

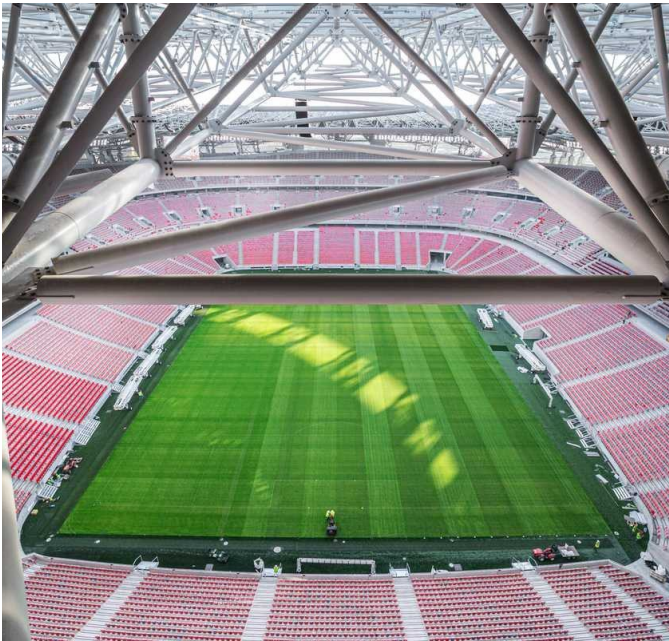


How to build an arena?

Synchronising luminaires with sport or how European stadiums are illuminated

Sports venue construction in Europe has seen significant growth over the last five years. More than 50 stadiums have been built or renovated in Europe in the last five years. The total cost of these projects exceeded €5 billion.

Funding for stadium construction is often a combination of public and private sources. More than half of the stadiums in Europe are owned by public authorities, while a tenth are owned directly by clubs and even fewer are owned by companies or club owners. (Source: [The Stadium Business](#))



Co-location criteria and trends in design and sustainability

The construction of sports venues in Europe is constantly evolving with an emphasis on sustainability and innovation. Modern stadiums not only provide excellent conditions for athletes and spectators, but also contribute to environmental protection and sustainable development.

The approval criteria for new stadiums include strict requirements for safety, evacuation and fire protection. Another key trend in stadium construction is sustainability. Modern stadiums focus on energy efficiency, the use of renewable energy sources and minimising the carbon footprint. An example is the Johan Cruyff Arena in Amsterdam, which uses solar panels and energy storage systems.

Another trend is circular design, which focuses on the reuse of existing structures and materials. This approach not only reduces costs but also minimises environmental impact.

Sports field lighting is subject to strict standards

Modern stadiums place an emphasis on quality lighting that meets UEFA's stringent lighting level requirements for different types of competitions. For example, the London Stadium recently installed a new lighting system that synchronises lights with sound for a better spectator experience.

The lighting level requirements for different types of stadium competitions are set by a standard that specifies minimum lighting values, lighting uniformity, glare limitation and colour characteristics of light sources.

To illustrate some specific requirements that ensure good visibility for athletes, referees and spectators while allowing for quality television coverage. (Source: [Světlo magazine](#))

- **International and national competitions with TV broadcasting**

Minimum light level: 2000 lux
Color Rendering Index (CRI): 65-80

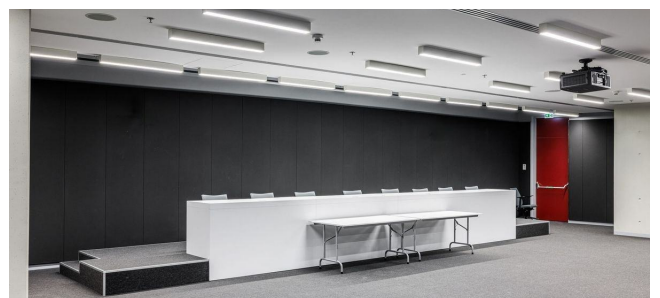
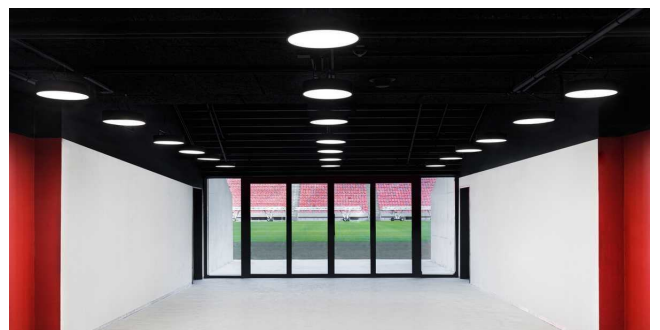
- **Regional and local competitions**

Minimum illumination level: 500-1000 lux
Color Rendering Index (CRI): 60-70

- **Training and Recreational Activities**

Minimum lighting level: 200-500 lux
Color Rendering Index (CRI): 50-60

Indoor areas of stadiums are designed to provide comfort not only for athletes but also for spectators and VIP guests. Skyboxes and VIP areas offer a luxurious experience with modern design and superior service.



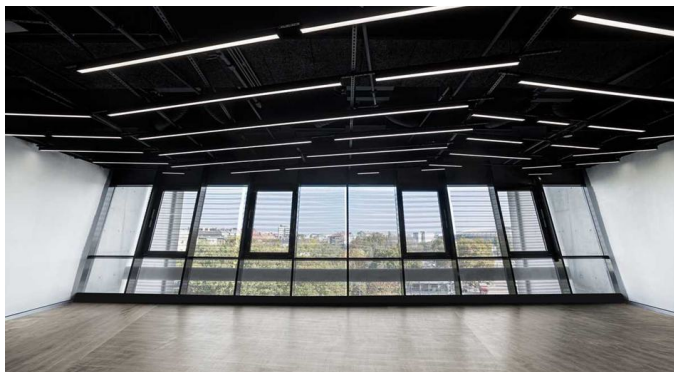
Two major sports venues have been built in Budapest in the last 5 years

In 2019 and 2023, two major sports venues were completed in Budapest - the Puskás Aréna and the National Athletics Stadium. However, few people know that both monumental buildings in Budapest were illuminated by the European lighting manufacturer [Halla](#) based in Czech republic.

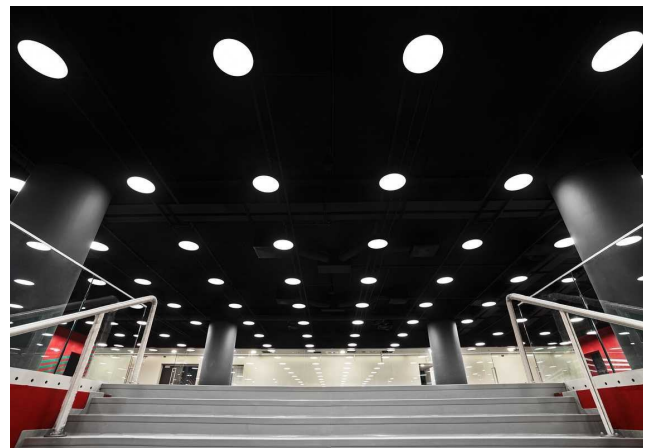
Puskás Aréna: a monumental concrete structure with fish bone motifs

The construction of the football stadium was financed by the Hungarian government and cost 610 million euros, making it one of the most expensive stadiums on the continent. With a capacity of more than 60,000 seats, the Hungarian Football Federation Stadium meets all UEFA FIFA requirements. The construction of the Puskás Aréna in Budapest is characterised by two distinctive elements - the exterior is a concrete mosaic, while the interior is characterised by lighting, including luminaires from the Czech manufacturer Halla.

Halla products were also used in other parts of the stadium to underline the dynamics of the interior. [Rundo87](#) round luminaires in a quantity of 1,800 pieces were placed in the skyboxes and lounges in the VIP area, but also in the foyer on the ground floor and in the hall from where the players enter the grass pitch.



- **Camp Nou (Barcelona)**
 Capacity 105,053 seats, opening 2023, investment of approximately €600 million
- **Santiago Bernabeu (Madrid)**
 Capacity 80,000 seats, opening 2022, investment of approximately €575 million
- **Puskás Aréna (Budapest)**
 Capacity 65,000 seats, opening 2019, investment of approx €600 million
- **Stadio Della Roma (Rome)**
 Capacity 52,594 seats, opening 2020, investment of approximately €300 million
- **National Athletics Stadium (Budapest)**
 Capacity 40,000 seats, opening 2023, investment approximately €560 million.
- **Olympic Stadium for the 2024 Olympics (Paris)**
 Capacity 80,000 seats, Total infrastructure costs for the Paris Olympics are estimated at €4.9 billion (Note: Despite significantly higher construction costs, OH2024 is expected to be significantly profitable for the host country. Source: [International Olympic Committee](#))



"Speed and ease of installation were crucial when choosing a lighting supplier. This aspect is really important in projects the size of Puskás Aréna. Halla offered good quality at a reasonable price, which was very important to us, as we used about 7 km of Lina60 linear luminaires just to create the herringbone pattern throughout the VIP floor. The easy installation of the luminaires was also a great advantage."

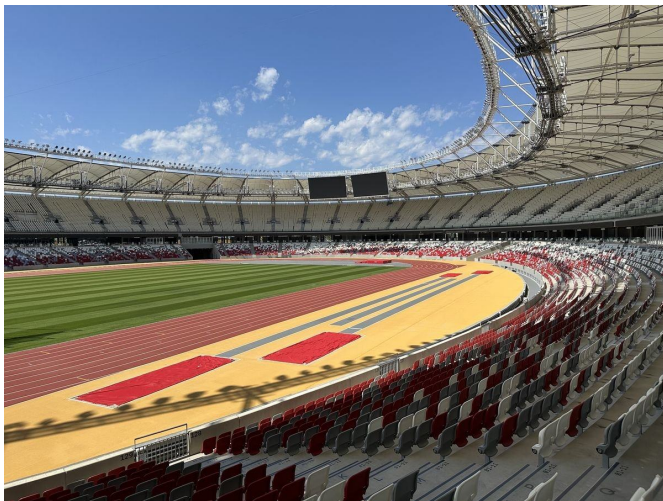


Istvan Vonnák, West Hungaria Bau

The crown of the queen of sport with overlap

The 75,000 m² National Athletics Centre, known as the "Crown of the Queen of Sport", is not only a place of sporting performance, but an embodiment of innovation and urban planning. The stand for the world's athletic elite, completed at the end of summer 2023, cost 560 million euros. Thanks to the striking interior design by NAPUR Architect Kft. (architect Marcel FERENCZ) and the spectacular steel roof structure, it is already a landmark of the city. The fully covered stadium features a roof structure that was designed for long-term use in competition, but also outside of top events. This has succeeded in creating an attractive urban space with a total area of 1,500,000 m² that honours the highest standards of Hungary and the entire EU.

During weekdays, the stadium's upper stands are transformed into a hub for sports enthusiasts, who can use the indoor and floodlit running track, roller skating track, streetworkout zone, training facilities and various refreshment areas.



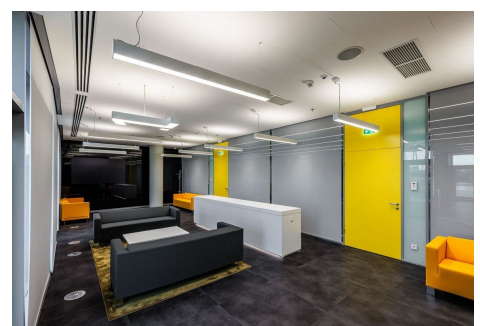
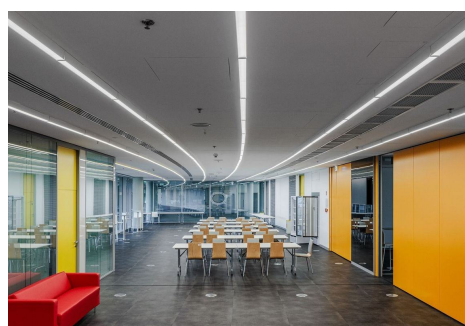
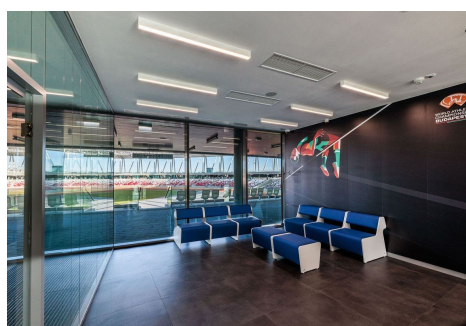
This project for Halla started in April 2019, when calculations for the Hungarian partner Rio Lampastudio began. Over the years, the specifications of the luminaires, the width of the profiles, the optical materials were then changed to achieve a satisfactory price while maintaining the necessary parameters.



"Once agreed, we were then able to deliver 2850 pieces of Lina80 and Lina60 luminaires as per our customer's request in three deliveries - first, second and third month to make everything work on site. In total, we have thus equipped the spectator facilities all over the sports stadium, including the exclusive VIP areas, with 3,300 metres of linear luminaires. Although our solution was by no means the cheapest, it succeeded mainly by meeting the strict technical requirements in the right price/quality ratio,"



Roman Šiška, Halla



What is planned and worth mentioning?

AS Rome is planning a new stadium with the largest fan stand and ambitions to become the new landmark of Rome. The project includes the construction of car parks, green areas of more than fifteen hectares, as well as cycling and walking paths. Construction could take place on an area of around twenty hectares and is expected to start in 2027. The stadium, which will have a capacity of 55,000 people with an expansion to 62,000 visitors, has a total construction cost estimated at 582 million euros, according to a feasibility study carried out in 2022.

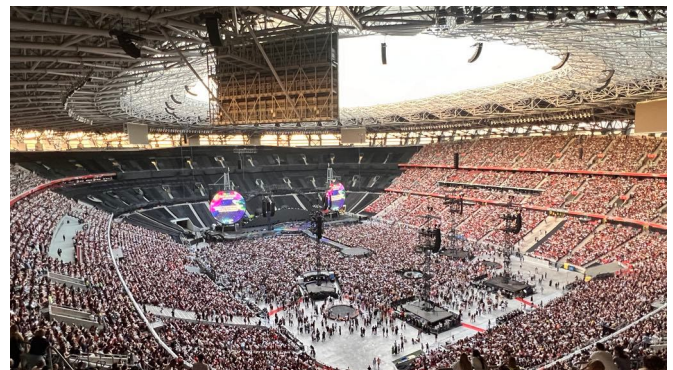
Another European project shows how difficult it is to find not only finance but also operators for ambitious buildings. The Czech city of Brno is building a new multifunctional arena with a capacity of around 13,000 visitors, which should be ready in less than three years. Its cost is estimated at 240 million euros. The project will be paid by a combination of resources from the National Sports Agency, the regional budget and, most significantly, the Brno Municipal Company Arena Brno will finance the project with a combination of money from the city's coffers.

Market oversupply is also a problem.

Brno's soaring visions can be ruined not only by high costs, but also by competition from Prague and Vienna. Although the hall will primarily be used for Kometa hockey matches, it will also be used for cultural purposes. But music bands will be able to choose whether to play in Brno or in nearby Prague and Vienna, where a similar arena is also planned. In Austria, they started planning a new arena around the same time as Brno and are experiencing similar problems. However, the start of the construction has been delayed because the Austrians have been unable to find an operator, who is also supposed to be a co-investor.



(Source: [Visualization - A PLUS a Arch.Design](#))



"It is necessary to monitor the market from the perspective of the entire European continent. There are already more arenas across Europe than the bands can play during a concert tour. This means that the arenas are competing with each other and the ones where the artists make the most money per stop are the logical winners."



Robert Schaffer, O2 arena Prague

30 years of traditional Halla quality

Halla is an established Czech manufacturer of commercial lighting systems with more than 30 years of history. Here is an insight into our world and philosophy.

Our own production in the Czech Republic

- With more than 30 years on the market, we have extensive experience in the development, production and sale of technically advanced luminaires of cutting edge design.
- We take pride in developing and manufacturing luminaires in our own production facility in Nové Město nad Metují in the Czech Republic. This allows us to maintain high quality standards as well as a high degree of customization even for the most complex projects.
- Thanks to our configurator, we have been able to reduce the time required for project designing by 90%.

Halla Configurator

www.halla.eu/konfigurator

Care and Commitment

- We form a part of buildings and our lights are responsible for the quality of life inside. Halla's Manifesto emphasizes our care for each project, providing precise and high-quality light conditions.
- At Halla, we not only supply luminaires, but also create light that pushes the boundaries of quality and care for the environment.

Innovations and Technologies

- With our complete mechanical and assembly workshop, and warehouse controlled via online mobile terminals, we are flexible and able to respond quickly to market needs.
- We have invested in a modern light laboratory, equipped with the latest technologies, including a goniophotometer and an integrating sphere. This allows us to test and guarantee a high standard of luminaires.

Experience our luminaires in virtual reality

www.halla.eu/vr

"In the world of lighting manufacturers, it's not just about luminaires, but also about creating an environment that shows we care. At Halla, we know that first-class care is not just words but the basis for building long-term partnerships. We are convinced that only through first-class partnerships can we provide our customer with first-class projects and innovative solutions."



Lukáš Krch, Halla



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