



Five stadium lighting design myths—busted!

How smart lighting design can turn a stadium into a future-ready, multi-use venue



Today's stadiums are much more than just places for playing sports—they're multipurpose entertainment hubs.

With stadiums doubling as concert arenas and esports venues, or hosting events that demand high-quality, broadcast-ready illumination, lighting designers and consultants have a lot more to consider than just switching on big lights. Yet in early project discussions, certain misconceptions about what really matters can complicate and slow down the process. So it's time to bust five common myths and illuminate the real priorities and solutions in stadium lighting design.

Myth #1: "The more light, the better the stadium."

It's true that professional stadiums require very high illuminance (often 1500–2000 lux horizontally on the pitch for top events). But once these lux levels are reached, adding more fixtures or over-specifying the brightness yields diminishing returns and can even have a negative impact.

Excess light can cause glare for players and spectators, while also wasting energy and potentially creating environmental compliance issues due to spill light and light pollution. A well-lit stadium should be understood in terms of quality of light, rather than quantity of light.

So alongside illumination, factors like uniformity, glare

control, and color quality need to be considered. Using computer simulations and professional expertise, you can calculate exactly what type of light is needed, how much, and where, in order to provide optimal lighting for players, spectators, and broadcasters.

What's more, providing too much light upfront can compromise future flexibility. If a system is already over-driven, there's little headroom to adjust or improve without major changes. Thoughtful lighting design therefore aims for just-right illumination that meets all criteria and still leaves room for future adjustments.

In short, it's a balancing act. Brighter is better only up to a point, and then it's about fine-tuning and optimizing the lighting to enhance visibility and provide the best experience, rather than just pushing numbers.

Myth #2: “Hit the horizontal lux spec and you’re done.”

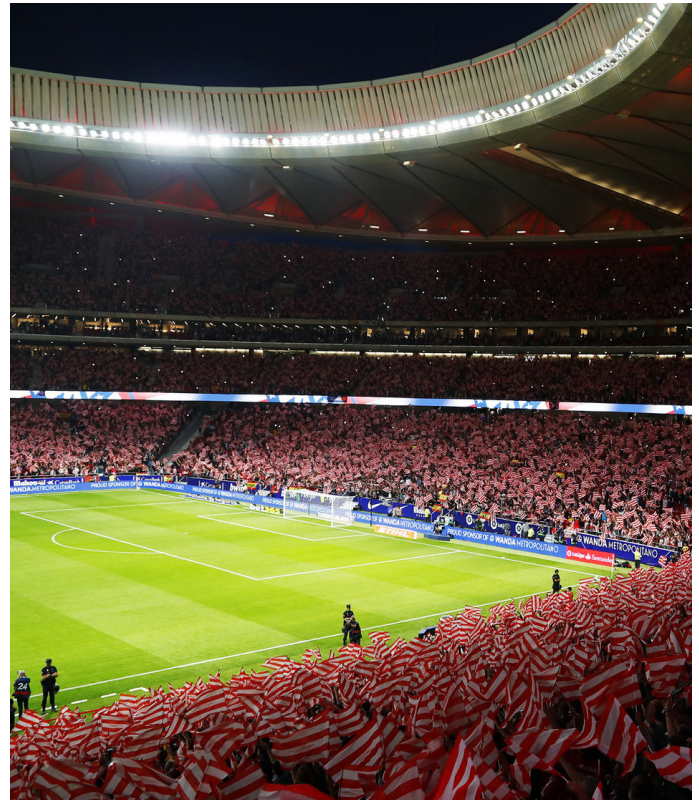
Focusing solely on the horizontal illuminance (the illuminance on the playing surface) is insufficient. Instead, a range of contemporary standards (created by FIFA, UEFA, IES, or CEN) emphasize other lighting criteria that you need to bear in mind when specifying, notably including vertical illuminance and uniformity.

Vertical illuminance (Ev) is the light that hits vertical surfaces (like a standing player or a ball mid-flight), usually measured at ~1.5 m height toward key camera positions. This is important because cameras and spectators need to see players’ faces, jerseys, and the ball clearly.

It’s also important to consider the vertical lighting on four orthogonal planes, because broadcasters today use a mixture of fixed, portable, and ariel cameras. Typically, Ev levels around 1400 lux are required as a minimum for the cameras to capture the action from all these angles.

Uniformity is a key factor too. It’s typically quantified by U1 (min/avg) or U2 (min/max) ratios, and it describes how evenly the light is spread. High uniformity (common targets are $U1 \geq 0.7$, U2 around 0.5 or better) prevents dark patches and overly bright spots.

This is not just a nice-to-have: poor uniformity can hinder players’ performance and cause broadcast cameras to struggle with exposure as they pan across the field. For instance, a camera set for a bright midfield might make a dimly lit corner look underexposed.



A design meeting 2000 lux horizontal at 0.7 uniformity and robust vertical levels will far outperform one that just achieves 2000 lux average with poor evenness. It pays off in the clarity of the game and broadcast, and it’s something experienced lighting teams devote many simulation hours to get right.

Myth #3: “Glare and shadows are inevitable at high brightness.”

Minimizing glare and shadows is crucial because they can hinder gameplay and ruin the spectator experience. And although it is indeed challenging to light a stadium without creating any glare or shadow, it’s far from impossible.

There are metrics like the Glare Rating (GR), which is a globally recognized metric developed by the

International Commission on Illumination (CIE) for outdoor lighting. Top-level sports usually aim for GR under 50 (the lower, the better) and many push for the mid 40s.

You can minimize glare by optimizing fixture placement and aiming angles. Installing lights as high as feasible (on tall masts or catwalks) and aiming them at a maximum angle of 60° prevents them from shining directly into players’ or spectators’ eyes. Roof-mounted lighting often achieves low glare ratings because the lights encircle the field at high vantage points.

Shielding (visor hoods or louver grids) can also prevent glare without reducing the amount of light that reaches the field—they simply block the direct source when viewed from the stands or pitch. This lets fans watch comfortably without squinting each time the action nears a light bank, and it lets athletes look up for a high ball without being dazzled.

Finally, careful luminaire arrangement can eliminate harsh shadows by overlapping beams from multiple sides. For example, corner areas of a pitch might get coverage from both a side stand and a corner mast to prevent one-sided lighting that would cast long player shadows. Instead, there are fewer shadows and they appear softer.





Myth #4: “If it looks good to the eye, it’s fine for broadcast.”

Human eyes and TV cameras have very different needs. What seems like perfect illumination to spectators at the stadium might actually cause a high-speed camera to struggle due to flicker or color issues that are imperceptible to your eyes.

Flicker comes from slight fluctuations in brightness (often due to how lights are powered). People typically don’t see flicker beyond ~100 Hz, so it might look fine in person. But broadcast cameras (especially ultra slow-motion 300 fps+) will detect flicker as rolling bands or pulsing, which can spoil replays or cause camera auto-settings to malfunction.

This is why you typically aim for a flicker percentage under 1% or Stroboscopic Visibility Measure (SVM) below ~0.5–1.0 to be truly broadcast-proof. This can be achieved using flicker-free LED drivers and luminaires that are specially engineered to eliminate flicker for slow-motion cameras, like Signify ArenaVision LED gen3.5 floodlights which are approved by FIFA for lighting the world’s biggest sports events.

Stadium lighting also needs to render colors accurately. A setup that looks fine to your eyes might have a poor color rendering index (CRI) or be missing spectral content that cameras will reveal. Most top-tier venues require at least CRI 80+, with many pushing for CRI 90 so that team jerseys, skin tones, and the turf look true-to-life on 4K screens.

There’s also color temperature (CCT) consistency, which means all the lights should produce the same color temperature (often ~5700 K daylight) to avoid any color cast on-camera. The solution is using high-grade LEDs and measuring the Television Lighting Consistency Index (TLCI) to achieve a score above 90.

Clearly, stadium lighting needs to be designed with camera requirements in mind from the get-go. It’s an area where close collaboration with a partner like Signify pays off, because working with flicker-testing labs and bringing decades of broadcast lighting expertise to bear will ensure that if it looks good to the eye, it looks even better on camera.

Myth #5: “Stadium lighting doesn’t need smart controls or future-proofing.”

This myth might come from the old days of simple on-off floodlights, but times have changed. Smart, connected systems like Signify Interact are increasingly considered essential in stadium lighting for two major reasons: operational flexibility and future-readiness.

Systems like Signify Interact allow venues to pre-program lighting scenes: one scene for standard match lighting, another for a televised event (slightly brighter, maybe), another for a concert (with dynamic color-changing effects, if needed), and even low-energy scenes for training or cleaning.

When connected lighting systems are in the mix, a stadium can change personality at the touch of a button—ideal for multi-use venues. Plus, connected systems bring added benefits like real-time monitoring, scheduling, and analytics that help with energy savings and quick troubleshooting. Today, a stadium without a connected lighting solution is leaving a lot of value on the table.

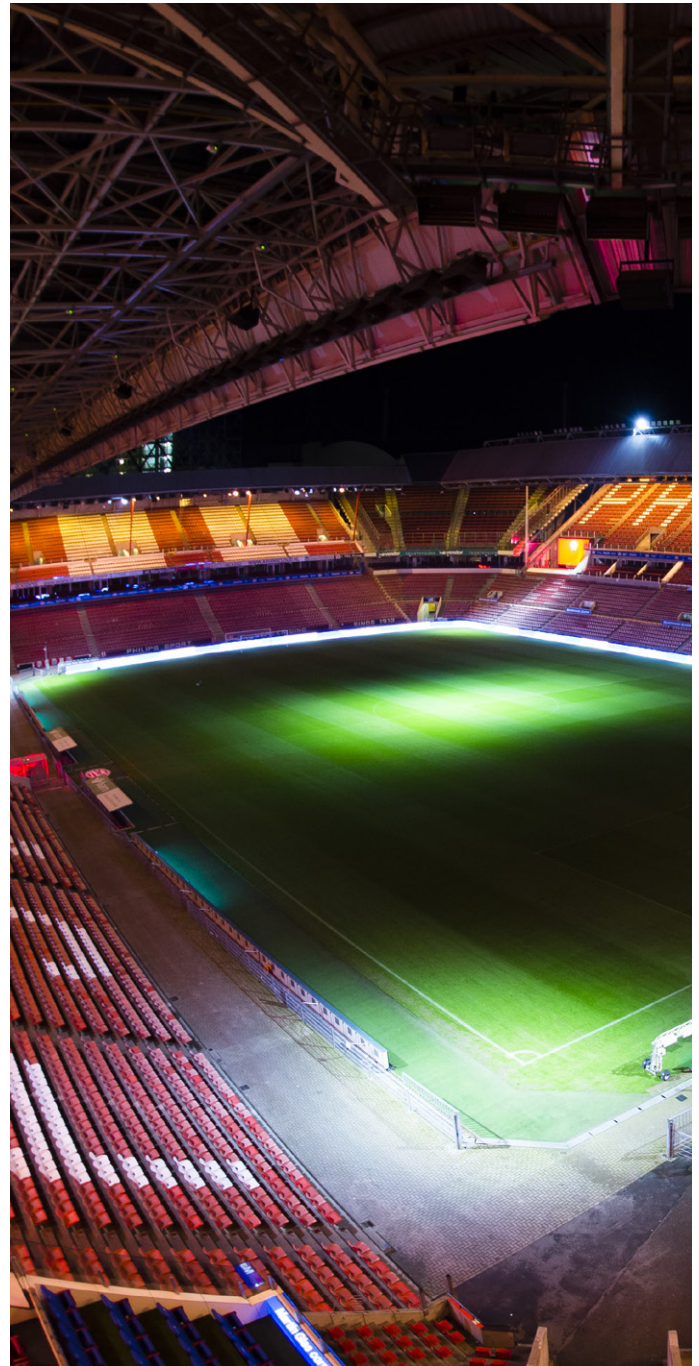
You can future-proof stadium lighting by planning ahead: they might design around the highest plausible requirements (e.g. aim for FIFA final-level lighting even if only national games are scheduled, anticipating upgrades or events) or specify installations that can be upgraded (modular LEDs, software updates) without replacing everything.

And as stadium usage changes over time, having the infrastructure to incorporate new sensors or smarter algorithms (automatic adaptive dimming based on crowd size, for example) will set the venue apart.

Stadium lighting is a sophisticated engineering and creative domain, and clinging to out-of-date assumptions can jeopardize project outcomes.

By dispelling myths like “more is better” or “specs end at lux levels,” we see that great stadium lighting is about balance and delivering high performance on every front: illuminance, uniformity, comfort, efficiency, and control.

Signify’s experience in hundreds of venues worldwide confirms this. The best results come when technical rigor is combined with strategic planning, often working hand-in-hand with global lighting experts to pair cutting-edge LED technology with smart design. As stadiums continue to evolve, lighting will remain at



the heart of the spectator and broadcast experience. By understanding the truth behind these myths, and leveraging modern, connected solutions, you can ensure that every night game, final, or concert is lit to its fullest brilliance.

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