jackets                        | LED        | Musco        | 2019 |
| A     | USA          | Dallas              | American Airlines Center           | Dallas Mavericks/Dallas Stars                | LED        | Musco        | 2019 |
| S     | USA          | Denver              | Empower Stadium at Mile High       | Denver Broncos                               | LED        | Musco        | 2019 |
| BS    | USA          | Detroit             | Comerica Park                      | Detroit Tigers                               | LED        | Musco        | 2023 |
| S     | USA          | East Rutherford     | MetLife Stadium                    | New York Giants/New York Jets                | LED        | Musco        | 2020 |
| S     | USA          | Foxborough          | Gillette Stadium                   | New England Patriots                         | LED        | Musco        | 2020 |
| S     | USA          | Glendale            | State Farm Stadium                 | Arizona Cardinals                            | LED        | Musco        | 2023 |
| S     | USA          | Indianapolis        | Lucas Oil Stadium                  | Indianapolis Colts                           | LED        | Musco        | 2020 |
| S     | USA          | Inglewood           | SoFi Stadium                       | LA Chargers/LA Rams                          | LED        | Musco        | 2020 |
| S     | USA          | Jacksonville        | TIAA Bank Field                    | Jacksonville Jaguars                         | LED        | Musco        | 2020 |
| A     | USA          | Los Angeles         | Crypto.com Arena                   | LA Lakers,-Clippers,-Kings,-Sparks           | LED        | Musco        | 2022 |
| BS    | USA          | Los Angeles         | Dodger Stadium                     | Los Angeles Dodgers                          | LED        | Musco        | 2023 |
| A     | USA          | Memphis             | FedEx Forum                        | Memphis Grizzlies                            | LED        | Musco        | 2019 |
| S     | USA          | Miami               | Inter Miami Stadium                | Inter Miami CF                               | LED        | Musco        | 2020 |
| SR/BS | USA          | Milwaukee           | American Family Field              | Milwaukee Brewers                            | LED        | Musco        | 2020 |
| S     | USA          | Pittsburgh          | Heinz Field                        | Pittsburgh Steelers                          | LED        | Musco        | 2020 |
| A     | USA          | Pittsburgh          | PPG Paints Arena                   | Pittsburgh Penguins                          | LED        | Musco        | 2023 |
| S     | USA          | San Antonio         | Alamodome                          | UTSA Roadrunners                             | LED        | Musco        | 2020 |
| A     | USA          | San Francisco       | Chase Center                       | Golden State Warriors                        | LED        | Musco        | 2019 |
| A     | USA          | Seattle             | Climate Pledge Arena               | Seattle Kraken                               | LED        | Musco        | 2021 |
| BS    | USA          | St. Louis           | Busch Stadium                      | St. Louis Cardinals                          | LED        | GigaTera     | 2019 |
| A     | USA          | Washington D.C.     | Capital One Arena                  | Washington Wizards/- Capitals                | LED        | Musco        | 2019 |
| SR/BS | USA          | St. Petersburg      | Tropicana Field                    | Tampa Bay Rays                               | LED        | GigaTera     | 2019 |
| BS    | Venezuela    | Caracas             | Estadio Universitario              | Leones del Caracas                           | LED        | AAA-LUX      | 2022 |

Type of sports venue: A = Multifunctional arena, BS = Baseball stadium, CS = Cricket stadium, RT = Race track, S = Stadium, SR = Stadium with (retractable) roof, TS = Tennis stadium

Status: 7/2023

Source: STADIAWORLD, suppliers

# Sometimes it's good to be a control freak.

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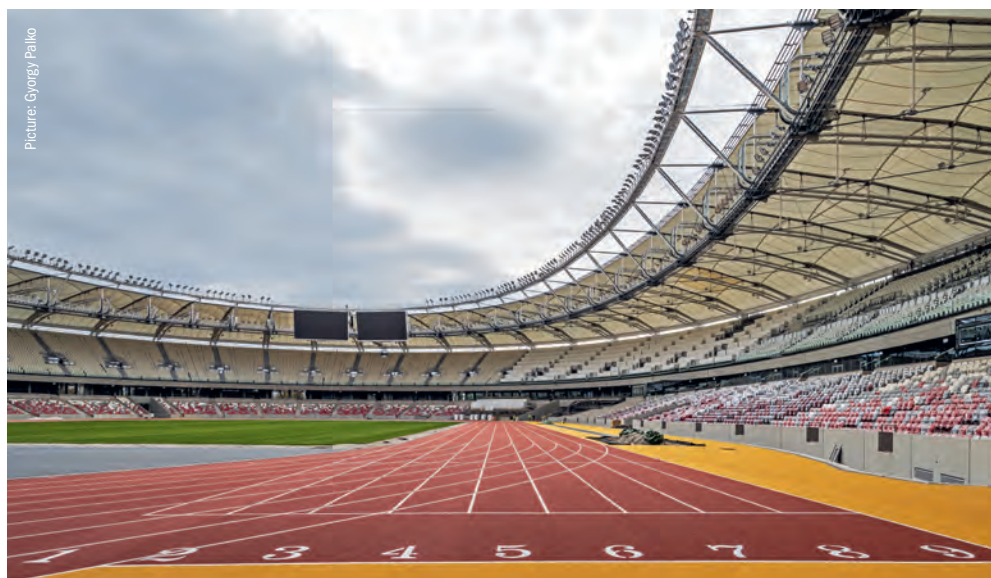


# Athletics: Certificates and guidelines for the infrastructure

Track and field events require certified surfaces and must orient themselves to further guidelines that also affect the stadium infrastructure. A current push will open up the existing indoor facilities for creative as well as cost-effective formats.

The World Athletics federation (in short: World Athletics) formulates a specific catalogue of requirements for the infrastructure of all competition classes. In athletics, with its many disciplines and extensive mobile and stationary sports equipment, an almost unmanageable wealth of details is described. And the higher the level of competition, the higher the demands on the precision of markings and fixtures. At the same time, the competition facilities of international championships and meetings are larger, and warm-up facilities must also be available here. To achieve worldwide infrastructural consistency and thus ensure fair competition in which fractions of a second correspond to the same distances on all lanes, WA issues certificates above and beyond the national federation guidelines and construction standards.

For the top level, the certifications Class 1 and Class 2 apply for outdoor facilities and, of course, a separate certificate for indoor events. A Class 1 facility not only has the full infrastructure for all sports – some areas are also duplicated. WA describes all this in detail in the “Track and Field Facilities Manual”. The first part contains all the information on the infrastructure of a facility. It describes the use of the facility, the typologies according to the number of lanes, the arrangement of disciplines and warm-up areas, lengths, radii, markings, irrigation and drainage, et cetera, as well as the basic construction aspects to be considered in the infrastructure for each individual discipline, and of



World Championships 2023: 9 lanes in the Budapest stadium.

course the surfaces for athletics running tracks in all their variations.

The second part regulates other very important aspects, such as chang-

ing rooms, first aid, VIP areas, press rooms, access tunnels, lighting, measurements, scoreboards, noise levels, etc. It also includes extremely important advice on equipment, such as hurdles, mats, starting blocks, equipment for high jump, pole vault, javelin, discus and hammer throw, etc. Another chapter explains the suggested maintenance for synthetic surfaces in their possible variations in sports facilities and the repair, for example by retoppings for athletics tracks. One section deals specifically with indoor facilities. Incidentally, the current indoor regulations are about to undergo a significant reform that will enable athletics to offer attractive formats and will also allow locations with weaker infrastructures to establish their place on the map permanently or temporarily (see separate page in this article).

The synthetic surface is the basis for most of the disciplines exercised →

## CLASS 1 certified surfaces

|                |    |
|----------------|----|
| China          | 44 |
| Brazil         | 8  |
| Korea          | 8  |
| Poland         | 8  |
| Chinese Taipei | 7  |
| India          | 7  |
| United States  | 7  |
| South Africa   | 6  |
| Australia      | 5  |
| Saudi Arabia   | 5  |
| Canada         | 4  |
| Great Britain  | 4  |
| Morocco        | 4  |
| Spain          | 4  |

Source: World Athletics 05/2023

## World Athletics to create new short track product to grow the sport

*World Athletics intends to introduce the new term 'short track' to replace the current term 'indoor' to describe events and performances that are set on a 200m track, traditionally staged indoors.*

The World Athletics Council is supporting the concept of 'short track' competition to allow more flexibility in the setting of 200m tracks, which may, in the future, be constructed outdoors or in temporary city locations, rather than in a traditional indoor arena. Performances set on outdoor or temporary 200m tracks could therefore be recognised as official results for the purpose of records and rankings.

For more than 150 years, athletics has been divided between 'outdoor' competition, staged on a standard 400m oval track, and 'indoor' competition, which developed in cold climates to provide athletes from those countries with an indoor venue, typically a 200m oval track, to train and compete during the winter season. Because these events were conducted in a different environment, with the closed indoor facility protected from any weather interference, the performances were not regarded as comparable with outdoor marks.

Consequently, World Athletics and the National Federations have always maintained separate lists of indoor and outdoor events and performances for statistical and records purposes.

However, with the advent of modern athletics and the development of hybrid competition venues – city squares, shopping malls, train stations – it is becoming increasingly difficult to maintain the separation between outdoor and indoor athletics.

In some field events, the separation has been eliminated altogether for world record purposes.

This evolution has prompted World Athletics to redefine the boundaries of outdoor and indoor athletics, so they relate to the competition facility rather than to the environment.

World Athletics President Sebastian Coe said: "This change is designed to remove an unintentional barrier to competition innovation, by offering organisers the chance to explore solutions and opportunities which the current rules may discourage. Under this new concept, the 200m short track will no longer be confined to the indoor environment, and a world of opportunities will open up for meeting organisers to stage official competition in whatever facilities they have available, either indoors or outdoors, using 200m or 400m tracks. This change will allow and actively encourage the possibility for 200m tracks to move to an outdoor environment and

will provide a more affordable option to cities, especially where space is in short supply, while stimulating the growth of the sport through investment in new infrastructure."

Indoor championships (whether at national, area or world level) would continue to exist but, in those regions / areas where there are no or very limited indoor facilities, short track championships could be held, which would be the equivalent of the indoor championships, and could be used as qualifying competitions for major indoor championships.



German Indoor Championships (Dortmund)

Events held in temporary facilities (whether part of an event-specific competition or within the frame of a larger competition), could also find a place in the official competition structure as well as in statistics and record books regardless of the environment in which they are conducted.

The World Athletics Council unanimously supports the move towards short track and the detailed rule changes required to initiate this innovation will be formally approved at its August meeting in Budapest.

These will be published in the new edition of the Competition and Technical Rule Book, coming into effect 1 November 2023.

Source: World Athletics press release as of 23 May 2023



in the stadiums. This is a floor made of bound plastic granulate spread in situ on base layers and elastic layers, the properties of which can be tailored to any intended use. In parallel, there is a system with rubber surfacing from the roll. Every year in May, WA publishes the complete list of all certified sports facilities worldwide. When asked which regions in the world are the most dynamic in terms of high-level athletics facilities, WA answers with: “Central Asia and China”. This is pretty obvious from the current certifications alone (see overview in this article) – on the other hand, no direct conclusions are drawn from this sheer quantity as far as the respective countries as athletics locations are concerned: “The number of Class 1 and Class 2 certifications is not necessarily meaningful as our sport is practised in 214 countries, which each have different conditions, populations and challenges.”

#### “In a transition period”

When asked about the most important developments in the certification of athletics facilities, WA answers: “The introduction in 2019 of the five-year initial validity for facility certificates and extendibility to 12 years of maximum synthetic surface age. As between 1999 (the launch of the sys-



Picture: György Palko

Budapest 2023: Infield layout.

| Wanda Diamond League 2023: Venues and surfaces |         |               |                                  |          |                      |                                         |
|------------------------------------------------|---------|---------------|----------------------------------|----------|----------------------|-----------------------------------------|
| City                                           | Country | Date          | Stadium                          | Capacity | Surface              | Manufacturer                            |
| Doha                                           | Qatar   | 05/05/2023    | Qatar Sports Club                | 13,000   | HERCULAN SR SPRINT   | Herculan B.V, NED                       |
| Rabat                                          | Morocco | 28/05/2023    | Complexe Sportif Moulay Abdellah | 60,000   | POLYTAN M            | Polytan GmbH, GER                       |
| Rome / Florence                                | Italy   | 02/06/2023    | Stadio Luigi Ridolfi             | 12,000   | REKORTAN M           | Polytan GmbH, GER                       |
| Paris                                          | France  | 09/06/2023    | Stade Charléty                   | 20,000   | SPORTFLEX SUPER X720 | Mondo S.p. a., ITA                      |
| Oslo                                           | Norway  | 15/06/2023    | Bislett Stadion                  | 15,400   | STOBITAN SC          | Stockmeier Urethanes GmbH & Co. KG, GER |
| Lausanne                                       | Suisse  | 30/06/2023    | Stade Olympique de la Pontaise   | 15,700   | CONIPUR M            | Conica AG, SUI                          |
| Stockholm                                      | Sweden  | 02/07/2023    | Olympiastadion                   | 14,417   | CONIPUR VMAX         | Conica AG, SUI                          |
| Silesia                                        | Poland  | 16/07/2023    | Stadion Śląski                   | 55,211   | SPORTFLEX SUPER X720 | Mondo S.p. a., ITA                      |
| Monte Carlo                                    | Monaco  | 21/07/2023    | Stade Louis II                   | 16,360   | CONIPUR VMAX         | Conica AG, SUI                          |
| London                                         | England | 23/07/2023    | London Stadium                   | 66,000   | MONDOTRACK WS        | Mondo S.p. a., ITA                      |
| Zurich                                         | Suisse  | 31/08/2023    | Letzigrund Stadion               | 26,000   | CONIPUR VMAX         | Conica AG, SUI                          |
| Shenzhen                                       | China   | 02/09/2023    | Bao'an Stadium                   | 40,000   | TONGXIN TOPTHINK     | Guangzhou Tongxin Sports Equip., CHN    |
| Brussels                                       | Belgium | 08/09/2023    | King Baudouin Stadium            | 50,000   | MONDOTRACK           | Mondo S.p. a., ITA                      |
| Eugene                                         | USA     | 16-17/09/2023 | Hayward Field                    | 25,000   | BSS-2000             | Beynon Sports Surfaces, USA             |

Status: 7/2023

Source: Diamond League/World Athletics

tem) and 2019, there was no expiry, this led to many certified facilities losing good quality and not deserving a World Athletics label anymore. We are now in a transition period, and we need to accept that a number of tracks will disappear from our certified list. We are trying to focus particularly on those facilities that are part of our competition programme, including those in the Continental Tour.”

It is important to emphasise that while this certification does not look at the size and quality of a stadium with its spectator facilities and other infrastructure, the latter is included in the assessment of suitability for high-profile events. Even the rough framework for the budget of a World Championships in Athletics, which WA puts at 68 million to 78 million euros in the Bid Guide, varying according to local costs and conditions, indicates that for an event of this magnitude no venue comes into question that does not meet the highest standards. “The main stadium for the World Athletics Championships should have a minimum capacity of 30,000 spectators (...),” says the Bid Guide and does not stop at this point,

since, among other things, secondary sports facilities and a considerable media infrastructure are also added. In the Diamond League, on the other hand, the events are also celebrated in smaller stadiums at traditional athletics hot spots.

World Athletics has initiated an overarching sustainability strategy that makes demands that local organisers have to deal with. On the other hand, however – as mentioned – the rigid scheme for indoor events is being broken, opening options for many interested and motivated venues to advance their sports even with smaller budgets. But there is still room for improvement for the elite as well, as WA explains: “We expect that the recent recognition of Short Track (200 m track) facilities will result in building such facilities worldwide and boost athletics also in countries where there is no budget for having new full tracks. As athletics as an outdoor sport is often subject to adverse weather conditions, therefore any closable roof stadium projects are exciting and could contribute to better performances and spectator experience.” ◆

# Better results, less injuries

Conica invests in research and collaboration with athletes to further optimise running surfaces. Recently, a research facility was commissioned in Germany for this purpose.

As one of the world's leading manufacturers of sports flooring, Conica is represented on every continent – with a complete product range that extends from equipping schools to the high-end competition facilities in the world's leading athletics stadiums. For example, athletes in Diamond League meetings run and jump for records on Conica sports surfaces – currently in Lausanne, Monaco, Stockholm and Zurich. And as an official partner of the European Athletics Association, Conica is also closely involved in all processes involving track surfaces in the continental association.

Of course, now that the synthetic running track has replaced red ash for decades, any products on the market have been perfected and adapted to the strict set of rules of the associations and the standards in the respective countries. But development does not stand still at Conica. For the athletes with their top performances and records, it's all about fractions of a second and millimetres – and at the same time about the sensory perception of the running track, which has a lot to do with the athletes' body feeling.

Health aspects are immensely important for the athletes and inseparably

linked to top performances. And it is precisely in this complex of topics that Conica sees potential for further optimisation of the product portfolio. Details can make the difference. And the company is now taking a closer look at these details. In cooperation with numerous athletes and within the framework of scientific research.

A unique research laboratory has been built at the Offenburg University of Applied Sciences in Germany. In the field of sports and motion mechanics, the "Advanced Motion Lab" is investigating the factors that contribute to athletes performing better and at the same time injuring themselves less. The project is led by Professor Dr. Steffen Willwacher, who has been conducting groundbreaking research in the field of motion mechanics for years, and has already worked with top athletes such as Olympic champions Usain Bolt and Markus Rehm.

What does Dr. Willwacher expect from the new laboratory? "A great deal," he says. "We are doing research on the interaction of people within environmental conditions. How do different properties of the environments – the ground, for example – influence the way people generate force? The added value here is to develop a better under-

standing to enable the improvement of athletic performance, but also to minimise the risk of injury."

Willwacher's team finds optimal technical conditions in the new facility, especially for researching the athletic movement of people on different surfaces. Of course, this is very much in the direction of high-performance sports, which the projects focusses on. "In the future, however, we would also like to conduct research on surfaces for schools or recreational facilities, as well as work on the sustainability of running tracks," adds Willwacher.

As there are more disciplines than running, each sport has its own characteristics that make it worth looking at details and research biomechanical procedures. That is another topic the scientists are looking at as part of their research. If you were trying to develop an optimal surface for each discipline, those surfaces would most likely be different. Willwacher says: "Part of our research is looking at whether developing different surfaces for different athletic disciplines makes more sense for performance and injury risk reasons than continuing to develop the rather compromising 'all-rounder' surface currently in use around the world." ♦



Advanced Motion Lab: Demo by Prof. Willwacher.

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*d&b A-Series augmented array and XSL cardioid line array*

## d&b adds sparkling audio to the Estádio do Sport Lisboa e Benfica

Home to Lisbon's Benfica football club, the Estádio do Sport Lisboa e Benfica – known as the Estadio da Luz (Stadium of Light) – is now providing an unparalleled stadium sound experience, thanks to the installation of the world's first totally cardioid d&b audiotechnik sound system.

Unique for a football stadium, the new system was installed by Portuguese specialist NAN Audiovisuais, as part of a complete refurbishment aimed at achieving a more dynamic standard of utilization for the venue. The operators knew that a new sound system would be imperative – and according to the vision of the club president, Rui Costa, this would be achieved using the best technologies, facilities, and resources available.

The exceptional standard set by this installation is thanks to the d&b XSL 8/12 cardioid line array, along with the new XSL SUB and A-Series augmented array. Together, these produce an even and powerful sound distribution, based around a series of small arrays just 1.7 meters in length. With each array providing more than 60 meters of vertical coverage from the uppermost seat to the very front row, this is one of the most discreet systems ever installed. The impressive broadband

frequency control achieved by the cardioid technology of the XSL system minimizes reverberation times, taking intelligibility to a new level, one never achieved before in the stadium.

In terms of technology and performance, the installation was expected to place the Estadio da Luz at the top of the list of worldwide reference venues of similar size. It was to ensure that the facility remained as attractive as possible to the public, corporate clients, and promoters, while always



meeting the high standards laid down by UEFA and FIFA.

Benfica's technical team of Paulo Martins, Mario Correia, Hugo Garcia, and Vasco Martins, worked closely with NAN Audiovisuais, and d&b's Head of Global EAS, Stefan Goertz. Additional support with the creation and fine-tuning of d&b ArrayCalc and EASE files was provided by d&b's stadia team, led by Senior Application Engineer, Dominika Obwarzanek.



Picture: d&b audiotechnik GmbH & Co. KG

XSL 3-way line array cardioid loudspeaker



Estadio da Luz (Stadium of Light) Lissabon

Picture: d&b audiotechnik GmbH & Co. KG

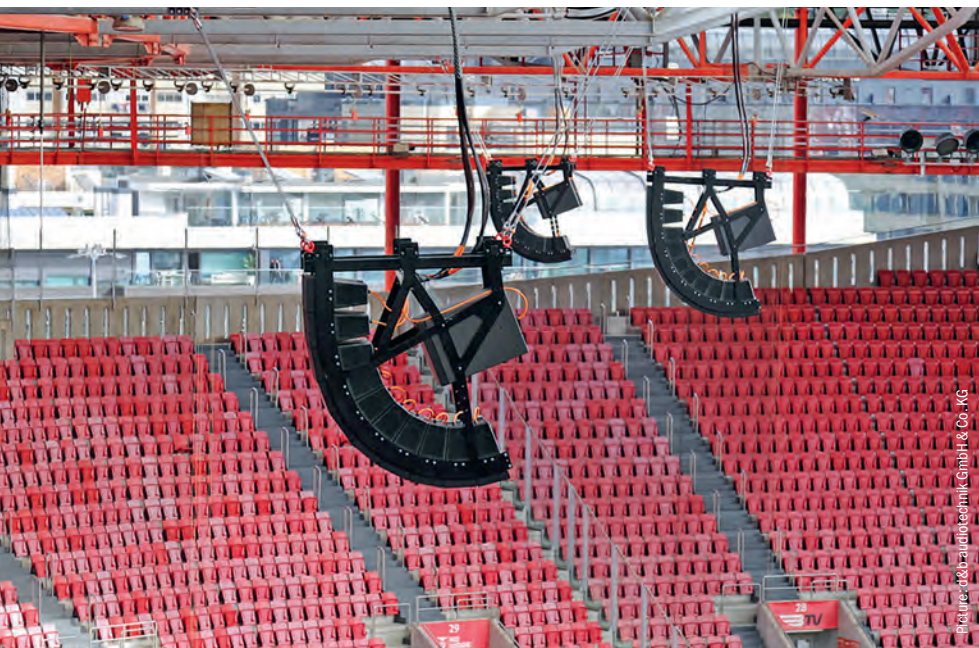
NAN Audiovisuais director, Luis Vidigal, says, "This was the biggest challenge we have ever taken on, and we had only three months to deliver it in the run-up to Christmas. We are very grateful to our suppliers, including our partners at d&b audiotechnik, who have helped us to

achieve what is possibly the fastest supply and the most advanced sound system installation for any stadium of this size on the planet."

He adds, "For this project we had a very simple task to achieve. As the Benfica club leaders put it, 'We are the

best team, so we must have the best sound.' So that was our target!"

The result generates a unique experience for a stadium environment hosting more than 65,000 people. As Mario Correia, Benfica's Director of Audiovisual System, says: "In 16 years of stadium history I never felt such a high level of emotion from the audience. The voice from the speakers and the music never produced anything like this before, getting the crowd so alive and such a part of the show!" ♦



Picture: d&b audiotechnik GmbH & Co. KG

d&b XSL 8/12 cardioid line array with XSL SUB and custom rigging



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# Displays: Digital signage is growing

While the boom in huge media displays is levelling off slightly, operators continue to equip their venues with contemporary solutions for signal distribution to monitors and screens throughout the building.

The project that recently eclipsed everything and was on everyone's lips in the field of event infrastructure and event technology was without a doubt "The Sphere" in Las Vegas. The largest dome structure in the world, at a price of almost 2 billion euros, whose façade with 54,000 m<sup>2</sup> of LED modules is the largest LED display in the world, supplemented on the inside by a display with a surface area of

15,000 m<sup>2</sup>. And the visual media that give the 112 m high sphere its versatile face and interior are by no means the only superlative.

There are also 164,000 loudspeakers and, of course, a lot more technology in front of and behind the scenes. 18,600 audience seats turn the gigantic installation into a venue. Here, unprecedented live entertainment productions can be marvelled at. Sport, boxing for

example, which requires little in the way of specific sports facilities, will be possible. For the time being, however, we do not consider "The Sphere" to be a sports or multifunctional arena. The type of building is too different, the technical parameters are not comparable enough.

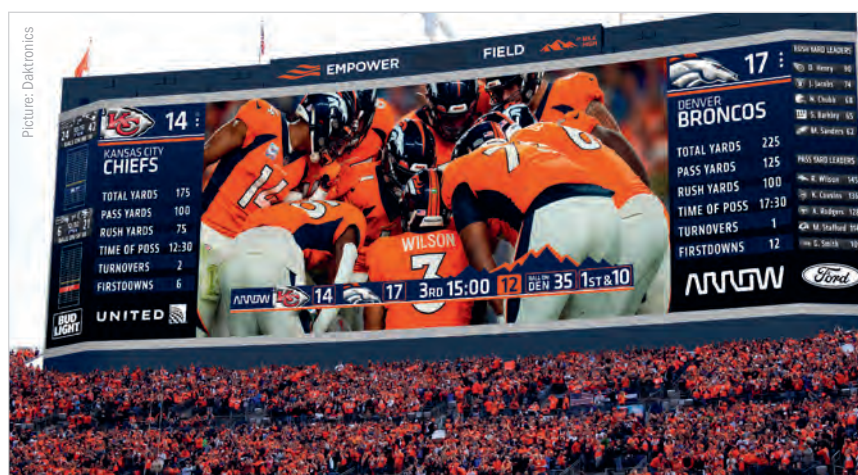
The development line of large multifunctional arenas in the USA has recently produced spectacular con-

| Type | Country     | City            | Arena                      | Main tenant                             | Display                                                | Size (in m <sup>2</sup> ) | Installation year | Supplier             |
|------|-------------|-----------------|----------------------------|-----------------------------------------|--------------------------------------------------------|---------------------------|-------------------|----------------------|
| A    | Austria     | Klagenfurt      | Heidi-Horten-Arena         | EC KAC                                  | 1 centerhung display                                   | n/a                       | 2022              | n/a                  |
| A    | Denmark     | Sonderborg      | Broager Sparekasse Skansen | SønderjyskE Håndbold                    | 2 displays                                             | 60                        | 2023              | Expromo              |
| A    | Germany     | Berlin          | Mercedes-Benz Arena        | ALBA Berlin/Eisbären                    | 1 centerhung display                                   | 124                       | 2017              | G+B                  |
| A    | Germany     | Bremen          | ÖVB Arena                  | n/a                                     | 2 video boards                                         | 34                        | 2022              | LEDCON               |
| A    | Germany     | Cologne         | LANXESS arena              | Kölner Haie                             | 1 centerhung display                                   | 144                       | 2019              | Expromo              |
| A    | Germany     | Düsseldorf      | PSD BANK DOME              | Düsseldorfer EG                         | 1 display                                              | 68                        | 2021              | Expromo              |
| A    | Germany     | Hannover        | ZAG Arena                  | TSV Hannover-Burgdorf                   | 1 centerhung display                                   | 112                       | 2017              | Sharp/NEC/S[quadrat] |
| A    | Germany     | Heidelberg      | SNP dome                   | MLP Academics / Rhein Neckar Löwen      | 2 boards                                               | 27                        | 2020              | Sharp/NEC/S[quadrat] |
| A    | Germany     | Krefeld         | YAYLA ARENA                | Krefeld Pinguine                        | 1 centerhung display                                   | 112                       | 2021              | LEDCON               |
| A    | Germany     | Landshut        | Eisstadion am Gutenbergweg | EV Landshut                             | 1 centerhung display + ring                            | 54                        | 2019              | Sharp/NEC/S[quadrat] |
| A    | Germany     | Lüneburg        | LKH Arena                  | SVG Lüneburg                            | 2 video boards                                         | 45                        | 2021              | LEDCON               |
| A    | Germany     | Munich          | Olympiahalle               | n/a                                     | 8 video boards                                         | 198                       | 2020              | LEDCON               |
| A    | Germany     | Nuremberg       | Kia Metropol Arena         | n/a                                     | 1 centerhung display, 1 video board                    | 66                        | 2021              | Sharp/NEC/S[quadrat] |
| A    | Germany     | Rosenheim       | ROFA-Stadion               | Starbulls Rosenheim                     | Tribune-Displays                                       | 145                       | 2022              | Expromo              |
| A    | Germany     | Straubing       | Eisstadion am Pulverturm   | Straubing Tigers                        | 1 centerhung display / LED ring / LED pylone           | 68                        | 2021              | Sharp/NEC/S[quadrat] |
| A    | Hungary     | Szeged          | Pick Arena                 | Pick Szeged                             | 1 centerhung display / boards / transparent screen     | 355                       | 2021              | Expromo              |
| A    | Russia      | Chelyabinsk     | Traktor Ice Arena          | HC Traktor Chelyabinsk                  | 1 centerhung display                                   | 140                       | 2017              | Colosseo             |
| A    | Russia      | Khabarovsk      | Platinum Arena             | Amur Khabarovsk                         | 1 centerhung display                                   | 113                       | 2018              | Colosseo             |
| A    | Russia      | Moscow          | Megasport Sport Palace     | BK CSKA Moscow                          | 1 centerhung display                                   | 166                       | 2019              | Colosseo             |
| A    | Switzerland | Ambri           | Gottardo-Arena             | HC Ambri Piotta                         | 1 centerhung display                                   | 108                       | 2021              | LG Electronics       |
| A    | Switzerland | Basle           | St. Jakob-Arena            | EHC Basel                               | 1 centerhung display                                   | 88                        | 2023              | n/a                  |
| A    | Switzerland | Davos           | Eisstadion Davos           | HC Davos                                | 1 centerhung display + ring                            | 123                       | 2021              | Expromo              |
| A    | Switzerland | Fribourg        | BCF Arena                  | HC Fribourg-Gottéron                    | 1 centerhung display                                   | 153                       | 2019              | Colosseo             |
| A    | Switzerland | Lausanne        | Vaudoise aréna             | Olympic Swimming                        | 1 display                                              | 23                        | 2022              | Sharp/NEC/S[quadrat] |
| A    | Switzerland | Lausanne        | Vaudoise aréna             | Lausanne HC                             | 1 centerhung display                                   | 160                       | 2019              | Colosseo             |
| A    | Switzerland | Pruntrut        | Raiffeisen Arena           | HC Ajoie                                | 1 centerhung display                                   | 28                        | 2020              | Sharp/NEC/S[quadrat] |
| A    | Switzerland | Zürich          | Swiss Life Arena           | ZSC Lions                               | 1 centerhung display (396 m <sup>2</sup> ) + displays  | 462                       | 2022              | Samsung              |
| A    | Turkey      | Istanbul        | Sinan Erdem Dome           | Anadolu Efes / Fenerbahçe               | 1 centerhung display                                   | 125                       | 2017              | Colosseo             |
| A    | Ukraine     | Zaporozhye      | Yunost Sport Palace        | HC Motor Zaporozhye                     | 1 centerhung display / 2 boards                        | 168                       | 2018              | Colosseo             |
| A    | USA         | Boston          | TD Garden                  | Boston Bruins/Boston Celtics            | 1 centerhung display                                   | 386                       | 2021              | Daktronics           |
| A    | USA         | Chicago         | United Center              | Chicago Bulls / Chicago Blackhawks      | 1 centerhung display                                   | 805                       | 2019              | Mitsubishi           |
| A    | USA         | Cincinnati      | Fifth Third Arena          | University of Cincinnati                | 1 centerhung display                                   | 186                       | 2018              | Daktronics           |
| A    | USA         | Detroit         | Little Caesars Arena       | Detroit Red Wings/- Pistons             | 1 centerhung display                                   | 373                       | 2017              | Daktronics           |
| A    | USA         | Elon            | Schar Center               | Elon University                         | 2 video boards                                         | 162                       | 2018              | Daktronics           |
| A    | USA         | Inglewood       | Intuit Dome                | LA Clippers                             | 360° display                                           | 3,565                     | 2023              | Daktronics           |
| A    | USA         | Los Angeles     | Crypto.com Arena           | LA Kings, -Lakers -Clippers, -Sparks    | 2 endwall displays                                     | 256                       | 2022              | Daktronics           |
| A    | USA         | New York        | UBS Arena                  | New York Islanders                      | 1 centerhung display (439 m <sup>2</sup> ) + displays  | 1,400                     | 2021              | Daktronics           |
| A    | USA         | Philadelphia    | Wells Fargo Center         | Philadelphia Flyers/Philadelphia 76ers  | 1 centerhung display                                   | 613                       | 2019              | ANC                  |
| A    | USA         | Phoenix         | Phoenix Suns Arena         | Phoenix Suns                            | 1 centerhung display                                   | 290                       | 2021              | Daktronics           |
| A    | USA         | Raleigh         | PNC Arena                  | PCarolina Hurricanes                    | 1 centerhung display                                   | 860                       | 2019              | Daktronics           |
| A    | USA         | San José        | SAP Center                 | San José Sharks                         | 7-display-centerhung system                            | 560                       | 2022              | Daktronics           |
| A    | USA         | Seattle         | Climate Pledge Arena       | Seattle Kraken                          | 2 centerhung displays (502 m <sup>2</sup> ) + displays | 2,078                     | 2021              | Daktronics           |
| A    | USA         | Washington D.C. | Capital One Arena          | Washington Capitals, Washington Wizards | 1 centerhung display / 4 boards                        | 729                       | 2019              | Colosseo             |
| A    | USA         | Wichita         | Intrust Bank Arena         | Wichita Thunder                         | 1 centerhung display / displays                        | 400                       | 2021              | Daktronics           |

Type of sports venue: A = Multifunctional arena

Status: 7/2023 Source: STADIAWORLD, suppliers

struction projects with groundbreaking display constructions from the East to the West Coast. Examples include: T-Mobile Arena, Las Vegas (2016); Little Caesars Arena, Detroit (2017); UBS Arena, Elmont/New York (2021); Climate Pledge Arena, Seattle (reopening in 2021). This momentum lost some steam recently. But with the Intuit Dome in Inglewood/L.A., another mega-project is currently being implemented. Once again, the US market leader Daktronics has been commissioned with the visual media. The company reports: “The double-sided halo display in the LA Clippers’ Intuit Dome will provide approximately 3,565 m<sup>2</sup> of digital screen – that’s more than 3,592 60-inch TVs and more than 233 million LEDs. The Clippers designed and constructed the Intuit Dome’s roof specifically for the unique Halo Board to optimise



Denver Broncos: 25 LED displays totaling 2,230 m<sup>2</sup>.

sight lines from all seats and prioritise the viewing experience in the seats at the top of the stadium. The inner halo display will be 11 m high and have a perimeter of 190 m. The outer halo display will be 8.5 m high and have a perimeter of 201 m, making the entire

halo proportionally more balanced than others. The entire halo will be 4K and have a tight 3.9-millimetre pixel layout.”

There will certainly be further reports on the Intuit Dome. Meanwhile, European installations are generally →

| Video displays: Large stadium installations (selection) |             |                   |                            |                                 |                                   |                           |                   |                |
|---------------------------------------------------------|-------------|-------------------|----------------------------|---------------------------------|-----------------------------------|---------------------------|-------------------|----------------|
| Type                                                    | Country     | City              | Stadium                    | Main tenant                     | Display                           | Size (in m <sup>2</sup> ) | Installation year | Supplier       |
| S                                                       | Australia   | Sydney            | Accor Stadium              | Mixed use                       | 2 video displays                  | 1,200/230                 | 2022              | Daktronics     |
| S                                                       | Belgium     | Brussels          | Jan Breydel Stadium        | Club Brugge                     | 3 video displays                  | 88                        | 2021              | LG Electronics |
| SR                                                      | Canada      | Toronto           | Rogers Centre              | Toronto Blue Jays               | 5 video displays                  | 795                       | 2022              | Daktronics     |
| S                                                       | England     | London            | New White Hart Lane        | Tottenham Hoptspur              | 2 video displays                  | 1,031                     | 2018              | Daktronics     |
| S                                                       | England     | London            | Wembley Stadium            | The FA                          | LED façade                        | 840                       | 2020              | LG Electronics |
| S                                                       | Germany     | Berlin            | Olympiastadion Berlin      | Hertha BSC                      | 3 video displays                  | 301                       | 2018              | Expromo        |
| S                                                       | Germany     | Braunschweig      | EINTRACHT-STADION          | Eintracht Braunschweig          | 2 video displays                  | 70                        | 2021              | LEDCON         |
| S                                                       | Germany     | Dortmund          | SIGNAL IDUNA PARK          | Borussia Dortmund               | 4 video displays inside/3 outside | 194/750                   | 2022              | APA            |
| S                                                       | Germany     | Essen             | Stadion an der Hafenstraße | Rot-Weiss Essen                 | 1 video display                   | 42                        | 2021              | LEDCON         |
| SR                                                      | Germany     | Frankfurt         | Deutsche Bank Park         | Eintracht Frankfurt             | 1 centering display               | 276                       | 2021              | LG Electronics |
| S                                                       | Germany     | Leverkusen        | BayArena                   | Bayer 04 Leverkusen             | 2 video displays                  | 195                       | 2019              | LEDCON         |
| S                                                       | Germany     | Meppen            | Hänsch-Arena               | SV Meppen                       | 1 video display                   | 40                        | 2022              | LEDCON         |
| S                                                       | Germany     | Munich            | Allianz Arena              | FC Bayern München               | 4 video displays                  | 480                       | 2017              | LEDCON         |
| S                                                       | Germany     | Schweinfurt       | Sachs-Stadion              | 1. FC Schweinfurt               | 1 video display                   | 31                        | 2022              | LEDCON         |
| S                                                       | Greece      | Athens            | OPAP Arena                 | AEK Athens                      | 2 video displays inside/2 outside | 228                       | 2022              | LG Electronics |
| S                                                       | New Zealand | Auckland          | Eden Park                  | Auckland Blues/Auckland RFU     | 1 video display                   | 330                       | 2021              | Samsung        |
| S                                                       | Portugal    | Lisbon            | Estádio da Luz             | SL Benfica                      | 2 video displays                  | 238                       | 2022              | LG Electronics |
| S                                                       | Slovakia    | Bratislava        | National Football Stadium  | SK Slovan Bratislava            | 2 video displays/perimeters       | 365                       | 2019              | Colosseo       |
| S                                                       | Spain       | Barcelona         | Power8 Stadium             | RCD Espanyol                    | 2 video displays                  | 96                        | 2022              | LG Electronics |
| S                                                       | Spain       | Madrid            | Estadio Santiago Bernabéu  | Real Madrid                     | 360° video display                | 3,700                     | 2022              | Daktronics     |
| S                                                       | Spain       | Palma de Mallorca | Estadi Mallorca Son Moix   | RCD Mallorca                    | 1 video display                   | 154                       | 2023              | n/a            |
| S                                                       | Spain       | San Sebastián     | Estadio Anoeta             | Real Sociedad                   | 2 video displays                  | n/a                       | 2022              | LG Electronics |
| S                                                       | Spain       | Villareal         | Estadio de la Cerámica     | Villareal CF                    | 2 video displays                  | 294                       | 2022              | LG Electronics |
| S                                                       | Switzerland | Geneva            | Stade de Genève            | Servette FC                     | 2 video displays                  | 80                        | 2020              | LG Electronics |
| S                                                       | Switzerland | Lausanne          | Stade de la Tuilière       | FC Lausanne-Sport               | 2 video displays                  | 80                        | 2020              | LG Electronics |
| BS                                                      | USA         | Arlington         | Globe Life Field           | Texas Rangers                   | 4 video displays                  | 1,445                     | 2020              | Daktronics     |
| SR                                                      | USA         | Atlanta           | Mercedes-Benz Stadium      | Atlanta Falcons                 | 360° video display                | 5,927                     | 2017              | Daktronics     |
| S                                                       | USA         | Austin            | Q2 Stadium                 | Austin FC                       | 1 video display                   | 187                       | 2021              | Daktronics     |
| S                                                       | USA         | Columbus          | Downtown Stadium           | Columbus Crew                   | 2 video displays                  | 326                       | 2021              | Daktronics     |
| S                                                       | USA         | Denver            | Empower Field at Mile High | Denver Broncos                  | 25 LED displays                   | 2,276                     | 2023              | Daktronics     |
| S                                                       | USA         | Foxborough        | Gillette Stadium           | New England Patriots/Revolution | 1 video display (upgraded 2023)   | 2,060                     | 2023              | Daktronics     |
| S                                                       | USA         | Green Bay         | Lambeau Field              | Green Bay Packers               | 2 main video displays             | 1,960                     | 2023              | Daktronics     |
| SR                                                      | USA         | Inglewood         | SoFi Stadium               | Los Angeles Rams/Chargers       | 360° video display                | 6,500                     | 2020              | Samsung        |
| S                                                       | USA         | Kansas City       | Arrowhead Stadium          | Kansas City Chiefs              | 2 oval video displays             | 623                       | 2019              | Daktronics     |
| BS                                                      | USA         | Kansas City       | Kauffman Stadium           | Kansas City Royals              | 2 video displays                  | 1,034                     | 2021              | Daktronics     |
| BS                                                      | USA         | Minneapolis       | Target Field               | Minnesota Twins                 | 1 video display                   | 930                       | 2023              | Daktronics     |
| BS                                                      | USA         | New York          | Citi Field                 | New York Mets                   | 1 double-sided main display       | 1,617/613                 | 2023              | Samsung        |
| BS                                                      | USA         | Philadelphia      | Citizens Bank Park         | Philadelphia Phillies           | 1 video display                   | 1,197                     | 2023              | Daktronics     |
| S                                                       | USA         | Raleigh           | Carter-Finley Stadium      | North Carolina State University | 1 main video display              | 663                       | 2023              | Daktronics     |

Type of sports venue: BS = Baseball stadium, S = Stadium, SR = Stadium with (retractable) roof

Status: 7/2023 Source: STADIWORLD, suppliers



somewhat smaller. However, the trend towards ribbon boards and extended centre-hung displays continues in smaller venues here as well. An interesting project in a special hall was carried out by Expromo in Davos, Switzerland. The ice stadium in Davos is a household name for ice hockey fans all over the world, not least because of the “Spengler Cup”. The wooden construction is a unique architectural feature of the hall, which was opened in 1979. Now a new video cube has been installed centrally above the ice surface at the same location. It is octagonal, has an additional ring and offers around 125 m<sup>2</sup> of LED surface. Not only has the surface area been increased, but also the resolution. For outdoor venues, too, it is still true that US stadiums keep outdoing each other with new video wall records, although no new special architectural solutions with integrated 360° halos are in the works. In contrast to football stadiums in Europe, US basketball and

football stadiums generally have huge free spaces available. European stadiums can be considered an exception, where 360° solutions were feasible, as recently in Madrid. Most recently, the Green Bay Packers at Lambeau Field in the US added display area, and the New York Mets expanded their display areas at Citi Field. The Philadelphia Phillies and Denver Broncos, among others, also upgraded significantly.

For all sports and event venues, the topic of digital signage is becoming increasingly important – even in smaller European stadiums and halls. In this category, “fan experience” or “customer journey” have hardly taken place so far. However, the realisation has prevailed that it is no longer possible without up-to-date presentation and network technology. The efficient distribution of signals to the playback devices in the stadium has become indispensable, and as the orders from the service providers show, the large

venues are also continuing to step up in terms of TV monitors and media surfaces throughout the building as well as on the façades.

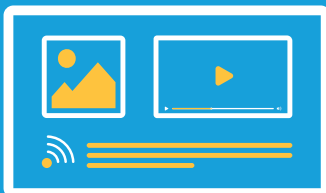
In industry news, it is worth noting here that, with VITEC having already acquired Exterity, Tripleplay has now been absorbed into the Uniguest brand. Matt Goche, CEO, Uniguest, said: “As you may know, the Uniguest family has grown rapidly over the past few years, with Tripleplay being one of the teams that joined us in 2019 (...) and helped create one of the top five digital signage software providers in the world. As part of this change, we will be retiring our social media and websites that are not part of Uniguest. Our unified home will then be Uniguest.com, and Uniguest channels will be where you’ll find the latest news about our technology, updates and solutions. So, what changes for our customers? Actually, not much.” →

| Type | Country     | City           | Venue                     | Main tenant                          | Size (in m <sup>2</sup> ) | Installation year | Supplier             |
|------|-------------|----------------|---------------------------|--------------------------------------|---------------------------|-------------------|----------------------|
| A    | Austria     | Klagenfurt     | Heidi-Horten-Arena        | EC KAC                               | 200                       | 2022              | n/a                  |
| S    | Denmark     | Herning        | MCH Arena                 | FC Midtjylland                       | 283                       | 2022              | Expromo              |
| S    | England     | London         | Tottenham Hotspur Stadium | Tottenham Hotspur                    | 962                       | 2018              | Daktronics           |
| S    | England     | Manchester     | Etihad Stadium            | Manchester United                    | 466                       | 2018              | LG                   |
| A    | Germany     | Bremen         | ÖVB Arena                 | n/a                                  | 25                        | 2022              | LEDCON               |
| A    | Germany     | Cologne        | LANXESS arena             | Köln Haie                            | 315                       | 2019              | Expromo              |
| S    | Germany     | Dortmund       | Signal Iduna Park         | Borussia Dortmund                    | 400                       | 2019              | APA                  |
| SR   | Germany     | Frankfurt      | Deutsche Bank Park        | Eintracht Frankfurt                  | 865                       | 2021              | LG Electronics       |
| A    | Germany     | Hannover       | ZAG Arena                 | TSV Hannover-Burgdorf                | 104                       | 2017              | Sharp/NEC/S[quadrat] |
| S    | Germany     | Leverkusen     | Bay Arena                 | Bayer 04 Leverkusen                  | 130                       | 2019              | LEDCON               |
| A    | Germany     | Lüneburg       | LKH Arena                 | SVG Lüneburg                         | 32                        | 2021              | LEDCON               |
| S    | Greece      | Athens         | OPAP Arena                | AEK Athens                           | 348                       | 2022              | LG Electronics       |
| A    | Hungary     | Szeged         | Pick Arena                | Pick Szeged                          | 160                       | 2022              | Expromo              |
| S    | Portugal    | Lisbon         | Estádio da Luz            | SL Benfica                           | 1,457                     | 2022              | LG Electronics       |
| S    | Russia      | St. Petersburg | Gazprom Arena             | FK Zenit                             | 1,298                     | 2019              | Colosseo             |
| S    | Slovakia    | Bratislava     | National Football Stadium | SK Slovan Bratislava                 | 195                       | 2019              | Colosseo             |
| S    | Spain       | Madrid         | Cívitas Metropolitano     | Atlético de Madrid                   | 530                       | 2017              | LG                   |
| S    | Spain       | Madrid         | Estadio Santiago Bernabéu | Real Madrid                          | 541                       | 2022              | Daktronics           |
| S    | Spain       | San Sebastián  | Estadio Anoeta            | Real Sociedad                        | n.a.                      | 2022              | LG Electronics       |
| A    | Switzerland | Ambri          | Gottardo-Arena            | HC Ambri Piotta                      | 95                        | 2021              | LG Electronics       |
| A    | Switzerland | Biel           | Tissot Arena              | EHC Biel                             | 152                       | 2020              | Sharp/NEC/S[quadrat] |
| A    | Switzerland | Fribourg       | BCF Arena                 | HC Fribourg-Gottéron                 | 204                       | 2019              | Colosseo             |
| A    | Switzerland | Lausanne       | Vaudoise aréna            | Lausanne HC                          | 155                       | 2019              | Colosseo             |
| A    | Switzerland | Zurich         | Swiss Life Arena          | ZSC Lions                            | 207                       | 2022              | Samsung              |
| A    | Turkey      | Istanbul       | Sinan Erdem Dome          | Anadolu Efes / Fenerbahçe            | 326                       | 2017              | Colosseo             |
| SR   | USA         | Atlanta        | Mercedes-Benz Stadium     | Atlanta Falcons                      | 1022                      | 2017              | Daktronics           |
| S    | USA         | Austin         | Q2 Stadium                | Austin FC                            | 153                       | 2021              | Daktronics           |
| S    | USA         | Columbus       | Downtown Stadium          | Columbus Crew                        | 145                       | 2021              | Daktronics           |
| S    | USA         | Foxborough     | Gillette Stadium          | New England Patriots/Revolution      | 718                       | 2021              | Daktronics           |
| A    | USA         | Los Angeles    | Crypto.com Arena          | LA Kings, -Lakers -Clippers, -Sparks | 711                       | 2022              | Daktronics           |
| S    | USA         | Miami          | Hard Rock Stadium         | Miami Dolphins                       | 759                       | 2019              | Daktronics           |
| A    | USA         | Phoenix        | Phoenix Suns Arena        | Phoenix Suns                         | 1,160                     | 2021              | Daktronics           |
| A    | USA         | San José       | SAP Center                | San José Sharks                      | 256                       | 2022              | Daktronics           |
| A    | USA         | Seattle        | Climate Pledge Arena      | Seattle Kraken                       | 726                       | 2021              | Daktronics           |

Type of sports venue: A = Multifunctional Arena, S = Stadium, SR = Stadium with (retractable) roof

Status: 7/2023 Source: STADIAWORLD, suppliers

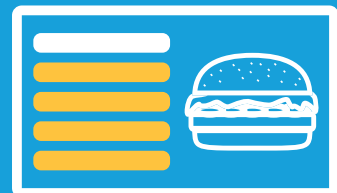
# unigu<sup>est</sup>



**Digital  
Signage**



**IP Video**



**Digital  
Menu Boards**

[unigu<sup>est</sup>.com](http://unigu<sup>est</sup>.com)



| Digital Signage: TVs in stadiums and arenas (selection) |              |                     |                                   |                                   |               |                                 |                         |
|---------------------------------------------------------|--------------|---------------------|-----------------------------------|-----------------------------------|---------------|---------------------------------|-------------------------|
| Type                                                    | Country      | City                | Venue                             | Main tenant                       | Number of TVs | Installation year <sup>1)</sup> | Supplier                |
| RC                                                      | Australia    | Adelaide            | Morphetville Racecourse           | South Australian Jockey Club      | 400           | 2019                            | Exterity                |
| S                                                       | Australia    | Brisbane            | Brisbane Cricket Ground/Gabba     | Brisbane Lions/Brisbane Heat      | 100           | 2021                            | Exterity                |
| S                                                       | Australia    | Canberra            | GIO Stadium                       | Canberra Raiders/Brumbies         | 130           | 2020                            | Exterity                |
| S                                                       | Australia    | South Townsville    | Queensland Country Bank Stadium   | North Queensland Cowboys          | 275           | 2020                            | Exterity                |
| A                                                       | Australia    | Sydney              | Qudos Bank Arena                  | Sydney Kings, NSW Swifts          | 130           | 2019                            | Tripleplay              |
| RC                                                      | Australia    | Sydney              | Rosehill Gardens                  | Australian Turf Club              | 800           | 2020                            | Exterity                |
| S                                                       | Austria      | Linz                | Raiffeisen Arena                  | LASK                              | 180           | 2023                            | Uniguest                |
| S                                                       | Belarus      | Minsk               | Dinamo Stadium                    | Dinamo Minsk                      | 450           | 2019                            | Colosseo                |
| S                                                       | Belgium      | Gent                | Ghelamco Arena                    | KAA Gent                          | 180           | 2019                            | LG Electronics          |
| S                                                       | England      | London              | Tottenham Hotspur Stadium         | Tottenham Hotspur                 | 1,800         | 2019                            | LG Electronics          |
| S                                                       | France       | Bordeaux            | Matmut Atlantique                 | Girondins Bordeaux                | 268           | 2019                            | Exterity                |
| S                                                       | France       | Lyon                | Groupama Stadium                  | Olympique Lyon                    | 651           | 2023                            | Uniguest                |
| S                                                       | France       | Marseille           | Orange Vélodrome                  | Olympique Marseille               | 355           | 2023                            | Uniguest                |
| S                                                       | France       | Metz                | Stade Saint-Symphorien            | FC Metz                           | 150           | 2022                            | VITEC                   |
| S                                                       | France       | Monaco              | Stade Louis II                    | AS Monaco                         | 316           | 2020                            | Uniguest                |
| A                                                       | France       | Orléans             | CO'met                            | Mixed Use                         | 87            | 2022                            | VITEC                   |
| A                                                       | France       | Reims               | Reims Arena                       | Mixed use                         | 71            | 2021                            | VITEC                   |
| A                                                       | France       | Saint-Chamond       | Arena Saint-Etienne Métropole     | Mixed use                         | 37            | 2023                            | VITEC                   |
| S                                                       | Georgia      | Batumi              | Batumi Stadium                    | FC Dinamo Batumi                  | 65            | 2019                            | Exterity                |
| S                                                       | Germany      | Darmstadt           | Merck-Stadion am Böllenfalltor    | SV Darmstadt 98                   | 112           | 2023                            | Uniguest                |
| S                                                       | Germany      | Dortmund            | Signal Iduna Park                 | Borussia Dortmund                 | 600           | 2021                            | Grundig/Samsung         |
| S                                                       | Germany      | Elversberg          | Ursapharm Arena                   | SV Elversberg                     | 50            | 2023                            | Uniguest                |
| SR                                                      | Germany      | Frankfurt           | Deutsche Bank Park                | Eintracht Frankfurt               | 110           | 2021                            | VITEC                   |
| S                                                       | Germany      | Freiburg            | Europapark-Stadion                | SC Freiburg                       | 286           | 2020                            | VITEC                   |
| S                                                       | Germany      | Hamburg             | Millerntor-Stadion                | FC St. Pauli                      | 75            | 2020                            | PMS/Exterity            |
| S                                                       | Germany      | Heidenheim          | Voith Arena                       | FC Heidenheim                     | 42            | 2023                            | VITEC                   |
| S                                                       | Germany      | Karlsruhe           | BBBank Wildpark                   | Karlsruher SC                     | 232           | 2023                            | Uniguest                |
| S                                                       | Germany      | Leverkusen          | BayArena                          | Bayer 04 Leverkusen               | 750           | 2021                            | Misc.                   |
| A                                                       | Germany      | Mannheim            | SAP Arena                         | Adler Mannheim/Rhein-Neckar Löwen | 10            | 2019                            | VITEC                   |
| S                                                       | Germany      | Mönchengladbach     | Stadion im BORUSSIA-PARK          | Borussia Mönchengladbach          | 454           | 2021                            | Samsung/Toshiba         |
| S                                                       | Germany      | Sinsheim            | Prezero Arena                     | 1899 Hoffenheim                   | 140           | 2021                            | Sharp/Exterity          |
| S                                                       | Germany      | Stuttgart           | Mercedes-Benz Arena               | VfB Stuttgart                     | 350           | 2021                            | Panasonic               |
| A                                                       | Japan        | Okinawa             | Okinawa Arena                     | Mixed use                         | 306           | 2021                            | Uniguest                |
| A                                                       | Kazakhstan   | Nur-Sultan (Astana) | Kazakhstan Sports Palace          | Mixed use                         | 160           | 2021                            | Colosseo                |
| S                                                       | New Zealand  | Auckland            | Eden Park                         | Auckland Blues/Auckland RFU       | 400           | 2021                            | Exterity                |
| A                                                       | New Zealand  | Christchurch        | Christchurch Arena                | Mixed use                         | 104           | 2022                            | Uniguest                |
| S                                                       | Saudi Arabia | Jeddah              | Prince Abdullah Al-Faisal Stadium | Mixed use                         | 55            | 2021                            | Exterity                |
| S                                                       | Slovakia     | Bratislava          | National Stadium                  | ŠK Slovan Bratislava              | 400           | 2019                            | Colosseo                |
| S                                                       | South Africa | Cape Town           | Cape Town Stadium                 | Ajax Cape Town                    | 343           | 2021                            | Exterity                |
| S                                                       | Spain        | Madrid              | Estadio Santiago Bernabeu         | Real Madrid                       | 1,000         | 2022                            | LG Electronics          |
| S                                                       | Spain        | Palma de Mallorca   | Estadi Mallorca Son Moix          | RCD Mallorca                      | 128           | 2023                            | Uniguest                |
| A                                                       | Switzerland  | Ambri               | Gottardo-Arena                    | HC Ambri Piotta                   | 220           | 2021                            | LG Electronics          |
| A                                                       | Switzerland  | Fribourg            | BCF Arena                         | HC Fribourg-Gottéron              | 350           | 2021                            | Uniguest                |
| S                                                       | Switzerland  | Geneva              | Stade de Genève                   | Servette FC                       | 40            | 2020                            | LG Electronics/Uniguest |
| S                                                       | Switzerland  | Lausanne            | Stade de la Tuilière              | FC Lausanne-Sport                 | 91            | 2020                            | LG Electronics/Uniguest |
| A                                                       | Switzerland  | Zurich              | Hallenstadion Zürich              | Mixed use                         | 245           | 2022                            | Samsung                 |
| A                                                       | Switzerland  | Zurich              | Swiss Life Arena                  | ZSC Lions                         | 240           | 2022                            | Samsung                 |
| A                                                       | USA          | Anaheim             | Honda Center                      | Anaheim Ducks                     | 425           | 2021                            | Uniguest                |
| SR                                                      | USA          | Arlington           | AT&T Stadium                      | Dallas Cowboys                    | 1,000         | 2021                            | LG Electronics          |
| BS                                                      | USA          | Arlington           | Globe Life Field                  | Texas Rangers                     | 1,400         | 2020                            | Daktronics              |
| A                                                       | USA          | Atlanta             | State Farm Arena                  | Atlanta Hawks                     | 350           | 2022                            | VITEC                   |
| S                                                       | USA          | Austin              | Moody Center                      | University of Texas               | 270           | 2022                            | VITEC                   |
| A                                                       | USA          | Chicago             | United Center                     | Chicago Bulls                     | 230           | 2021                            | Uniguest                |
| S                                                       | USA          | Columbus            | Historic Crew Stadium             | Columbus Crew                     | 455           | 2021                            | Uniguest                |
| BS                                                      | USA          | Cumberland          | Truist Park                       | Atlanta Braves                    | 1,378         | 2022                            | Uniguest                |
| BS                                                      | USA          | Dunedin             | TD Ballpark                       | Dunedin Blue Jays                 | 150           | 2020                            | Uniguest                |
| A                                                       | USA          | Elmont              | UBS Arena                         | New York Islanders                | 852           | 2021                            | Uniguest                |
| S                                                       | USA          | Kansas City         | Kauffman Stadium                  | Kansas City Royals                | 650           | 2023                            | VITEC                   |
| BS                                                      | USA          | Los Angeles         | Dodger Stadium                    | Los Angeles Dodgers               | 500           | 2020                            | Uniguest                |
| BS/SR                                                   | USA          | Milwaukee           | American Family Field             | Milwaukee Brewers                 | 275           | 2020                            | Uniguest                |
| S                                                       | USA          | Nashville           | Geodis Park                       | Nashville SC                      | 268           | 2021                            | Uniguest                |
| A                                                       | USA          | Newark              | Prudential Center                 | News Jersey Devils                | 154           | 2022                            | Uniguest                |
| A                                                       | USA          | Oakland             | Oakland Arena                     | Mixed use                         | 612           | 2023                            | VITEC                   |
| BS                                                      | USA          | Philadelphia        | Citizens Bank Park                | Philadelphia Phillies             | 640           | 2021                            | Uniguest                |
| A                                                       | USA          | San Antonio         | AT&T Center                       | San Antonio Spurs                 | 560           | 2022                            | Uniguest                |
| S                                                       | USA          | San Diego           | Snapdragon Stadium                | San Diego State Aztecs            | 225           | 2021                            | Uniguest                |
| A                                                       | USA          | San José            | SAP Center                        | San José Sharks                   | 150           | 2021                            | Uniguest                |
| A                                                       | USA          | Seattle             | Climate Pledge Arena              | Seattle Kraken/Seattle Storm      | 800           | 2021                            | Uniguest                |
| BS/SR                                                   | USA          | Seattle             | T-Mobile Park                     | Seattle Mariners                  | 135           | 2022                            | Uniguest                |

Type of sports venue: A = Multifunctional arena, BS = Baseball stadium, RC = Race Circuit, S = Stadium, SR = Stadium with (retractable) roof

1) Installation year: in some cases a process spanning several years

Status: 7/2023

Source: STADIAWORLD, suppliers

# ASB GlassFloor at Basketball World Cup: Historic moment and new standards set

During the FIBA U19 Women's Basketball World Cup Madrid witnessed a world premiere that will profoundly impact the sports world. Starting from the quarter-finals, games were no longer played on parquet flooring but on the ASB GlassFloor, a high-tech video sports floor made of glass.

In conjunction with the specially developed application GlassCourt OS, the German company ASB GlassFloor demonstrated a new dimension in presenting a sports event. This new technology opens up opportunities for many sports to position themselves for the future, competing for Olympic relevance and the next generation of sports fans. Players, fans, and FIBA were thrilled with the experience.

"Today is a proud day for the International Basketball Federation and FIBA, which may also have changed the history of our sport to some extent. We want and are already planning for the future implementation of this technology", FIBA Secretary-General Andreas Zagklis said. Jorge Garbajosa, President of FIBA Europe, shared a similar sentiment: "I feel that basketball is changing. I would even say that indoor sports will be different."

GlassCourt OS is an interactive software solution designed to seamlessly integrate data from various 3rd parties, including player and ball tracking systems, sports and health data platforms, and coaching applications. The software acts as a central hub, capable of processing real-time data and transforming it into visually stunning and informational graphics, displayed directly on the glass sports floor. GlassCourt OS seamlessly integrates and synchronises the ASB GlassFloor with LED boards and video cubes, providing real-time, contextual overlays that inform spectator, athlete or coach. The result is an unprecedented level of engagement and value for athletes, clubs,



*A new dimension in presenting a sports event.*

associations, sponsors, and, most importantly, fans. The combination of GlassCourt OS and ASB GlassFloor presents endless marketing and training opportunities via the interactive LED canvas.

## About ASB GlassFloor

ASB, short for Aluminum Systembau, was founded in 1965 as an interior design company and has been synonymous with innovation, multifunctionality, and uncompromising design since 1965. What began as a revolution for the sport of squash is now known as ASB GlassFloor – one of the most advanced floorings for sports halls in the world, redefining the boundaries of design and technology. With its products, ASB

GlassFloor offers unique solutions for sports floors made of glass with LED technology and is certified by a number of associations for use in professional sports, including FIBA for Competition Level 1. ♦



### ASB GlassFloor

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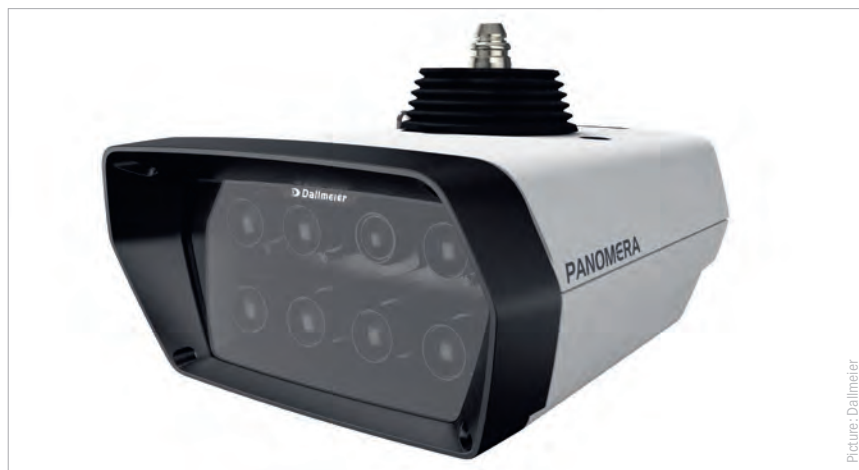
# Camera technology for Turkish Stadium

In order to be able to better identify and track offenders in the stands in the future, the operator of the Alsancak Mustafa Denizli Stadium opted for a video security solution from the German manufacturer Dallmeier.

The Alsancak Mustafa Denizli Stadium in Izmir – named after former Turkish football player and current football coach Mustafa Denizli – is a multipurpose stadium that mainly hosts football matches. With over 15,000 seats, it is one of the medium-sized stadiums in Türkiye. Originally built in 1929, it was demolished in 2015 and reopened after reconstruction in November 2021.

## Up to 15% fewer spectators due to riots

In Türkiye, stadiums are usually owned by the Ministry of Sport, which then grants the rights of use to an operator. In the case of the Alsancak stadium, the operator is “Altay Izmir”, an Izmir-based football club that currently plays in Türkiye’s top professional league. The club, like so many other football stadiums, has had its fair share of repeated incidents and threats to spectators and players. These have included verbal abuse and even the throwing of objects onto the



Dallmeier's Panomera® S-Series.

pitch. In addition to the intangible damage to the image, the consequences have been painful, ranging from traditional fines to the closure of an entire block of spectators – a loss of 1,000 to 2,000 spectators per home game, and that on a regular basis.

Under these conditions, the operators were looking for a solution that would allow them to reliably detect and track

potential offenders. The tender specified a minimum resolution density of 144 pixels per metre (px/m), which is also required by law. This means that there must be at least 144 pixels in the camera image to represent every metre of “reality” in the stands. This value is between the “recognition” (125 px/m) and “identification” (250 px/m) qualities specified in the IEC EN 62676-4 standard for video surveillance systems.

## Only ten cameras to monitor the stands

To find the most suitable solution for the Alsancak Stadium, the Ministry of Sports decided to invite various manufacturers to a comparative test. After receiving the proofs of concept (PoCs) of several companies, the owner chose a solution from the German manufacturer Dallmeier electronic. In addition to around 140 single-sensor cameras for corridors, outdoor areas and entrances, only ten “Panomera®” multifocal sensor systems are required for the particularly critical grandstand surveillance.

The low number of camera systems required for grandstand surveillance is due to the patented multifocal sen-

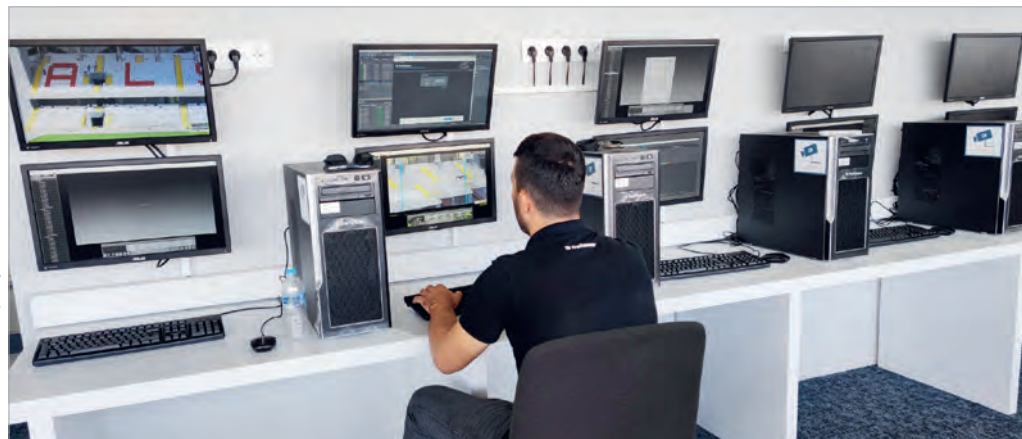


Izmir, Turkey: Alsancak Mustafa Denizli Stadium.

technology: Panomera® cameras combine the images from up to seven detail sensors and one overview sensor in a single camera system. This provides the user with a high-resolution overview of the entire area to be monitored, which acts as a single image of a vast environment. Within this overall picture, system operators can now open any number of detail views at the same time, while the overall scene is always available in high resolution – even during recording, which is essential for possible prosecution. This provides an optimal overview of the situation and ensures that all events can be followed in real time, in high resolution and in detail. Thanks to this technology, a minimum of 200 px/m is now available throughout the Alsancak stadium instead of the required 144 px/m – 39 per cent more than originally required.

#### Remote “FAT” and training from Dallmeier Türkiye

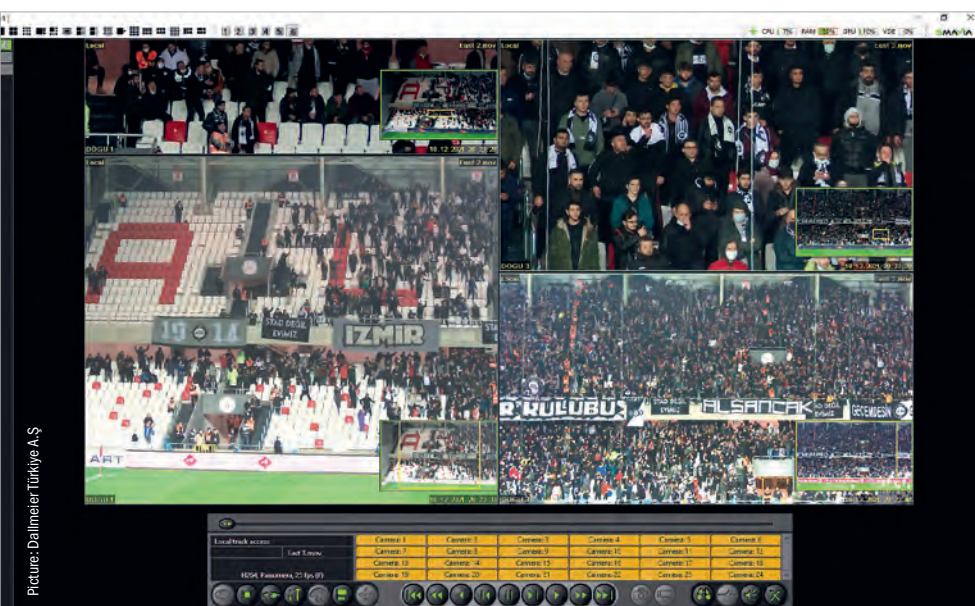
Due to the COVID-19 pandemic, the stadium’s technicians were unable to travel to Dallmeier’s headquarters in Regensburg, Germany, to commission the system and attend classroom training. For this reason, the so-called Dallmeier Factory Acceptance Test



Test setup of operator workstations. Only three operators are required to monitor the entire grandstand.

(FAT) took place online. The entire system was set up, configured and remotely accepted in the FAT centre in Regensburg. The training of the technicians and operators was carried out by Dallmeier Türkiye experts on site. Serkan Atalar, CEO of RESA Construction Electromechanical Inc. CO, the installer company that implemented the project, is very pleased: “Dallmeier’s sincere and collaborative approach, as well as the high-tech products and after sale support they offered were very impressive. We thank Dallmeier Türkiye for the great cooperation.” “The customer is very satisfied with the Panomera® systems. The benefits are equivalent to combining a power-

ful megapixel camera with any number of high-resolution ‘virtual’ PTZ cameras. At the same time, the systems reduce the total cost of ownership for infrastructure, cables, masts, screens, workstations, etc.,” Serkan Atalar summarises. “Alsancak Stadium only needs three system operators with one monitor each. They also have two workstations for the police and management. The solution always gives them 100% control of the security situation in the stadium, allowing them to react immediately and reliably track down perpetrators. And all this at a low total cost of ownership and with minimal manpower thanks to the unique multifocal sensor technology.” ♦



The monitoring system combines any number of detailed views with an enormously large overall picture.



STADIAWORLD

Scan the QR code to see a video of the case study.

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# Grass or synthetic turf?

## Debates in the US leagues

A consistent pitch quality and multifunctionality of the stadium are arguments in favour of artificial turf. But many professionals complain about the risk of injury and demand the conversion to natural grass pitches.

Starting next season, the Tennessee Titans' NFL football games at Nissan Stadium will be played on artificial turf instead of natural grass. The Titans cite various reasons for this. In particular, the climate zone in which Nashville is located is a reason for the change. It is not possible to guarantee a consistent playing surface throughout the season. Turf swaps and constant seeding have not produced satisfactory results. The inconsistent surface has also resulted in numerous lower-body injuries, the most LEAGUE-wide, the Titans said.

Another decisive factor was the advanced artificial turf technology. The NFL franchise opted for a monofilament matrix helix turf in combination with an organic infill. This is to combine the consistency and durability of artificial turf with the feel and performance of turf and soil.

"I think our grounds crew is among the best in the National Football League," Titans team president and CEO Burke Nihill said in a statement. "Ultimately there's just a limit to how much can be done for a natural grass surface in this part of the country. This turf is cutting-edge technology and will be a huge improvement in terms of consistency and performance."

The Tennessee Titans made the decision to switch from natural grass to synthetic turf amid a heated debate about the right playing surface. While a large number of NFL professionals are in favour of playing exclusively on natural grass, the league argues that injury rates on synthetic surfaces and those on natural grass have decreased to the point where there is little difference.

| Venue                      | City            | Team(s)               | Grass type <sup>1)</sup> | Roof <sup>2)</sup> |
|----------------------------|-----------------|-----------------------|--------------------------|--------------------|
| Acrisure Stadium           | Pittsburgh      | Pittsburgh Steelers   | n                        | o                  |
| Allegiant Stadium          | Paradise        | Las Vegas Raiders     | n                        | c                  |
| Arrowhead Stadium          | Kansas City     | Kansas City Chiefs    | n                        | o                  |
| AT&T Stadium               | Arlington       | Dallas Cowboys        | s                        | c                  |
| Bank of America Stadium    | Charlotte       | Carolina Panthers     | s                        | o                  |
| Caesars Superdome          | New Orleans     | New Orleans Saints    | s                        | r                  |
| Empower Field at Mile High | Denver          | Denver Broncos        | n                        | o                  |
| FedExField                 | Landover        | Washington Commanders | n                        | o                  |
| FirstEnergy Stadium        | Cleveland       | Cleveland Browns      | n                        | o                  |
| Ford Field                 | Detroit         | Detroit Lions         | s                        | c                  |
| Gillette Stadium           | Foxborough      | New England Patriots  | s                        | o                  |
| Hard Rock Stadium          | Miami Gardens   | Miami Dolphins        | n                        | o                  |
| Highmark Stadium           | Orchard Park    | Buffalo Bills         | s                        | o                  |
| Lambeau Field              | Green Bay       | Green Bay Packers     | n                        | o                  |
| Levi's Stadium             | Santa Clara     | San Francisco 49ers   | n                        | o                  |
| Lincoln Financial Field    | Philadelphia    | Philadelphia Eagles   | n                        | o                  |
| Lucas Oil Stadium          | Indianapolis    | Indianapolis Colts    | s                        | r                  |
| Lumen Field                | Seattle         | Seattle Seahawks      | s                        | o                  |
| M&T Bank Stadium           | Baltimore       | Baltimore Ravens      | n                        | o                  |
| Mercedes-Benz Stadium      | Atlanta         | Atlanta Falcons       | s                        | r                  |
| MetLife Stadium            | East Rutherford | New York Giants/-Jets | s                        | o                  |
| Nissan Stadium             | Nashville       | Tennessee Titans      | s                        | o                  |
| NRG Stadium                | Houston         | Houston Texans        | s                        | r                  |
| Paycor Stadium             | Cincinnati      | Cincinnati Bengals    | s                        | o                  |
| Raymond James Stadium      | Tampa           | Tampa Bay Buccaneers  | n                        | o                  |
| SoFi Stadium               | Inglewood       | LA Chargers/-Rams     | s                        | r                  |
| Soldier Field              | Chicago         | Chicago Bears         | n                        | o                  |
| State Farm Stadium         | Glendale        | Arizona Cardinals     | n                        | r                  |
| TIAA Bank Field            | Jacksonville    | Jacksonville Jaguars  | n                        | o                  |
| U.S. Bank Stadium          | Minneapolis     | Minnesota Vikings     | s                        | c                  |

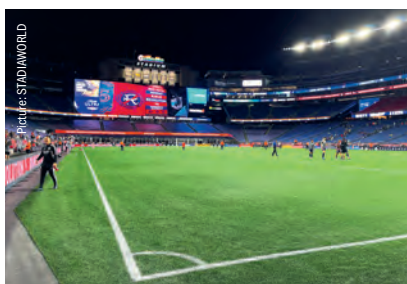
1) n=natural turf (hybrid systems are classified as natural); s=synthetic turf; 2) \*o = open; r = retractable; c = closed

Highlighted stadiums are NFL- and MLS-venues.

Status: 7/2023

Source: Venues, clubs

The players' union is calling for the elimination of artificial turf fields at a total of six NFL stadiums, citing statistically higher rates of non-opponent lower extremity injuries: Caesars Su-



Football and soccer on synthetic turf: Gillette Stadium

perdome (New Orleans Saints), Ford Field (Detroit Lions), Lucas Oil Stadium (Indianapolis Colts), MetLife Stadium (New York Giants and New York Jets), Paycor Stadium (Cincinnati Bengals) U.S. Bank Stadium (Minnesota Vikings). In addition to the six venues mentioned, another eight stadiums have artificial turf. Fifteen clubs, on the other hand, rely on natural grass.

Meanwhile, the debate about artificial and natural turf is also ongoing in the Major League Soccer (MLS) and Major League Baseball (MLB). The soccer teams, that do not have their own →



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stadiums but rent NFL venues, have little choice. However, there is critical discussion about how the US league can achieve its ambitious goal of establishing itself among the world's leading leagues under these circumstances. There is no artificial turf in the English professional leagues, and it is a rarity throughout Europe at a high competitive level. Stars from Europe who were under contract to MLS clubs also expressed their reservations, in some cases very clearly.



Tennessee Titans: not happy with their grass.

Of course, there are synthetic surfaces of different quality. But how can one and the same surface be optimally suited for the highest professional demands of different sports? And at the same time specifically reduce the risk of injury? This question has not been definitively answered, but on the other hand, it is said that there is still a lack of meaningful studies that precisely examine the risk of injury and the corresponding prevention.

However, stadiums have been built that make it possible to quickly change pitches. And if multifunctional mega-stadiums are already being built for billions of euros, in which the state of the art is realised in every respect, couldn't a device be built in so that an artificial turf field can be ready at any time to temporarily replace the natural grass? Tottenham Hotspur has shown the way with its artificial turf drawer, and there are other technologies on offer. ◆

#### Major League Soccer (MLS): Venues & grass types

| Venue                      | City            | Team(s)                 | Grass type <sup>1)</sup> | Roof <sup>2)</sup> |
|----------------------------|-----------------|-------------------------|--------------------------|--------------------|
| Allianz Field              | Saint Paul      | Minnesota United FC     | n                        | o                  |
| America First Field        | Sandy           | Real Salt Lake          | n                        | o                  |
| Audi Field                 | Washington D.C. | D.C. United             | n                        | o                  |
| Bank of America Stadium    | Charlotte       | Charlotte FC            | s                        | o                  |
| BC Place Stadium           | Vancouver       | Vancouver Whitecaps FC  | s                        | r                  |
| BMO Field                  | Toronto         | Toronto FC              | n                        | o                  |
| BMO Stadium                | Los Angeles     | Los Angeles FC          | n                        | o                  |
| Children's Mercy Park      | Kansas City     | Sporting Kansas City    | n                        | o                  |
| Citypark                   | St. Louis       | St. Louis City FC       | n                        | o                  |
| Dick's Sporting Goods Park | Colorado        | Colorado Rapids         | n                        | o                  |
| Dignity Health Sports Park | Carson          | LA Galaxy               | n                        | o                  |
| DRV PMK Stadium            | Fort Lauderdale | Inter Miami CF          | n                        | o                  |
| Exploria Stadium           | Orlando         | Orlando City FC         | n                        | o                  |
| Gillette Stadium           | Foxborough      | News England Revolution | s                        | o                  |
| Geodis Park                | Nashville       | Nashville SC            | n                        | o                  |
| Lower.com Field            | Columbus        | Columbus Crew           | n                        | o                  |
| Lumen Field                | Seattle         | Seattle Sounders FC     | s                        | o                  |
| Mercedes-Benz Stadium      | Atlanta         | Atlanta United FC       | s                        | r                  |
| PayPal Park                | San José        | San Jose Earthquakes    | n                        | o                  |
| Providence Park            | Portland        | Portland Timbers        | s                        | o                  |
| Q2 Stadium                 | Austin          | Austin FC               | n                        | o                  |
| Red Bull Arena             | Harrison        | New York Red Bulls      | n                        | o                  |
| Saputo Stadium             | Montreal        | CF Montréal             | n                        | o                  |
| Shell Energy Stadium       | Houston         | Houston Dynamo FC       | n                        | o                  |
| Soldier Field              | Chicago         | Chicago Fire            | n                        | o                  |
| Subaru Park                | Chester         | Philadelphia Union      | n                        | o                  |
| Toyota Stadium             | Frisco          | FC Dallas               | n                        | o                  |
| TQL Stadium                | Cincinnati      | FC Cincinnati           | n                        | o                  |
| Yankee Stadium             | New York City   | News York City FC       | n                        | o                  |

1) n=natural turf (hybrid systems are classified as natural); s=synthetic turf; 2) \*o = open; r = retractable; c = closed

■ Highlighted stadiums are NFL- and MLS-venues.

Status: 7/2023

Source: Venues, clubs

#### Major League Baseball (MLB): Venues & grass types

| Venue                           | City             | Team(s)               | Grass type <sup>1)</sup> | Roof <sup>2)</sup> |
|---------------------------------|------------------|-----------------------|--------------------------|--------------------|
| American Family Field           | Milwaukee        | Milwaukee Brewers     | n                        | r                  |
| Angel Stadium of Anaheim        | Anaheim          | Los Angeles Angels    | n                        | o                  |
| Busch Stadium                   | St. Louis        | St. Louis Cardinals   | n                        | o                  |
| Chase Field                     | Phoenix          | Arizona Diamondbacks  | s                        | o                  |
| Citi Field                      | New York         | New York Mets         | n                        | o                  |
| Citizens Bank Park              | Philadelphia     | Philadelphia Phillies | n                        | o                  |
| Comerica Park                   | Detroit          | Detroit Tigers        | n                        | o                  |
| Coors Field                     | Denver           | Colorado Rockies      | n                        | o                  |
| Dodger Stadium                  | Los Angeles      | Los Angeles Dodgers   | n                        | o                  |
| Fenway Park                     | Boston           | Boston Red Sox        | n                        | o                  |
| Globe Life Field                | Arlington        | Texas Rangers         | s                        | r                  |
| Great American Ballpark         | Cincinnati       | Cincinnati Reds       | n                        | o                  |
| Guaranteed Rate Field           | Chicago          | Chicago White Sox     | n                        | o                  |
| Kauffman Stadium                | Kansas City      | Kansas City Royals    | n                        | o                  |
| LoanDepot Park                  | Miami            | Miami Marlins         | s                        | r                  |
| Minute Maid Park                | Houston          | Houston Astros        | n                        | r                  |
| Nationals Park                  | Washington, D.C. | Washington Nationals  | n                        | o                  |
| Oakland-Alameda County Coliseum | Oakland          | Oakland Athletics     | n                        | o                  |
| Oracle Park                     | San Francisco    | San Francisco Giants  | n                        | o                  |
| Oriole Park at Camden Yards     | Baltimore        | Baltimore Orioles     | n                        | o                  |
| Petco Park                      | San Diego        | San Diego Padres      | n                        | o                  |
| PNC Park                        | Pittsburgh       | Pittsburgh Pirates    | n                        | o                  |
| Progressive Field               | Cleveland        | Cleveland Guardians   | n                        | o                  |
| Rogers Centre                   | Toronto          | Toronto Blue Jays     | s                        | r                  |
| Target Field                    | Minneapolis      | Minnesota Twins       | n                        | o                  |
| T-Mobile Park                   | Seattle          | Seattle Mariners      | n                        | r                  |
| Tropicana Field                 | St. Petersburg   | Tampa Bay Rays        | s                        | c                  |
| Truist Park                     | Cumberland       | Atlanta Braves        | n                        | o                  |
| Wrigley Field                   | Chicago          | Chicago Cubs          | n                        | o                  |
| Yankee Stadium                  | New York         | New York Yankees      | n                        | o                  |

1) n=natural turf (hybrid systems are classified as natural); s=synthetic turf

2) \*o = open; r = retractable; c = closed

Status: 7/2023

Source: Venues, clubs

# Digital grass management: The Dutch League approach

Higher quality football pitches, better data-driven maintenance, fewer injuries, and all perfectly aligned with sustainability goals: the benefits of the Hi Pitch Screener (HiPster) are noticeable in both the short and long term.

The HiPster system has been operating on Dutch football fields for some time now. According to Hi Sports, developer of the all-in-one system, this is the moment for the German Bundesliga to join this successful approach. The HiPster analyzes, among other things, the hardness, ball bounce, ball roll, and grip of the pitches so that clubs can focus on their quality. The measurement kit measures the surface on eight quality aspects at any time of the day, after which the data is automatically loaded into a dashboard. This gives field managers the necessary insight into the quality of the field and allows them to adjust their grass management accordingly. The HiPster ensures digitization and standardization, reliability, and higher quality across the board.

## The Dutch League Approach

The goal of data-driven turf management is to raise the level of football further and make the whole league fairer. In fact, it was Fair Play and safety considerations that ensured the choice for the HiPster was not left

to individual clubs but rather to the Dutch Premier League (Eredivisie) as a whole. After all, each club has different priorities, but if there is one thing that is in the interest of all teams, it is the quality of the pitch – especially when a better pitch can safeguard the players from injuries.

*"Above all, data-driven field management has brought peace of mind within the organization. Previously, player problems related to injuries or technical performance were often blamed on the field. Now we can objectively prove that the field was of safe and uniform quality."*

### Henk Slootweg

AH Vrij, Field Manager at ADO Den Haag and Sparta

The Dutch choice has turned out to be a smart one for both the rich and the less wealthy clubs. The common interest is clear: the more clubs with good pitches, the lower the risk of an injury. That's why 'big' clubs such as Ajax, PSV, Feyenoord, and AZ were happy to support the Eredivisie initia-



Henk Slootweg (right) and Bo Videler (left) AHVrij

tive instead of taking on an individual approach. The same could apply to the top teams in the German league. All Eredivisie clubs now use HiPster equipment to analyze their main fields and to work on quality and uniformity. Thanks to the Eredivisie CV and Hi Sports collaboration, the Netherlands has successfully pioneered these data-driven management technologies for the optimal playing field. Interested parties can take a look at HiPster at the Eurogreen Roadshow at different clubs in Germany and Austria. ♦



Eurogreen partner of Hi Sports in Germany



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*Allegiant Stadium in Paradise, Nevada: Super Bowl LVIII will be played here in February 2024.*

## Major sports events in 2023 & 2024

Basketball, handball, American football – even Olympic Summer Games and the UEFA EURO 2024: Numerous sporting highlights all over the world await in the upcoming twelve months.

| Sporting events 2023 & 2024 (selection)         |                   |                                      |                                   |
|-------------------------------------------------|-------------------|--------------------------------------|-----------------------------------|
| Event                                           | Sports            | Date                                 | Location                          |
| Tour de France 2023                             | Cycling           | 01/07 until 23/07/2023               | Bilbao (Spain) & across France    |
| "Die Finals 2023"                               | Multisports       | 06/07 until 09/07/2023               | Düsseldorf & Duisburg (Germany)   |
| World Triathlon Hamburg                         | Triathlon         | 13/07 until 16/07/2023               | Hamburg (Germany)                 |
| 2023 World Aquatics Championships               | Swimming          | 14/07 until 30/07/2023 <sup>1)</sup> | Fukuoka (Japan)                   |
| FIFA Women's World Cup 2023                     | Football          | 20/07 until 20/08/2023               | Australia & New Zealand           |
| UCI Cycling World Championships                 | Cycling           | 03/08 until 13/08/2023               | Glasgow (and across Scotland)     |
| World Athletics Championships 2023              | Athletics         | 19/08 until 27/08/2023               | Budapest (Hungary)                |
| FIBA Basketball World Cup 2023                  | Basketball        | 25/08 until 10/09/2023               | Indonesia, Japan, Philippines     |
| US Open 2023                                    | Tennis            | 28/08 until 10/09/2023               | Flushing Meadows, NY (USA)        |
| Ironman World Championship                      | Triathlon         | 14/10/2023                           | Hawaii (USA)                      |
| PDC World Darts Championship                    | Darts             | 15/12/2023 until 03/01/2024          | London (England)                  |
| Four Hills Tournament                           | Ski jumping       | 28/12/2023 until 06/01/2024          | Germany & Austria                 |
| EHF EURO 2024                                   | Handball          | 10/01 until 28/01/2024               | Germany                           |
| Australian Open 2024                            | Tennis            | 15/01 until 28/01/2024               | Melbourne (Australia)             |
| Super Bowl LVIII                                | American Football | 11/02/2024                           | Paradise, Nevada (USA)            |
| World Athletics Indoor Championships Glasgow 24 | Athletics         | 01/03 until 03/03/2024               | Glasgow (Scotland)                |
| 2024 IIHF World Championship                    | Ice hockey        | 10/05 until 26/05/2024               | Prague & Ostrava (Czech Republic) |
| French Open 2024                                | Tennis            | 26/05 until 09/06/2024               | Paris (France)                    |
| TruckScout24 EHF FINAL4 2024                    | Handball          | 08/06 and 09/06/2024                 | Cologne (Germany)                 |
| UEFA EURO 2024                                  | Football          | 14/06 until 14/07/2024               | Germany                           |
| Tour de France 2024                             | Cycling           | 29/06 until 21/07/2024               | Florence (Italy) & across France  |
| Wimbledon/The Championships 2024                | Tennis            | 01/07 until 14/07/2024               | London (England)                  |
| Olympic Games "Paris 2024"                      | Multisports       | 26/07 until 11/08/2024               | Paris (France) <sup>2)</sup>      |

<sup>1)</sup> Originally scheduled to be held in 2021, postponed due to the pandemic.

<sup>2)</sup> The city of Paris is officially the organiser. However, there are also competition venues in other places.

Status: 7/2023  
Source: Organisers

# 30 grandstands for the largest inclusive sports festival

Thousands of athletes with intellectual and multiple disabilities, their support teams, and fans celebrated the world's largest inclusive sporting event. NUSSLI transformed Messe Berlin into a multi-sport facility for the tournament.

For the first time, the world's largest inclusive sporting event took place in Germany – as the biggest sporting event since the 1972 Olympic Games. From June 17 to 25, the event in Berlin united people with and without intellectual disabilities in their enthusiasm for sport and shared experiences. More than 7,000 athletes from over 190 countries competed in 26 summer Olympic sports and celebrated sporting highlights together.

## Sports venues throughout the city

Of the total of ten locations in Berlin and Brandenburg, the Olympiapark and Messe Berlin were the main venues. The sustainability, advantages of the existing infrastructure, venues, and partnerships were also arguments why Berlin won the bid for the 2023 World Games in 2018. The Berlin Exhibition Grounds hosted the competitions in the disciplines of bocce, table

tennis, badminton, powerlifting, judo, volleyball, basketball, rhythmic and artistic gymnastics.

## From exhibition center to multi-sport facility

Event contractor NUSSLI installed around 9,000 grandstand seats in the form of 30 individual grandstands, which formed the appropriate spectator infrastructure for the various sports in 11 halls at Messe Berlin. They offered between 140 and 1,450 spectator seats. Uli Born, Sales Manager of NUSSLI, says: "Our solution approach was to reduce the number of different grandstand layouts to a minimum without losing sight of the needs of the individual sports. By developing "only" seven grandstand layouts, we managed to pay tribute to tight budget constraints as well as reduce planning and logistics efforts, simplify assembly, and standardize processes."

## Media broadcasts all over the world

The competitions and highlights of the Special Olympics World Games were broadcast daily all over the world. Accordingly, the infrastructure for the approximately 1,500 media representatives on site was important. The NUSSLI project team installed six camera towers, which required a special solution due to the hall floor. This is because the hall floor rests on a steel support grid and is caused to vibrate by strong audience movements. To ensure wobble-free images, these vibrations had to be prevented from being transmitted to the camera towers, which

are up to seven meters high. For this reason, the towers were founded under the lifting floor on the concrete subsoil 45 centimeters below and precisely aligned.

## Short transport routes

It took only ten days to set up the infrastructure and six days to dismantle it. Careful coordination of the contractors involved made it possible to work in the various halls overlapping in time and to minimize waiting times. Logistics played a key role in terms of efficiency and sustainability. A large part of the 460 tons of system material was delivered by trucks from the Ludwigsfelde plant, which is only 24 kilometers away, thus ensuring a significantly lower carbon footprint for the construction site. On the extensive exhibition grounds, the material then reached the respective hall in an optimized manner – either directly from the truck or with suitable means of transport, such as heavy-duty platform trailers. Time-consuming and environmentally damaging journeys with individual pallets were thus minimized. ♦



Picture: SOWG23 / Marvin Ibo Guenger

30 grandstands provided the appropriate event setting.

**NUSSLI**

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Picture: Simon O'Connor/PDC

### PDC World Darts Championship 2023/24

"ONEHUNDREDANDEIGHTY!" – The most beloved exclamation at Alexandra Palace. Every year the darts elite compete in the north of London around the turn of the year to determine the new darts world champion.



Picture: STADIOWORLD

### Australian Open

The Australian Open is the largest regular sporting event on the Australian continent – and the first of the four Grand Slam tournaments of the year. The competition has been held in Melbourne since 1987.



Picture: Michael Clemens/Raiders

### Super Bowl LVIII

Every year anew a lot is written about the Super Bowl. On 11 February 2024, the NFL's two best teams will compete against each other at Allegiant Stadium in Nevada for the 58th edition of the mega-spectacle.



Picture: STADIOWORLD

### TruckScout24 EHF FINAL4 2024

Every year, the LANXESS arena hosts the final of the EHF Champions League – and 2024 is no exception. The TruckScout24 EHF FINAL4 promises to be a great week-end full of handball highlights next year as well. It will take place on 8 and 9 June.



Picture: image/ABC/ABC PRESS

### Tour de France 2024

In 2024, for the first time in its history, the grand finale of the Tour de France will not be celebrated in the middle of Paris. This is a concession to the Summer Olympics. Instead, the Tour will end with a single time trial from Monaco to Nice.

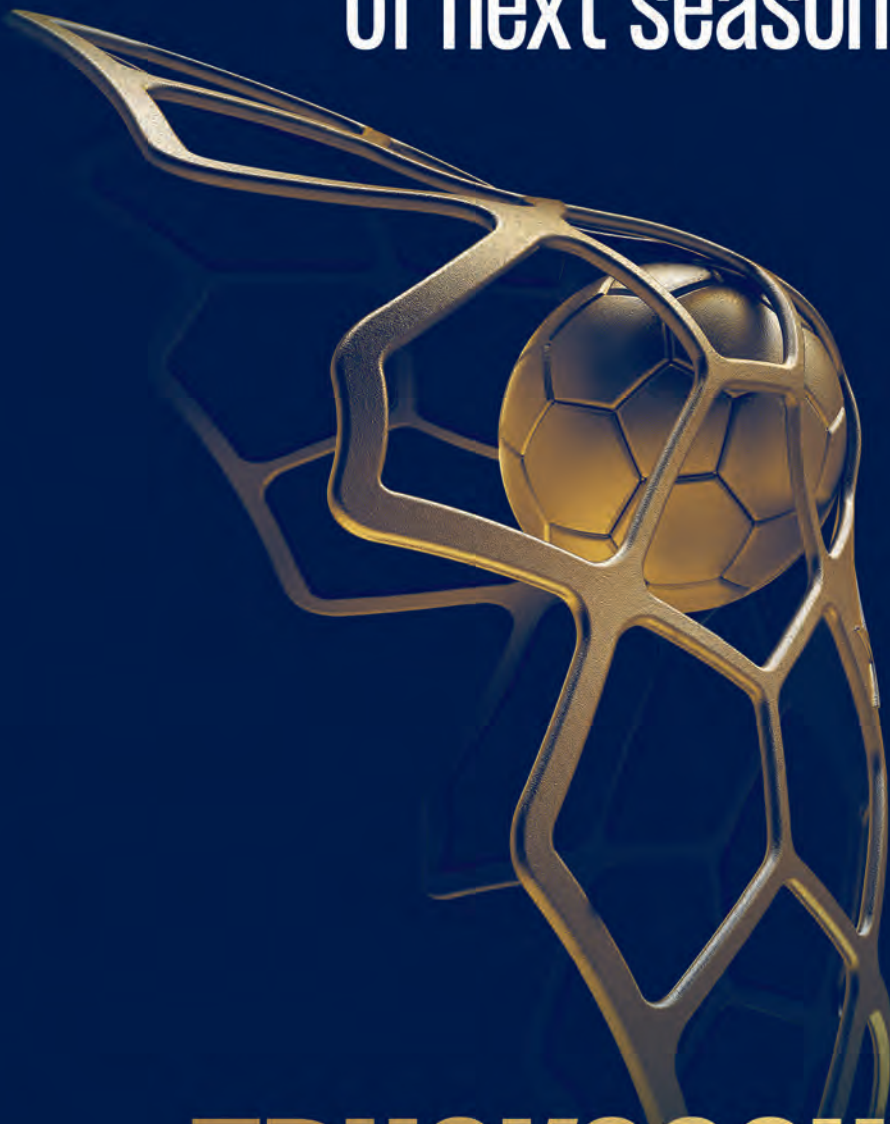


Picture: image/FP3press

### 2024 Summer Olympics

The 2024 Summer Olympics, also referred to as Paris 2024, is scheduled to take place from 26 July to 11 August 2024 with Paris as its main host city and 16 cities spread across Metropolitan France and one in Tahiti.

Are you already dreaming  
of next season?



# TRUCKSCOUT24 EHF FINAL4 2024

8/9 June LANXESS arena Cologne



Tickets are available online. Scan  
the QR Code and secure your spot  
in the LANXESS arena.

Truck  
Scout24





# Paris 2024: Venue plan as sustainability approach

Next summer, all eyes in the world of sports will turn to Paris. The French metropolis will host the Olympic and Paralympic Summer Games in 2024, focusing on sustainability by primarily utilising existing and temporary venues and minimising distances between them.

| Paris 2024: Venue plan                               |                           |                               |                     |                                                                                  |                                         |
|------------------------------------------------------|---------------------------|-------------------------------|---------------------|----------------------------------------------------------------------------------|-----------------------------------------|
| Venue <sup>1)</sup>                                  | City                      | Capacity                      | Construction status | Sports/Competition                                                               | Distance to the Olympic village (in km) |
| Stade de France                                      | Saint-Denis               | 77,083                        | existing            | Athletics, Rugby                                                                 | 2                                       |
| Stade de Marseille                                   | Marseille                 | 67,394                        | existing            | Football                                                                         | 671                                     |
| Stade de Lyon                                        | Décines                   | 59,186                        | existing            | Football                                                                         | 403                                     |
| Parc de Princes                                      | Paris                     | 47,926                        | existing            | Football                                                                         | 12                                      |
| Stade de Bordeaux                                    | Bordeaux                  | 42,000                        | existing            | Football                                                                         | 502                                     |
| Stade Geoffroy-Guichard                              | Saint-Etienne             | 41,965                        | existing            | Football                                                                         | 415                                     |
| Château de Versailles <sup>2)</sup>                  | Versailles                | 15,000 – 40,000 <sup>3)</sup> | temporary           | Equestrian, Modern pentathlon                                                    | 35                                      |
| Stade de la Beaujoire                                | Nantes                    | 37,473                        | existing            | Football                                                                         | 345                                     |
| Stade de Nice <sup>6)</sup>                          | Nizza                     | 36,178                        | existing            | Football                                                                         | 688                                     |
| Golf National                                        | Saint-Quentin-en-Yvelines | 32,72                         | existing            | Golf                                                                             | 41                                      |
| Stade Pierre Mauroy                                  | Villeneuve-d'Ascq         | 27,000                        | existing            | Basketball (preliminary round), Handball (final round)                           | 194                                     |
| Stade nautique de Vaires-sur-Marne                   | Vaires-sur-Marne          | 12,000, 24,000 <sup>7)</sup>  | existing            | Canoe slalom, Canoe sprint, Rowing                                               | 39                                      |
| Paris La Défense Arena                               | Nanterre                  | 17,000                        | existing            | Swimming, Water polo                                                             | 15                                      |
| Bercy Arena <sup>10)</sup>                           | Paris                     | 15,000                        | existing            | Artistic gymnastics, Basketball (final round), Trampoline                        | 15                                      |
| Colline d'Elancourt                                  | Saint-Quentin-en-Yvelines | 15,000                        | existing            | Mountain bike                                                                    | 41                                      |
| Stade Yves-du-Manoir                                 | Colombes                  | 15,000                        | existing            | Hockey                                                                           | 9                                       |
| Stade Roland Garros                                  | Paris                     | 14,962 <sup>4)</sup>          | existing            | Boxing, Tennis                                                                   | 12                                      |
| Stade Tour Eiffel                                    | Paris                     | 12,860                        | temporary           | Beachvolleyball                                                                  | 12                                      |
| Marina de Marseille                                  | Marseille                 | 12,262                        | existing            | Sailing                                                                          | 660                                     |
| Arena Paris Sud 1                                    | Paris                     | 12,000                        | existing            | Volleyball                                                                       | 14                                      |
| Arena Champs de Mars                                 | Paris                     | 8,356                         | temporary           | Judo, Wrestling                                                                  | 11                                      |
| Arena La Chapelle                                    | Paris                     | 8,000                         | new construction    | Badminton, Rhythmic Gymnastics                                                   | 2.5                                     |
| Grand Palais                                         | Paris                     | 8,000                         | existing            | Fencing, Taekwondo                                                               | 5                                       |
| Invalides                                            | Paris                     | 8,000                         | temporary           | Archery, Athletics (marathon), road cycling                                      | 12                                      |
| Arena Paris Sud 4                                    | Paris                     | 6,650                         | existing            | Table tennis                                                                     | 14                                      |
| Site d'escalade du Bourget                           | Le Bourget                | 6,000                         | new construction    | Sport climbing                                                                   | 7                                       |
| Arena Paris Sud 6                                    | Paris                     | 5,000                         | existing            | Weightlifting                                                                    | 14                                      |
| Centre Aquatique                                     | Saint-Denis               | 5,000                         | new construction    | Artistic swimming, Diving, Water polo                                            | 2                                       |
| Vélodrome National de Saint-Quentin-en-Yvelines      | Montigny-le Bretonneux    | 5,000                         | existing            | Cycling track                                                                    | 36                                      |
| Pont d'Iéna <sup>5)</sup>                            | Paris                     | 3,349                         | temporary           | Athletics (Marathon, 20km Race Walk), Marathon swimming, Road cycling, Triathlon | 12                                      |
| Stade BMX de Saint-Quentin-en-Yvelines <sup>6)</sup> | Montigny-le Bretonneux    | 3,000                         | existing            | BMX racing                                                                       | 37                                      |
| Tahiti Teahupo'o                                     | Teahupo'o <sup>7)</sup>   | 1,500 <sup>8)</sup>           | existing            | Surfing                                                                          | 15,721                                  |
| Pont Alexandre III                                   | Paris                     | 1,000 <sup>9)</sup>           | existing            | Marathon swimming, Road cycling, Triathlon                                       | 6                                       |
| Arena Paris Nord                                     | Villepinte                | n/a                           | existing            | Boxing, Modern pentathlon                                                        | 11                                      |
| Centre national de tir de Châteauroux                | Châteauroux               | n/a                           | existing            | Sport shooting                                                                   | 240                                     |
| Hôtel de Ville                                       | Paris                     | – <sup>10)</sup>              | existing            | Athletics (Marathon start)                                                       | 7                                       |
| Stade de la Concorde                                 | Paris                     | – <sup>11)</sup>              | temporary           | BMX freestyle, Skateboarding, Breaking, 3x3 basketball                           | 5                                       |

1) Official French names per Paris 2024. 2) Construction of a temporary event venue in the castle garden. 3) Depending on the competition. 4) The main Philippe-Chatrier Court.

5) Temporary grandstands will be built on and around the bridge. 6) Grandstands will be built around the existing BMX park. 7) Surf spot off the coast of Tahiti in French Polynesia.

8) The temporary installations will be dismantled after the competitions. 9) Capacity utilisation of the bridge designed for 1,000 people.

10) Starting point of the marathon competition; therefore no capacity indication. 11) Meeting place on Place de la Concorde with several temporary facilities; therefore no capacity indication.

Status: 7/2023  
Source: Paris 2024





# UEFA EURO 2024: The venues

The European Football Championship 2024 will take place from 14th June to 14th July in Germany – for the second time after 1988. STADIAWORLD shows the host cities and tournament stadiums.



## Matches in Gelsenkirchen

|        |             |
|--------|-------------|
| 16/06: | C3 vs C4    |
| 20/06: | B1 vs B3    |
| 26/06: | F2 vs F3    |
| 30/06: | Round of 16 |



## Matches in Düsseldorf

|        |               |
|--------|---------------|
| 17/06: | D3 vs D4      |
| 21/06: | E2 vs E4      |
| 24/06: | B4 vs B1      |
| 01/07: | Round of 16   |
| 06/07: | Quarter-final |



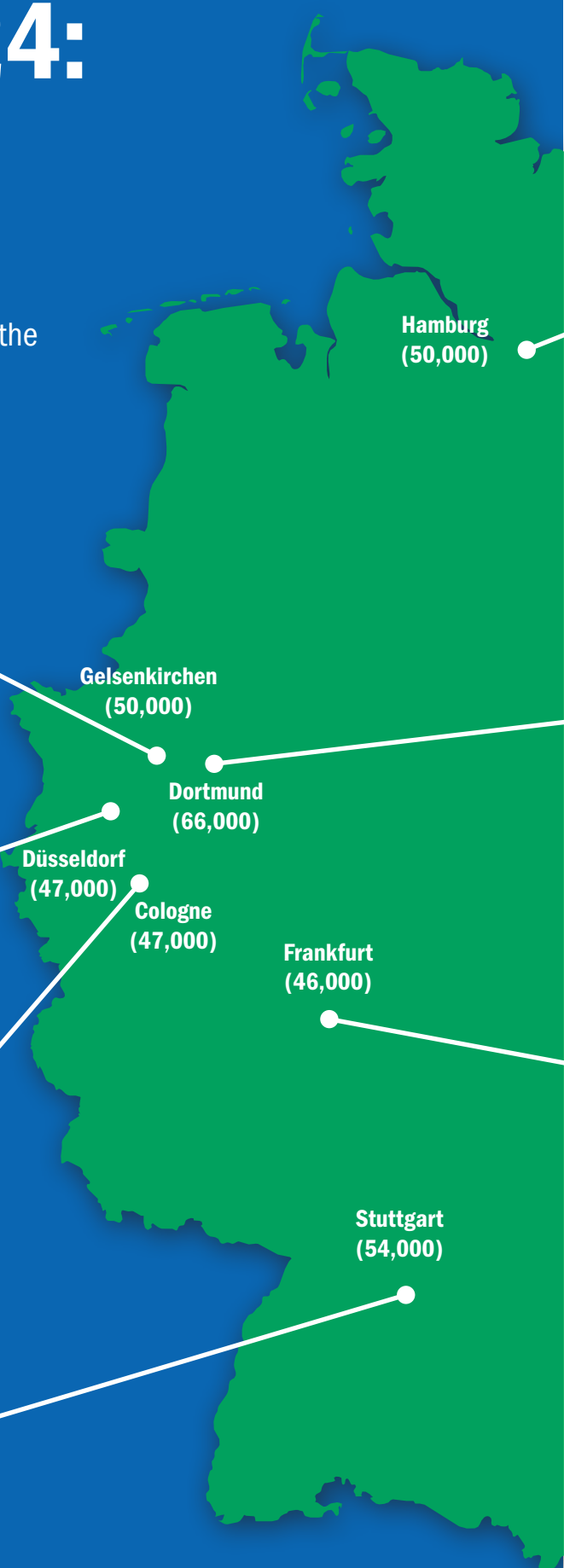
## Matches in Cologne

|        |             |
|--------|-------------|
| 15/06: | A3 vs A4    |
| 19/06: | A2 vs A4    |
| 22/06: | E1 vs E3    |
| 25/06: | C4 vs C1    |
| 30/06: | Round of 16 |



## Matches in Stuttgart

|        |               |
|--------|---------------|
| 16/06: | C1 vs C2      |
| 19/06: | A1 vs A3      |
| 23/06: | A2 vs A3      |
| 26/06: | E4 vs E1      |
| 05/07: | Quarter-final |





Berlin  
(70,000)

Leipzig  
(42,000)

Munich  
(67,000)



#### Matches in Hamburg

|        |               |
|--------|---------------|
| 16/06: | D1 vs D2      |
| 19/06: | B2 vs B4      |
| 22/06: | F2 vs F4      |
| 26/06: | F4 vs F1      |
| 05/07: | Quarter-final |



#### Matches in Berlin

|        |                    |
|--------|--------------------|
| 15/06: | B1 vs B2           |
| 21/06: | D1 vs D3           |
| 25/06: | D2 vs D3           |
| 29/06: | Round of 16        |
| 06/07: | Quarter-final      |
| 14/07: | Final (21:00 CEST) |



#### Matches in Dortmund

|        |                         |
|--------|-------------------------|
| 15/06: | B3 vs B4                |
| 18/06: | F1 vs F2                |
| 22/06: | F1 vs F3                |
| 25/06: | D4 vs D1                |
| 29/06: | Round of 16             |
| 10/07: | Semi-final (21:00 CEST) |



#### Matches in Leipzig

|        |             |
|--------|-------------|
| 18/06: | F3 vs F4    |
| 21/06: | D2 vs D4    |
| 24/06: | B2 vs B3    |
| 02/07: | Round of 16 |



#### Matches in Frankfurt

|        |             |
|--------|-------------|
| 17/06: | E1 vs E2    |
| 20/06: | C2 vs C4    |
| 23/06: | A4 vs A1    |
| 26/06: | E2 vs E3    |
| 01/07: | Round of 16 |



#### Matches in Munich

|        |                         |
|--------|-------------------------|
| 14/06: | A1 vs A2 (21:00 CEST)   |
| 17/06: | E3 vs E4                |
| 20/06: | C1 vs C3                |
| 25/06: | C2 vs C3                |
| 02/07: | Round of 16             |
| 09/07: | Semi-final (21:00 CEST) |



# “The chance to experience something truly unique”

In an interview with STADIAWORLD, Nick Addecott, Director Sports & Entertainment at The Maverick Group, explains the concept of the Stadium Golf Tour and the approach of implementing it in the UK.



Nick Addecott

Picture: Maverick Sports & Entertainment

**STADIAWORLD:** The Stadium Golf Tour is a fairly new event, invented during Covid-lockdown, and now in Europe for the first time. Would you explain the concept to our readers?

**Addecott:** It was an idea born during the Covid pandemic that came to fruition in 2021 – the brain-child of President Michael Wiggins, who has vast experience in working in American sports. Having been the Senior Director of Stadium Operations at the NFL’s Miami Dolphins and a consultant at the MLB’s San Diego Padres, Wiggins wanted to create special one-off events in stadiums to allow fans to discover sports grounds as they have never seen them before.

Stadium Golf Tour is a ground-breaking initiative that transforms iconic sporting stadiums into unique golfing experiences, we allow golf enthusiasts and newcomers alike to step onto the hallowed grounds and play nine holes of golf like never before. For the first time in England, beloved stadiums bid farewell to their traditional sports and welcome the game of golf. The famous pitches will be converted into 9-hole golf courses, challenging participants to showcase their skills from nine tee boxes positioned strategically around the stadium.

In addition to the unforgettable 9-hole golf course, Stadium Golf Tour offers attendees access to “The Clubhouse”, a vibrant hub where participants can immerse themselves in the world of golf. The Clubhouse boasts an array of activities, including golf simulators, a putting and chipping challenge, a hitting platform, and exclusive stadium tours. Participants will have the chance



Golf in the stadium: an idea that came about during the pandemic.

to explore notable areas of these sporting arenas.

**STADIAWORLD:** What is the role of Maverick Sport & Entertainment? What are your tasks and responsibilities?

**Addecott:** We are Stadium Golf Tour’s official marketing partner, and our roles are plentiful. We work closely with SGT to identify, source and contract with suitable venues and we then manage everything from event promotion (including advertising, partnerships and paid social), ticket sales, event production and design. We are also responsible for bringing in partners and sponsors to the event. To date we have introduced England Golf, Ellesse, Wilson, Range Servant and Stratstone BYD. We also work closely with golf influencers and arranged for Tubes and Ange Golf Life to come and film a challenge at Twickenham.

**STADIAWORLD:** The first event in the UK is now behind you. How was

the initial feedback? How many participants did you have per event?

**Addecott:** Initial feedback has been unreal, people have been really taken with the concept and everyone who attended Twickenham loved their day out. Stadium MK is our second event and we have more planned for this year, including London Stadium in October. We had roughly 1300 golfers take part at Twickenham and are looking forward to welcoming more to Stadium MK in July.

**STADIAWORLD:** What criteria are used to select the locations?

**Addecott:** Firstly, we want a venue that buys into the concept and is as excited as we are about Stadium Golf Tour, which nearly all venues we have spoken to are. We then need to look at the size of the venue and ensure that it will be able to fit the nine teeing areas and has suitable indoor space to house the Clubhouse. The final element is trying to find a venue that has availability for pitch use at the times we want

to host events, this is often the hardest part. To be fair, there aren't many venues that we can't work with, and we are even looking at racecourses and cricket grounds at the moment.

**STADIAWORLD:** How difficult was the selection? Were there stadia that actively approached you?

**Addecott:** The selection process has been fun and not hard at all, once we are all on the same page and aligned, it becomes a pretty straightforward process. We have a lot of venues that we couldn't fit in this year, that we have scheduled to visit with the tour next year.

As soon as we announced Twickenham our phone was ringing off the hook and we had a lot of venues reaching out wanting to find out more and to see if we could host an event with them. The interest has been really strong.

**STADIAWORLD:** Could you give us a rough estimate of the costs, expenses of realizing an event like this?

**Addecott:** I can't divulge actual numbers; however, we do work well with the venues to ensure it is a great revenue earner for them. This is from a combination of rental fees and F&B. The key thing for us is to ensure we create a true partnership with the venues we work with, as we are all in it together and we want everyone involved to benefit.

**STADIAWORLD:** How do you measure the success of the event?

**Addecott:** Smiles on faces ... and venues asking us to lock in dates for the next year straight after their event are great indicators that we are doing something right. It's a business at the end of the day so it will be measured financially but as we are in the infancy right now, it's more about creating a really compelling and impactful series of events, educating our customer base to what Stadium Golf Tour is, and ensuring we have a full calendar of events in 2024.

**STADIAWORLD:** Are there any differences in your approach compared to the events in the US? If so, what are the biggest differences and how do you address these?

**Addecott:** We do see some anomalies between the UK and the USA, but the fundamentals are very much the same. There are only small tweaks we have made in the UK, and these are things we are learning as we go along and do more events on both sides of the pond.

**STADIAWORLD:** Currently, the Stadium Golf Tour is about fun and easy access for all levels of golfer skills. Could you imagine adapting the concept to a professional level?



*The idea is well received.*

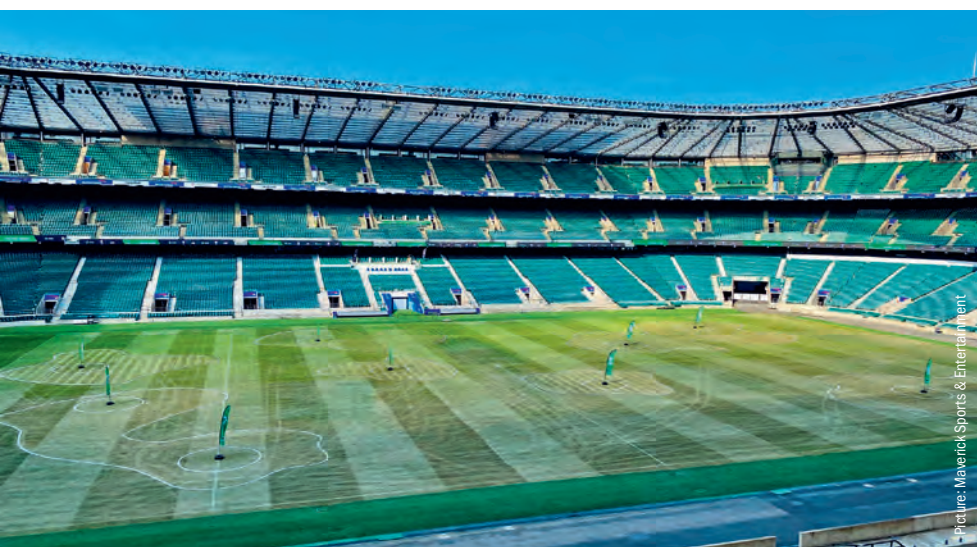
**Addecott:** I think it could work well for the Pros. It's a great way to practice and hone your short iron skills and I see that Tiger and Rory will be launching a Monday night stadium event series next year aimed at the PGA Tour Pro's, conducting a number of challenges – long drive, short irons etc. – so it looks like they think it's a great idea, too. And you can't get a much stronger endorsement than that.

**STADIAWORLD:** Amateur golfers also have Top Golf as a valid alternative. Would you say Top Golf is your biggest competitor and how do you set yourself apart?

**Addecott:** I think we are different enough; Top Golf is about range time and hitting a lot of balls and we are more about combining people's passion for golf and their passion for their team and stadium. We create something special and give our customers the chance to experience something truly unique. I mean, how many people can say they've hit a golf shot from the royal box at Twickenham Stadium?

**STADIAWORLD:** Last but not least: Any "dream" location you wish to bring the Stadium Golf Tour to?

**Addecott:** Great question! (laughs) All our venues are my dream venue! But as a Welsh Rugby fan I would say the Principality Stadium in Cardiff, or the Camp Nou or the Bernabéu ... literally too many to choose from. ♦



*Golf in a special setting and atmosphere*





Picture: Imagy/USA TODAY Network

NFL at Tottenham Hotspur Stadium: The New York Giants won against the Green Bay Packers on 9 October 2022 in London.

## Sport abroad: The internationalisation of the US leagues

Frankfurt, Paris, London, Melbourne or Abu Dhabi – the four major US sports leagues are on big trips again in the upcoming season. What are the leagues' concrete plans? Which teams will play their games abroad and where?

Last November, the game between the Tampa Bay Buccaneers and the Seattle Seahawks at the Allianz Arena in Munich released a lot of hype. It was the first time that the North American National Football League (NFL) had played a regular season game on German soil. The rush for tickets was so great that the league said it could have sold around 3 million tickets. The match at the Allianz Arena also set various NFL records for international games in terms of merchandising sales or TV coverage. In the four major leagues of US sport, it is almost a daily occurrence that official pre-season and regular season games are played outside the USA. The beginnings of the International Games or International Series – each league calls its games abroad differently – lie far in the past. The National Hockey

League (NHL) started its first international series 85 years ago. As part of the 1938 Detroit Red Wings-Montréal Canadiens European tour, the two teams from Detroit (Michigan) and Montréal (Québec) faced each other in a total of nine games for so-called exhibition games – i.e. games away from league play – in England and France. From then on, the NHL organised numerous international games under various titles, such as the DN Cup, the Friendship Tour, the NHL Challenge or currently the NHL Global Series. The first regular season game to be played outside the USA took place in Tokyo on 3 October 1997. The National Basketball Association (NBA) also played its first international regular season game in Tokyo; on 2 November 1990, the Phoenix Suns won against the Utah Jazz. Twelve

years earlier, however, the NBA had already started a series in which NBA teams played against other international teams. In the first game, the Washington Bullets lost to Maccabi Elite Tel Aviv – in Tel Aviv.

### Break due to the pandemic

Major League Baseball (MLB) started a little later with its internationalization strategy. The first time there was a game far away from the United States was in Monterrey (Mexico) in 1996. Subsequently, there were sporadic games in Tokyo, Sydney, Monterrey and in 2019 for the first time in Europe (London). The NFL also started its international encounters in Mexico. In 2005, under the name Fútbol Americano, the San Francisco 49ers met the Arizona Cardinals in the Azteca Stadium in Mexico

| US leagues: International games 2023/24 |             |             |                           |                                           |                    |                |
|-----------------------------------------|-------------|-------------|---------------------------|-------------------------------------------|--------------------|----------------|
| League                                  | Country     | City        | Venue                     | Match                                     | Date               | Type of game   |
| MLB                                     | Mexico      | Mexico City | Estadio Alfredo Harp Helú | San Diego Padres – San Francisco Giants   | 29/04/2023         | Regular season |
| MLB                                     | Mexico      | Mexico City | Estadio Alfredo Harp Helú | San Diego Padres – San Francisco Giants   | 30/04/2023         | Regular season |
| MLB                                     | England     | London      | London Stadium            | St. Louis Cardinals – Chicago Cubs        | 24/06/2023         | Regular season |
| MLB                                     | England     | London      | London Stadium            | St. Louis Cardinals – Chicago Cubs        | 25/06/2023         | Regular season |
| NHL                                     | Australien  | Melbourne   | Rod Laver Arena           | Arizona Coyotes – Los Angeles Kings       | 23/09/2023         | Pre-season     |
| NHL                                     | Australien  | Melbourne   | Rod Laver Arena           | Arizona Coyotes – Los Angeles Kings       | 24/09/2023         | Pre-season     |
| NFL                                     | England     | London      | Wembley Stadium           | Jacksonville Jaguars – Atlanta Falcons    | 01/10/2023         | Regular season |
| NBA                                     | UAE         | Abu Dhabi   | Etihad Arena              | Minnesota Timberwolves – Dallas Mavericks | 05/10/2023         | Pre-season     |
| NBA                                     | UAE         | Abu Dhabi   | Etihad Arena              | Minnesota Timberwolves – Dallas Mavericks | 07/10/2023         | Pre-season     |
| NFL                                     | England     | London      | Tottenham Hotspur Stadium | Buffalo Bills – Jacksonville Jaguars      | 08/10/2023         | Regular season |
| NFL                                     | England     | London      | Tottenham Hotspur Stadium | Tennessee Titans – Baltimore Ravens       | 15/10/2023         | Regular season |
| NFL                                     | Germany     | Frankfurt   | Deutsche Bank Park        | Kansas City Chiefs – Miami Dolphins       | 05/11/2023         | Regular season |
| NFL                                     | Germany     | Frankfurt   | Deutsche Bank Park        | New England Patriots – Indianapolis Colts | 12/11/2023         | Regular season |
| NHL                                     | Sweden      | Stockholm   | Avicii Arena              | Detroit Red Wings – Ottawa Senators       | 16/11/2023         | Regular season |
| NHL                                     | Sweden      | Stockholm   | Avicii Arena              | Toronto Maple Leafs – Detroit Red Wings   | 17/11/2023         | Regular season |
| NHL                                     | Sweden      | Stockholm   | Avicii Arena              | Minnesota Wild – Ottawa Senators          | 18/11/2023         | Regular season |
| NHL                                     | Sweden      | Stockholm   | Avicii Arena              | Toronto Maple Leafs – Minnesota Wild      | 19/11/2023         | Regular season |
| NBA                                     | Mexico      | Mexico City | tba                       | tba                                       | 2023 <sup>1)</sup> | Regular season |
| NBA                                     | France      | Paris       | Accor Arena               | Cleveland Cavaliers – Brooklyn Nets       | 11/01/2024         | Regular season |
| MLB                                     | South Korea | Seoul       | tba                       | Los Angeles Dodgers – San Diego Padres    | 20/03/2024         | Regular season |
| MLB                                     | South Korea | Seoul       | tba                       | San Diego Padres – Los Angeles Dodgers    | 21/03/2024         | Regular season |

1) Date not yet confirmed.

Status: 7/2023 Source: Leagues

City. Two years later, the NFL played a game in London for the first time – the beginning of a functioning cooperation. With the exception of a Covid break in 2020, NFL games have taken place in London every year since then. Logically, the pandemic interrupted the international matches in all four leagues. Lockdowns, spectator restrictions and travel restrictions made it impossible to play outside the USA. The NFL was the first of the leagues to venture across the pond again. In 2021, it continued the “NFL London Games” – as they have officially been called since 2017. The two indoor leagues NBA and NHL waited a year longer. Another year later – in 2023 – the MLB went on the road again.

### American Football in London and Frankfurt

With regard to the upcoming or, in the case of the MLB, already ongoing season, numerous trips are or were again on the agenda for various teams. The NFL will come to Europe for five games this autumn. The first game will be

played by the Jacksonville Jaguars and Atlanta Falcons at London’s Wembley Stadium on 1 October, followed by two games at Tottenham Hotspur Stadium on 8 and 15 October. One month later, the NFL will make another stop in Germany. On 5 and 12 November, two regular season games will take place in Frankfurt’s Deutsche Bank Park. Normally, the league’s Germany contract provides for one game per season on German soil until 2025. Due to the fact that the Azteca Stadium in Mexico City is being rebuilt for the FIFA World Cup 2026, no Mexico Game can take place this season – which is why the league has moved the game to Germany. The success of the very first regular season game in Germany was certainly a major factor in this decision.

While the NFL has to take a break this year with the Mexico Game, the MLB has already had its Mexico appearance. At the end of April, games took place in the Estadio Alfredo Harp Helú. Two months later, the MLB squad of the St. Louis Cardinals and San Francisco Giants made their way to London to play two games at London Stadium.

### Ice hockey in Australia

The NBA will also be heading to Mexico and Europe in the coming season. A regular season game is planned in Paris and Mexico City. In both cases, neither the teams nor the venue or date are known. Already at the beginning of the year – but in the past season – the league played a Paris Game at the Accor Arena in Paris. Before the season gets underway, however, the official preseason is on the agenda. As part of the preseason, the Minnesota Timberwolves and Dallas Mavericks will travel to the Middle East and play each other twice at the Etihad Arena.

The NHL is also already on the road during their preseason. Both the Arizona Coyotes and the Los Angeles Kings are heading “Down Under” for two matches in September. Both matches will be played in the Rod Laver Arena – the main stadium of the Australian Open tennis tournament. In the regular season, four teams will travel to Sweden to play a total of four matches – each team will play twice – in Stockholm’s Avicii Dome. →





## MLB – The journeys of the teams



## NBA – The journeys of the teams



1) Teams not known yet.



## NFL – The journeys of the teams



## NHL – The journeys of the teams





# Builders, planners and suppliers

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Uniguest is one of the world's top five providers of digital signage technology and has been deployed worldwide in over 250 venues integrating with key third party technologies to help clients deliver a connected venue that engages audiences, drives revenue, and requires low maintenance.

Bedford House, 21A John Street  
UK – WC1N 2BF London  
Phone: +44 203 807 5489  
Email: hello@uniguest.com  
Web: www.uniguest.com

## Digital Signage/ IPTV



VITEC, leader in IPTV & video streaming solutions combines expertise in video compression codecs, ultra-low latency processing and comprehensive software for securing, managing, playing back and archiving. VITEC's solutions empower sports teams to deliver broadcast-quality video anywhere, anytime.

Lise-Meitner-Str. 15  
GER – 24223 Schwentinental  
Phone: +49 4307 835899  
Email: soeren.koshyk@vitec.com  
Web: www.vitec.com

## Displays



For more than 50 years, the company Bodet Sport develops solutions for sports displays and LED video displays. In regular checks and tests constant attention is taken on the quality of the products. This way Bodet can offer its customers the best possible solutions.

1 rue du Général de Gaulle CS 40002  
FR – 49340 Trémontaines  
Phone: +33 241 717233  
Email: export@bodet-timesport.com  
Web: www.bodet-sport.com/de

## Floodlight



For over 35 years, Musco Lighting specializes in the design, supply and installation of lighting systems for sports and for large areas. Musco is a pioneer in the field of energy efficiency and cost-glare and stray light control.

Siegfriedstr. 34c  
GER – 61389 Schmitten  
Phone: +49 6082 9288261  
Email: hauke.petersen@musco.com  
Web: www.musco.com/de

## Grandstands



NUSSLI is a global leader in the provision of temporary structures for sporting, cultural and business events. Our product range includes grandstands, stages, event structures and event halls, which are offered to our customer as individually tailored solutions.

Rothgrund 6  
GER – 91154 Roth (Nuremberg)  
Phone: +49 9171 97630  
Email: roth@nussli.com  
Web: www.nussli.com

## Irrigation



The PERROT-Regnerbau Calw GmbH from Althengstett in Baden-Württemberg provides systems for lawn irrigation, among others for football, hockey and tennis courts, but also for golf and equestrian facilities. The products are specifically tailored to the particular sport.

Industriestraße 19 – 29  
GER – 75382 Althengstett  
Phone: +49 7051 1620  
Email: perrot@perrot.de  
Web: www.perrot.de

## Irrigation / Machinery



With state-of-the-art technologies, Toro enables green-keepers in all leagues to keep their playing fields in top shape through resource-saving and efficient irrigation. The manufacturer offers innovative products and uncomplicated service, from tendering to planning to installation.

Industriestr. 19-29  
GER - 75382 Althengstett  
Phone: 00800 836083-60  
Email: info.de@toro.com  
Web: www.toro.com/de-de/irrigation

## IT/communication



Riedel Communications provides communication solutions in industry, event and broadcast areas. Its portfolio includes analog and digital radio as well as wireless and wired intercom technology. Systems for access control and CCTV solutions complete the product range.

Uellendahler Straße 353  
GER - 42109 Wuppertal  
Phone: +49 202 29290  
Email: rental@riedel.net  
Web: www.riedel.net

## Machinery



Since 1975, SMG Sportplatzmaschinenbau GmbH trades in the development of modern machinery for the installation of artificial surfaces in the sports sector. Since the 80s SMG also has introduced products for the maintenance of artificial turf or carpeting with granule infilling.

Robert-Bosch-Str. 3  
GER - 89269 Vöhringen  
Phone: +49 7306 96650  
Email: info@smg-machines.com  
Web: www.smg-machines.com

## Seats



DAPLAST is one of the leading stadium seats manufacturers in Europe. The company started manufacturing seating in Spain in 1979 and since then, it has specialized in turn-key projects, working with customers from the design to the installation phase.

Ctra. Palma del Rio, km.9  
ES - 14005 Cordoba  
Phone: +34 957 329448  
Email: daplast@daplast.com  
Web: daplast.com/de/

## Sound



Adamson is Canada's most recognized exporter of loudspeaker technology for the pro-audio sector. For more than 30 years Adamson loudspeakers have been a main stay in global tours and festivals, as well as installed in some of the most prestigious venues around the world.

Scugog Line 6  
CAN - 1401 Port Perry, Ontario  
Phone: +1 905 9820520  
Email: info@adamsonsystems.com  
Web: www.adamsonsystems.com

## Sound



CODA Audio is a developer, manufacturer and supplier of sound reinforcement technology for mobile applications and fixed installations. The portfolio includes loudspeakers, electronics and software. This holistic system solution offers an optimal workflow, highest performance and maximum reliability.

Boulevard der EU 4 - EXPO Park  
GER - 30539 Hannover  
Phone: +49 511 86654433  
Email: deutschland@codaaudio.com  
Web: www.codaaudio.com

## Sound



d&b audiotechnik operates internationally in the field of electroacoustics as a manufacturer of high quality loudspeaker systems for speech and music reproduction and sound reinforcement in public places. d&b has become recognized as one of the leading companies in this market.

Eugen-Adolf-Straße 134  
GER - 71522 Backnang  
Phone: +49 7191 96690  
Email: info@dbaudio.com  
Web: www.dbaudio.com

## Sports floors



Since 1977 CONICA develops, produces and distributes high quality sports surfaces worldwide. The portfolio contains inter alia intelligent systems solutions for tracks, sports and multifunctional halls and tennis courts. Products like artificial turf and EPDM granulate complete the range.

Industriestrasse 26  
CH - 8207 Schaffhausen  
Phone: +41 52 6443600  
Email: info@conica.com  
Web: www.conica.com

## Sports flooring indoor



The ASB GlassFloor is the most advanced sports floor system in the world. Its unique aluminum substructure, patented glass surface and precise LED marking lines present a sports floor ideal for athletes, referees and operators.

Fabrikstraße 14  
GER - 83371 Stein  
Phone: +49 8621 987410  
Email: info@asbglassfloor.com  
Web: www.asbglassfloor.com

## Sports Flooring



Pulastic Sports Flooring is a trademark of Sika Nederland B.V. The Pulastic team of Sika Netherlands Location Deventer is manufacturer (R & D included) and worldwide supplier of polyurethane indoor and outdoor floors, including service, advice and customer service.

Duurstedeweg 7  
NL - 7418 CK Deventer  
Phone: +31 570 620744  
Email: export@nl.sika.com  
Web: www.pulastic.com

## Tents / Lightweight halls



HTS TENTIQ GmbH is one of the world's leading manufacturers of self-supporting aluminium tents. The constructions are available in self-supporting widths from 3 m to 60 m. All constructions are based on a modular system that ensures exchange and expansion.

Hinter der Schlagmühle 1  
GER - 63699 Kefenrod  
Phone: +49 6049 95100  
Email: verkauf@hts-tentiq.com  
Web: www.hts-tentiq.com

## Temporary space



Neptunus GmbH of Düsseldorf is an internationally recognized specialist in tent rental and temporary space solutions in the high price segment of the market. The company provides a variety of projects and is responsible for design, production, logistics and maintenance.

Georg-Glock-Straße 8  
GER - 40474 Düsseldorf  
Phone: +49 3222 1090176  
Email: sales.de@neptunus.eu  
Web: www.neptunus.de



# Builders, planners and suppliers

## Turf Care



HI Sports is your specialist for data-based sports turf maintenance. Our dashboard-based system, adapted to your needs, supports you in monitoring the condition of your turf and helps to optimise the maintenance of the pitch in terms of quality, costs and game performance.

High Tech Campus 29  
NL - 5656 AE Eindhoven  
Phone: +31 6 20619096  
Email: hans.meeske@holland-innovative.nl  
Web: www.hi-sports.nl

## Turf care



Rhenac Sports LED develops solutions and concepts of innovative pitch LED lighting technology systems for contactless cultivation of grass and hybrid lawns. The systems CLS (Complete Light Spectrum technology), the automated monitoring and defining of growing needs, provides the best possible care.

Reisertstraße 1-3  
GER - 53773 Hennef  
Phone: +49 2242 906110  
Email: info@rhenac.de  
Web: www.rhenacsportsled.com

## Ticketing



SecuTix SA, a subsidiary of ELCA group, is a Swiss company with an international focus which is offering software solutions for events, event and leisure professionals: Ticketing management, customer relationship management (CRM), decision analysis (BI) and access control.

Steinstrasse 21  
CH - 8003 Zürich  
Phone: +41 44 4563727  
Email: info@elca.ch  
Web: www.secutix.com

## Videowall



The Daktronics portfolio comprises of video displays, sport ad systems, ad displays and electronic traffic guidance systems with LED technology as well as comprehensive control systems which enable help realize visions.

Klingholzstraße 7  
GER - 65189 Wiesbaden  
Phone: +49 611 71186100  
Email: info@daktronics.de  
Web: www.daktronics.de

## Video surveillance



Dallmeier is one of the world leading providers of products for network-based video surveillance and develops and manufactures high quality components and complete solutions for the CCTV / IP sector: Whether it's Panomera, cameras, recorders, intelligent video analysis, software or video management.

Bahnhofstr. 16  
GER - 93047 Regensburg  
Phone: +49 941 87000  
Email: info@dallmeier.com  
Web: www.dallmeier.com

## Wi-Fi



Extreme Networks provides high-performance switching and routing products and core-to-edge networks, wired and wireless LAN access and unified network management and control. The solutions include Cloud and High Density Wi-Fi as well as network access management and security.

Solmsstraße 83  
GER - 60486 Frankfurt  
Phone: +49 69 478600  
Email: marketing.dach@extremenetworks.com  
Web: www.extremenetworks.de

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The electronic door handle for internal doors from Winkhaus fits seamlessly into the blueSmart product world and is compatible with all common internal doors made of wood, steel or PVC-U, as well as different door sash thicknesses. The ETB-IM can also be used on approved fire and smoke doors. This gives you flexible options for your building management and reliable protection against unauthorised access in sensitive areas of your buildings.



More about electronic systems  
by Winkhaus

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U-shaped handle<sup>2)</sup>



<sup>1)</sup> Also available in a plastic version

<sup>2)</sup> Suitable for use in emergency exit doors according to EN 179