

# SPORTS FACILITY LIGHTING LED SOLUTIONS FOR EVERY APPLICATION



# **INDEX**

Introduction	4
LEDVANCE Portfolio For Sports Facilities	6
Outdoor Paddle Court Lighting	8
Indoor Paddle Court Lighting	10
Outdoor Tennis Court Lighting	12
Indoor Tennis Court Lighting	15
Football Pitch Lighting 11-a-side	18
Outdoor Basketball Court Lighting	22
Volleyball Court Lighting	24
Indoor Multifunction Court Lighting	25
School Sports Lighting	26
Equestrian Racecourse Track Lighting	27
Outdoor Rugby Field Lighting	28
Baseball Field Lighting	29
Field Hockey Pitch Lighting	30
Ice Hockey Rink Lighting	31
Athletics Track Lighting	32
Take Advantage Of The Service Offered By LEDVANCE	33
Sports Lighting Case Studies	34
Good Lighting For All Spaces	36
VIVARES System	37



The lighting is one of the key elements for good sports performance since it can improve concentration, performance and motivation of the players. Sports spaces must have very homogeneous and glare-free light that facilitates the development of activities in an optimal and safe way.

The lighting design reaches its maximum complexity in professional competitions, where there are cameras and advertisements. In these cases, not only do the illuminance and uniformity values in the horizontal plane required according to the regulations increase, but other factors come into play such as the vertical planes; inclined planes; gradients; the flicker effect detectable by the cameras; or the shadows generated on the players.

# LIGHTING CLASSES FOR SPORTS FACILITIES

The lighting requirements in sports facilities such as soccer fields, tennis courts, paddle tennis, etc. are different depending on the use that is going to be given to that installation. DIN EN-12193 standard divides them in three classes:

### Class I

High performance training in combination with spectators



WiZink Basketball Center, Madrid

### Class II

Regional competitions, high performance training



Cobeña Soccer Field, Madrid

### Class III

General training, physical education and recreational activities.



Racquet City, Madrid

For each of these classes, minimum values of horizontal illumination, uniformity, color reproduction and glare are established that must be met.



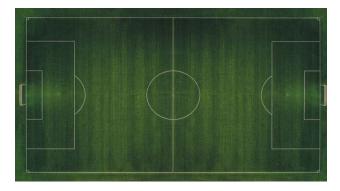
### **DO YOU HAVE A SPORTS PROJECT IN MIND?**

We can help you plan the project from start to finish. Contact us at sports@ledvance.com

# **KEY ASPECTS FOR GOOD SPORTS LIGHTING**

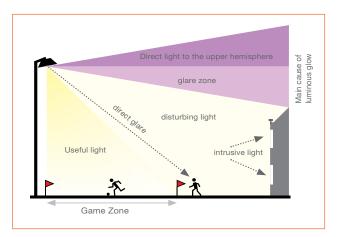
### **ILLUMINANCES AND HORIZONTAL UNIFORMITIES**

For good lighting, it is often necessary to consider not only the illuminance and uniformity on the pitch itself, but also the peripheral areas. For safety reasons, these must achieve a minimum illuminance in relation to the main pitch, depending on the sport.



### **SURROUNDING AREAS**

In general, outdoor sports facilities are part of an environment in which streets, buildings or other facilities are located. During the lighting design process all of this must be taken into account so that, on the one hand, the light remains on the playing field and, on the other hand, limit values in the surrounding area are adhered to.



### **COLOR RENDERING INDEX (CRI) AND TELEVISION** LIGHTING CONSISTENCY INDEX (TLCI)

CRI describes a methodology how colors can be reproduced by an artficial light source in relation to daylight. Clear recognition of markings, sports objects is particularly required as well as the need to clearly identify different players, teams etc. For televised events using high-sensitivity cameras, the TLCI better describes color reproduction requirements needed to ensure excellent display the colors of the player's jerseys and skin tones, as well as billboard colours.



### **GLARE**

To avoid areas with glare for players on the field, cameras and spectators in the stands, it is necessary to comply with the GR values established by the DIN EN-12193 standard.

Glare Rating is a method for assessing glare outside buildings, e.g. in stadiums or street lighting. Glare Rating takes into account the luminance, position, size and number of light sources visible to an observer. Glare Rating is expressed on a scale from 10 (no glare) over 40 (high glare) up to 60 (unacceptable).



### **FLICKER**

The effect of flicker in sports facilities is of particular importance because high-resolution cameras can detect this flicker and therefore transmit it. The maximum allowable flicker values depend on the level of competition and are more critical for slow motion transmissions.



### **COLOR TEMPERATURE**

The range of color temperatures permissible in a sports facility is quite wide. However, in outdoor installations where cameras are used, it becomes more critical since they cannot easily adjust to the different shades of white in the sky. In these cases a transition from daylight to artificial light has to be as stable as possible.













# LEDVANCE PORTFOLIO FOR SPORTS FACILITIES

LEDVANCE offers different lighting solutions for any type of sports space. They provide uniform, glare-free light and also offer high performance.

### **FLOODLIGHT MAX**

- 3 powers: 600W, 900W and 1,200W
- Color temperature: 5700K
- Opening angles: Symmetrical (10°, 30° and 60°), Asymmetrical (50°x110°)
- IP66, IK08, CRI 70
- Luminous flux from 78,000 lm up to 164,000 lm
- Lifespan of 100,000 hours (L70)
- Luminous efficacy up to 137 lm/W
- Ball-proof luminaire



### **FLOODLIGHT PERFORMANCE**

- Powers: 50W, 100W, 150W, 200W and 290W for asymmetrical ones and 150W, 200W and 290W for symmetrical ones
- Color temperature: 3000K and 4000K
- Opening angles: Symmetrical (60°) and Asymmetrical (55°x110°, 45°x140°)
- IP66, IK08, CRI>80
- Lifespan of 100,000 hours (L70)
- No top light output (ULOR 0%) when mounted at 0° tilt
- Hole that facilitates safe installation



### **FLOODLIGHT AREA**

- Powers: 72W, 105W and 145W
- Color temperature: 3000K and 4000K
- Opening angle: 48°x92°
- IP65, IK08, CRI>80°
- Luminous performance: up to 129 lm/W
- Lifespan of 70,000 hours (L70)
- Mounting bracket for tilt up to 210°



### **FLOODLIGHT ARENA**

- Ideal solution for demanding sports lighting including TV applications with TLCI >90
- Various light management options available including DALI and DMX
- Unique robust product design with COB technology and high grade reflectors for excellent application adopted illuminance
- Dedicated reflector shield system available in different sizes for spill light to optimization



### **HIGH BAY**

- Improved UGR compared to previous generations, up to UGR ≤ 22 in combination with reflector
- High luminous efficiency
- Energy savings of up to 60% compared to hoods conventional
- 5 years warranty
- Optimized weight and size thanks to its compact design



### **LOWBAY FLEX**

- Ball-proof luminaire with greater physical robustness (according to DIN 18032-3 and DIN 57710-13)
- Economical thanks to its high luminous efficiency of up to 155 lm/W
- Easy and quick installation thanks to the connection box without tools with 5 and 7 pole terminals
- Modern and robust design
- Ball-proof certified





# LIGHTING OF OUTDOOR PADDLE COURTS

Lighting requirements for 20x10 m outdoor paddle tennis courts

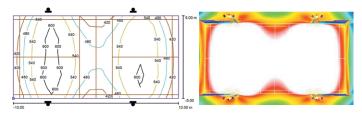
Paddle court Outdoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	500	0.7
Class II	300	0.7
Class III	200	0.6





### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT PERFORMANCE<sup>1</sup>

### **CLASS I**

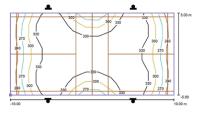


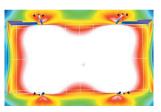
### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 522 Lx Total installed power: Uo= 0.71 2,000 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	8	4	2	6	150
FL PFM 200W 4000K ASYM 55x110	4058075 <b>353565</b>	4		1	6	200

### **CLASS II**



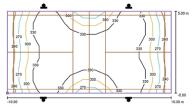


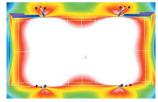
### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 318 Lx Total installed power: Uo= 0.72 1,200 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	8	4	2	6	150

### **CLASS III**





### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 210 Lx Total installed power: Uo= 0.73 800 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 100W 4000K ASYM 55x110	4058075 <b>353527</b>	8	4	2	6	100

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# LIGHTING OF OUTDOOR PADDLE COURTS

Lighting requirements for 20x10 m outdoor paddle tennis courts

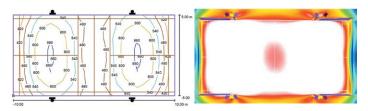
Paddle court Outdoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	500	0.7
Class II	300	0.7
Class III	200	0.6





### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA<sup>1</sup>

### **CLASS I**

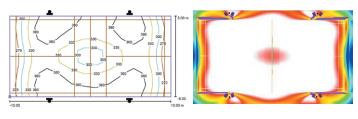


### **RESULTS - FLOODLIGHT AREA**

Em= 538 Lx Total installed power: Uo= 0.75 1,740 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	12	4	3	6	145

### **CLASS II**

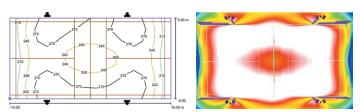


### **RESULTS - FLOODLIGHT AREA**

Em= 335 Lx Total installed power: Uo= 0.74 Total of the stalled power: 1,160 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	8	4	2	6	145

### **CLASS III**



### **RESULTS - FLOODLIGHT AREA**

Em= 252 Lx Total installed power: Uo= 0.74 845 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 105W 4000K ASYM 48x92	4058075 <b>539761</b>	8	4	2	6	105

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# INDOOR PADDLE COURTS LIGHTING

Lighting requirements for 20x10 m indoor paddle tennis courts

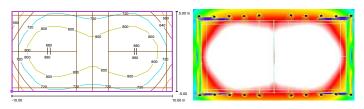
Tennis court Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5





### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT PERFORMANCE 1

### **CLASS I**

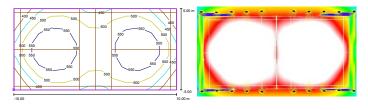


### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 772 Lx Total installed power: Uo= 0.70 3,000 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	20	0	0	6	150

### **CLASS II**

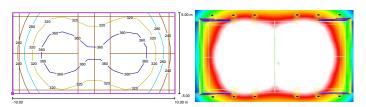


### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 512 Lx Total installed power: Uo= 0.71 2.000 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 100W 4000K ASYM 55x110	4058075 <b>353527</b>	20	0	0	6	100

### **CLASS III**



### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 323 Lx Total installed power: Uo= 0.63 1,200 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 100W 4000K ASYM 55x110	4058075 <b>353527</b>	12	0	0	6	100

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# INDOOR PADDLE COURTS LIGHTING

Lighting requirements for 20x10 m indoor paddle tennis courts

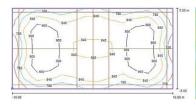
Tennis court Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5

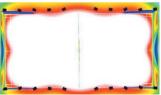




### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA 1

### **CLASS I**



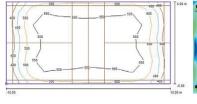


### **RESULTS - FLOODLIGHT AREA**

Em= 793 Lx Total installed power: Uo= 0.81 2,900 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	20	0	0	6	145

### **CLASS II**



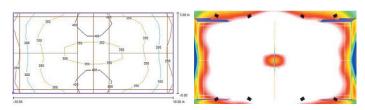


### **RESULTS - FLOODLIGHT AREA**

Em= 520 Lx Total installed power: Uo= 0.71 1,740 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	12	0	0	6	145

### **CLASS III**



### **RESULTS - FLOODLIGHT AREA**

Em= 348 Lx Total installed power: Uo= 0.63 1,600 W

Product	EAN	No. of floodlights	Number of masts per court	•	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	8	0	0	6	145

<sup>&</sup>lt;sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR TENNIS COURT LIGHTING**

Lighting requirements for 23.77x10.97 m outdoor tennis courts

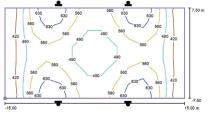
Tennis court Outdoor	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	300	0.7
Class III	200	0.6

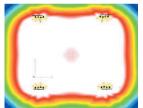




### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT PERFORMANCE 1

### **CLASS I**



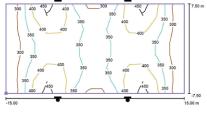


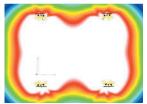
### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 527 Lx Total installed power: Uo= 0.71 4,640 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 290W 4000K ASYM 55x110	4058075 <b>353602</b>	16	4	4	8	290

### CLASS I



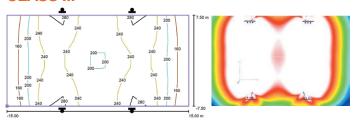


### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 360 Lx Total installed power: Uo= 0.73 3.120 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 290W 4000K ASYM 55x110	4058075 <b>353602</b>	8	4	2	8	290
FL PFM 200W 4000K ASYM 55x110	4058075 <b>353565</b>	4	4	1	8	200

### **CLASS III**



### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 220 Lx Total installed power: Uo= 0.60 1,800 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	12	4	3	8	150

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR TENNIS COURT LIGHTING**

Lighting requirements for 23.77x10.97 m outdoor tennis courts

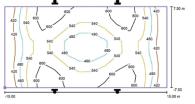
Tennis court Outdoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	500	0.7
Class II	300	0.7
Class III	200	0.6

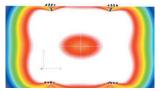




### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA 1

### **CLASS I**



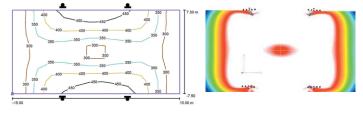


### **RESULTS - FLOODLIGHT AREA**

Em= 528 Lx Total installed power: Uo= 0.71 4,060 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	28	4	7	8	145

### CLASS II

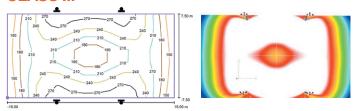


### **RESULTS - FLOODLIGHT AREA**

Em= 359 Lx Total installed power: Uo= 0.70 2.900 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	20	4	5	8	145

### **CLASS III**



### **RESULTS - FLOODLIGHT AREA**

Em= 218 Lx Total installed power: Uo= 0.64 1,740 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	12	4	3	8	145

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR TENNIS COURT LIGHTING**

Lighting requirements for 30x15 m outdoor tennis courts

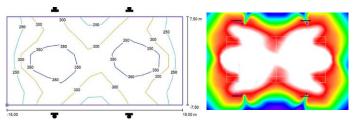
Tennis court Outdoor	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	300	0.7
Class III	200	0.6





### LIGHT CALCULATION WITH FLOODLIGHT MAX FROM LEDVANCE<sup>1</sup>

### **CLASS II**



### **RESULTS - FLOODLIGHT MAX**

Em= 304 Lx Total installed power: Uo= 0.72 2,400 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 600W ASYM 50x110	4058075 <b>580619</b>	4	4	1	8	600

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **INDOOR TENNIS COURT LIGHTING**

Lighting requirements for 23.77x10.97 m indoor tennis courts

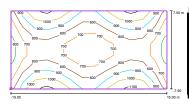
Tennis court Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5

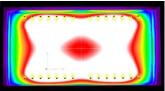




### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT PERFORMANCE 1

### **CLASS I**





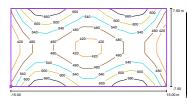
### **RESULTS - FLOODLIGHT PERFORMANCE**

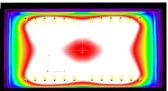
Em= 814 Lx Uo= 0.72 Total installed power:

5,600 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 200W 4000K ASYM 55x110	4058075 <b>353565</b>	28	0	0	5	200

### **CLASS II**



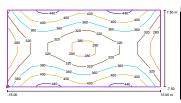


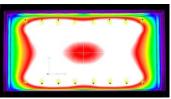
### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 526 Lx Total installed power: Uo= 0.73 3,600 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	24	0	0	5	150

### **CLASS III**





### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 347 Lx Total installed power: Uo= 0.73 2,400 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	16	0	0	5	150

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **INDOOR TENNIS COURT LIGHTING**

Lighting requirements for 23.77x10.97 m indoor tennis courts

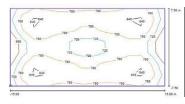
Tennis court Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5

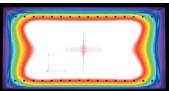




### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA <sup>1</sup>

### **CLASS I**



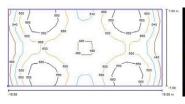


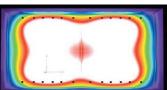
### **RESULTS - FLOODLIGHT AREA**

Em= 777 Lx Total installed power: Uo= 0.77 4,640 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	32	0	0	5	145

### **CLASS II**



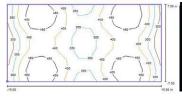


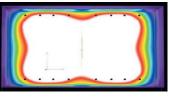
### **RESULTS - FLOODLIGHT AREA**

Em= 517 Lx Total installed power: Uo= 0.73 3,480 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	24	0	0	5	145

### **CLASS III**





### **RESULTS - FLOODLIGHT AREA**

Em= 405 Lx Total installed power: Uo= 0.70 2,320 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	16	0	0	5	145

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **INDOOR TENNIS COURT LIGHTING**

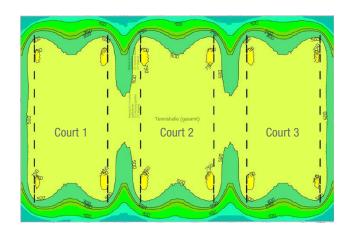
Lighting requirements for 55x38.8 m indoor tennis courts

Tennis court Indoor	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5





# LIGHT CALCULATION WITH LEDVANCE LOW BAY FLEX BALL PROOF <sup>1</sup> CLASS II



### **RESULTS - LOW BAY FLEX BALL PROOF**

Court 1: Court 2: Court 3: Em= 616 Lx Em= 628 Lx Em= 618 Lx Uo= 0.87 Uo= 0.86 Uo= 0.87

Total installed power: 7,560 W

Product	EAN	No. of luminaires	No. of luminaires per mast	Luminaire height (m)	Luminaire power (W)
LOW BAY FLEX BALL PROOF 1500 P 105W 840 W	4058075 <b>676367</b>	72	0	5 - 9.5	105

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **FOOTBALL PITCH LIGHTING 7-A-SIDE**

Lighting requirements for 65x44 m 7-a-side football pitches

Football Pitch	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5

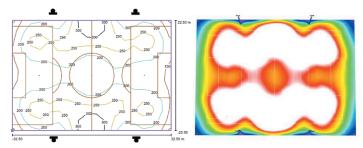




# LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX <sup>1</sup> CLASS I

Due to the uniqueness of Class I football pitches, lighting studies are carried out on demand.

### **CLASS II**



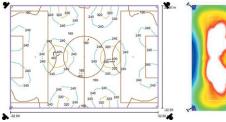
### **RESULTS - FLOODLIGHT MAX**

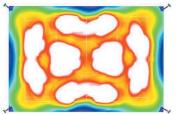
Em= 220 Lx Uo= 0.63 Total installed power:

9,600 W

Product	EAN	No. of floodlights	Number of masts per pitch	•	Mast height (m)	Floodlight power (W)
FL MAX 600W SYM 30	4058075 <b>580596</b>	12	4	3	18	600
FL MAX 600W SYM 60	4058075 <b>580602</b>	4	4	1	18	600

### **CLASS III**





### **RESULTS - FLOODLIGHT MAX**

Em= 226 Lx Total installed power: Uo= 0.62 9,600 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 600W SYM 10	4058075 <b>580589</b>	12	4	3	22	600
FL MAX 600W SYM 60	4058075 <b>580602</b>	4	4	1	22	600

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **FOOTBALL PITCH LIGHTING 11-A-SIDE**

Lighting requirements for 100x64 m 11-a-side football pitches

Football Pitch	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5



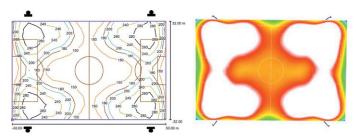


### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX 1

### **CLASS I**

Due to the uniqueness of Class I football pitches, lighting studies are carried out on demand.

### **CLASS II**

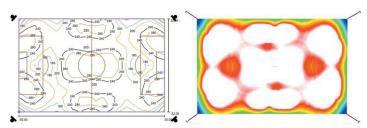


### **RESULTS - FLOODLIGHT MAX**

Em= 204 Lx Total installed power: Uo= 0.61 18,000 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 900W SYM 30	4058075 <b>580633</b>	12	4	3	18	900
FL MAX 900W SYM 60	4058075 <b>580640</b>	8	4	2	18	900

### **CLASS II**



### **RESULTS - FLOODLIGHT MAX**

Em= 238 Lx Total installed power: Uo= 0.66 21,600 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 900W SYM 30	4058075 <b>580633</b>	12	4	3	32	900
FL MAX 900W SYM 10	4058075 <b>580626</b>	12	4	3	32	900

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **FOOTBALL PITCH LIGHTING 11-A-SIDE**

Lighting requirements for 100x64 m 11-a-side football pitches with side masts

Football Pitch	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5

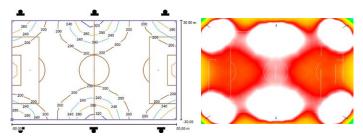




# LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX<sup>1</sup> CLASS I

Due to the uniqueness of Class I football pitches, lighting studies are carried out on demand.

### **CLASS II**

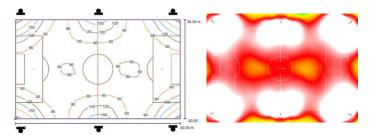


### **RESULTS - FLOODLIGHT MAX**

Em= 204 Lx Total installed power: Uo= 0.77 21,600 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 1200W 5700K ASYM 55x110	4058075 <b>580695</b>	18	6	3	18	1200

### **CLASS III**



### **RESULTS - FLOODLIGHT MAX**

Em= 91 Lx Total installed power: Uo= 0.61 9,600 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 600W 5700K ASYM 55x110	4058075 <b>580695</b>	16	6	3/2	15	600

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **FOOTBALL PITCH LIGHTING 11-A-SIDE**

Lighting requirements for 100x64 m 11-a-side football pitches with side masts - improved solution with fewer floodlights

Football Pitch	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5

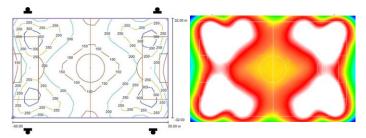




# LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX<sup>1</sup> CLASS I

Due to the uniqueness of Class I football pitches, lighting studies are carried out on demand.

### **CLASS II**

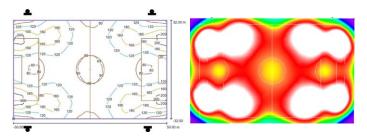


### **RESULTS - FLOODLIGHT MAX**

Em= 215 Lx Total installed power: Uo= 0.63 19,200 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 1200W 5700K SYM30	4058075 <b>580671</b>	12	4	3	20	1200
FL MAX 1200W 5700K SYM60	4058075 <b>580688</b>	4	4	1	20	1200

### **CLASS III**



### **RESULTS - FLOODLIGHT MAX**

Em= 124 Lx Total installed power: Uo= 0.56 Total one one of the control of the co

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 900W 5700K SYM30	4058075 <b>580671</b>	12	4	3	18	900

<sup>&</sup>lt;sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR BASKETBALL COURTS LIGHTING**

Lighting requirements for 28x15 m outdoor basketball courts

Basketball court	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5



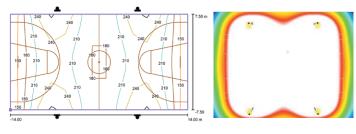


# LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT PERFORMANCE

### **CLASS I**

Due to the uniqueness of Class I basketball courts, lighting studies are carried out on demand.

### **CLASS II**

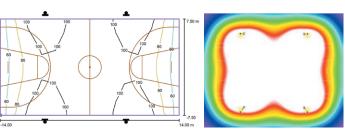


### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 207 Lx Total installed power: Uo= 0.70 1,800 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 150W 4000K ASYM 55x110	4058075 <b>353541</b>	12	4	3	8	150

### **CLASS III**



### **RESULTS - FLOODLIGHT PERFORMANCE**

Em= 89 Lx Total installed power: Uo= 0.63 800 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL PFM 100W 4000K ASYM 55x110	4058075 <b>353527</b>	8	4	2	8	100

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR BASKETBALL COURTS LIGHTING**

Lighting requirements for 28x15 m outdoor basketball courts

Basketball court	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5



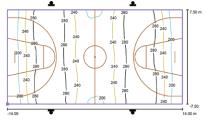


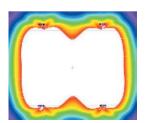
### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA<sup>1</sup>

### **CLASS I**

Due to the uniqueness of Class I basketball courts, lighting studies are carried out on demand.

### **CLASS II**



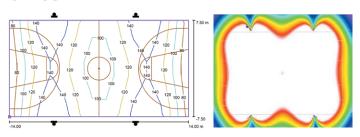


### **RESULTS - FLOODLIGHT AREA**

Em= 251 Lx Total installed power: Uo= 0.65 1,740 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	12	4	3	8	145

### **CLASS III**



### **RESULTS - FLOODLIGHT AREA**

Em= 118 Lx Total installed power: Uo= 0.65 1,200 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 105W 4000K ASYM 48x92	4058075 <b>539761</b>	8	4	2	8	105

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **VOLLEYBALL COURT LIGHTING**

### Lighting requirements for 18x8 m volleyball courts

Volleyball court	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5



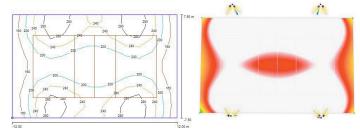


### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA<sup>1</sup>

### **CLASS I**

Due to the uniqueness of Class I volleyball courts, lighting studies are carried out on demand.

### **CLASS II**

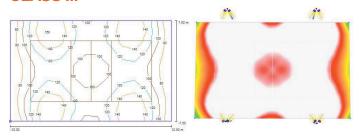


### **RESULTS - FLOODLIGHT AREA**

Em= 218 Lx Total installed power: Uo= 0.62 1,160 W

Product	EAN	No. of floodlights	Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	8	4	2	6	145

### **CLASS III**



### **RESULTS - FLOODLIGHT AREA**

Em= 115 Lx Total installed power: Uo= 0.59 576 W

Product	EAN		Number of masts per court	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL AREA 72W 4000K ASYM 48x92	4058075 <b>539747</b>	8	4	2	6	72

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# INDOOR MULTIFUNCTION COURT LIGHTING

Lighting requirements for 40x20 m indoor multifunction courts

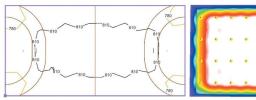
Multifunction Court Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	200	0.5





### LIGHT CALCULATION WITH LEDVANCE HIGH BAY1

### **CLASS I**



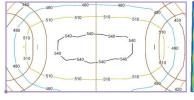


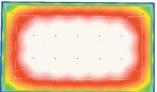
### **RESULTS - HIGH BAY PFM**

Em= 802 Lx Total installed power: Uo= 0.93 7,600 W

Product	EAN	No. of Luminaire	Number of masts per court	No. of luminaires per mast	Luminaire height (m)	Luminaire power (W)
HB P 190W 4000K 70DEG IP65	4058075 <b>452459</b>	40	0	0	7	190

### **CLASS II**



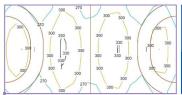


### **RESULTS - HIGH BAY PFM**

Em= 506 Lx Total installed power: Uo= 0.83 5,320 W

Product	EAN	No. of Luminaire	Number of masts per court	No. of luminaires per mast	Luminaire height (m)	Luminaire power (W)
HB P 190W 4000K 110DEG IP65	4058075 <b>452428</b>	28	0	0	7	190

### **CLASS III**





### **RESULTS - HIGH BAY PFM**

Em= 294 Lx Total installed power: Uo= 0.83 3,040 W

Product	EAN	No. of Luminaire	Number of masts per court	No. of luminaires per mast	Luminaire height (m)	Luminaire power (W)
HB P 190W 4000K 110DEG IP65	4058075 <b>452428</b>	16	0	0	7	190

<sup>&</sup>lt;sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **SCHOOL SPORTS LIGHTING**

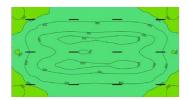
Fulfilled lighting requirements for school indoor sports hall 27x11 m

School sports hall	Horizontal Illuminance (lx)	Uniformity E min / E med
Regulation standard	>300	0.6





# LIGHT CALCULATION WITH LEDVANCE LOW BAY FLEX BALL PROOF <sup>1</sup> SCHOOL SPORTS HALL



### **RESULTS - LOW BAY FLEX BALL PROOF**

Em= 353 Lx Total installed power: Uo= 0.65 4,640 W

Product	EAN	No. of luminaires	No. of luminaires per mast	Luminaire height (m)	Luminaire power (W)
LOW BAY FLEX BALL PROOF 1500 P 105W 840 W	4058075 <b>676367</b>	12	0	8	105

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# LIGHTING OF EQUESTRIAN RACECOURSE TRACKS

Lighting requirements for 80x30 m equestrian racecourse arenas

Racecourse Track	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.5
Class III	100	0.5





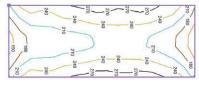
# LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT AREA<sup>1</sup> CLASS I

**EAN** 

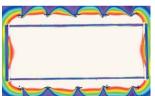
4058075**539785** 

Due to the uniqueness of Class I equestrian racecourse tracks, lighting studies are carried out on demand.

### **CLASS II**



FL AREA 145W 4000K ASYM 48x92



No. of

40

floodlights

### **RESULTS - FLOODLIGHT AREA**

Em= 223 Lx Uo= 0.63

Number of

10

masts per track

4

Total installed power: 5,800 W

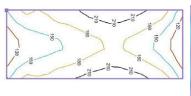
No. of floodlights Floodlight Floodlight per mast height (m) power (W)

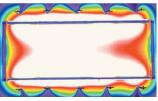
145

10

### **CLASS III**

**Product** 





### **RESULTS - FLOODLIGHT AREA**

Em= 171 Lx Total installed power: Uo= 0.57 4,350 W

Product	EAN	No. of floodlights	Number of masts per track	No. of floodlights per mast	Floodlight height (m)	Floodlight power (W)
FL AREA 145W 4000K ASYM 48x92	4058075 <b>539785</b>	30	10	3	10	145

<sup>&</sup>lt;sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **OUTDOOR RUGBY PITCH LIGHTING**

### Lighting requirements for 144x69 m outdoor rugby pitches

Rugby Pitch Outdoor	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.6
Class III	75	0.5



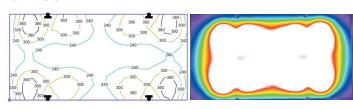


### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX 1

### **CLASS I**

Due to the uniqueness of Class I rugby pitches, lighting studies are carried out on demand.

### **CLASS II**

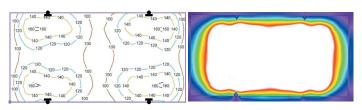


### **RESULTS - FLOODLIGHT MAX**

Em= 277 Lx Total installed power: Uo= 0.7 43,200 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 900W 5700K SYM 30	4058075 <b>580633</b>	48	4	12	25	900

### **CLASS III**



### **RESULTS - FLOODLIGHT MAX**

Em= 122 Lx Total installed power: Uo= 0.71 27,600W

Product	EAN	No. of floodlights	Number of mast per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 600W 5700K SYM 30	4058075 <b>580596</b>	28	4	7	25	900
FL MAX 600W 5700K SYM 60	4058075 <b>580602</b>	4	4	1	25	600

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **BASEBALL FIELD LIGHTING**

### Lighting requirements for baseball fields

Baseball Field Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.5





### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX 1

### **CLASS I**

Due to the uniqueness of Class I baseball fields, lighting studies are carried out on demand.

### **CLASS II**





### **RESULTS - FLOODLIGHT MAX**

Em= 679 Lx Uo= 0.80 Total installed power: 33,000 W

Mast height **Product** EAN No. of floodlights **Floodlight** No. of **Number of** floodlights masts per field (m) power (W) per mast FL MAX 900W 5700K SYM 10 4058075**580626** 2 6 1 24 900 FL MAX 1200W 5700K SYM 10 4058075**580664** 4 6 2 24 1.200 FL MAX 1200W 5700K SYM 30 4058075**580671** 22 6 3-4 24 1.200

### **CLASS III**





### **RESULTS - FLOODLIGHT MAX**

Em= 370 Lx Total installed power: Uo= 0.6 18,600 W

Product	EAN	No. of floodlights	Number of masts per field	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 600W 5700K SYM 10	4058075 <b>580589</b>	5	6	2-3	24	600
FL MAX 600W 5700K SYM 30	4058075 <b>580596</b>	6	6	3	24	600
FL MAX 1200W 5700K SYM 30	4058075 <b>580671</b>	10	6	2-3	24	1.200

<sup>&</sup>lt;sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# FIELD HOCKEY PITCH LIGHTING

Lighting requirements for 101.4x55 m field hockey pitches

Field Hockey Pitch Outdoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	300	0.7
Class III	200	0.7



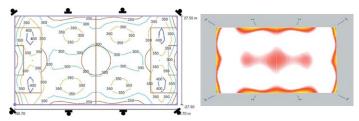


### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX 1

### **CLASS I**

Due to the uniqueness of Class I field hockey pitches, lighting studies are carried out on demand.

### **CLASS II**

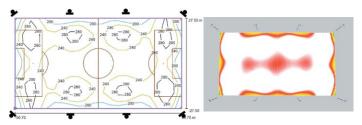


### **RESULTS - FLOODLIGHT MAX**

Em= 327 Lx Total installed power: Uo= 0.74 24.000 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 1200W 5700K SYM 30	4058075 <b>580671</b>	4	8	1 per corner	20	1200
FL MAX 1200W 5700K SYM 60	4058075 <b>580688</b>	16	8	2	20	1200

### **CLASS III**



### **RESULTS - FLOODLIGHT MAX**

Em= 242 Lx Total installed power: Uo= 0.70 18,000 W

Product	EAN	No. of floodlights	Number of masts per pitch	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 900W 5700K SYM 30	4058075 <b>580633</b>	4	8	1 per corner	18	900
FL MAX 900W 5700K SYM 60	4058075 <b>580640</b>	16	8	2	18	900

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# ICE HOCKEY RINK LIGHTING

### Lighting requirements for 60x26m ice hockey rinks

Ice Hockey Rink Indoor	Horizontal Illuminance (lx)	Uniformity E min / E med
Class I	750	0.7
Class II	500	0.7
Class III	300	0.7



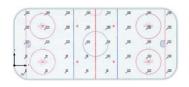


### LIGHTING CALCULATION WITH LEDVANCE HIGH BAY 1

### **CLASS I**

Due to the uniqueness of Class I ice hockey rinks, lighting studies are carried out on demand.

### **CLASS II**



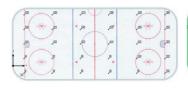


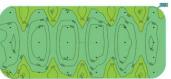
### **RESULTS - HIGH BAY**

Em= 516 Lx Uo= 0.72 Total installed power: 7,600 W

Product	EAN	No. of luminaires	Mounting height (m)	Luminaire power (W)
HB P 190W 840 110DEG IP65	4058075 <b>692817</b>	40	7	190

### **CLASS III**





### **RESULTS - HIGH BAY**

Em= 318 Lx Uo= 0.77 Total installed power: 4,410 W

Product	EAN	No. of luminaires	Mounting height (m)	Luminaire power (W)
HB P 147W 840 110DEG IP65	4058075 <b>692794</b>	30	7	147

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.

# **LIGHTING OF ATHLETICS TRACKS**

### Lighting requirements for athletics tracks

Athletics Track Outdoor	Horizontal Illuminance (Ix)	Uniformity E min / E med
Class I	500	0.7
Class II	200	0.5
Class III	100	0.5





### LIGHT CALCULATION WITH LEDVANCE FLOODLIGHT MAX 1

### **CLASS I**

Due to the uniqueness of Class I athletics tracks, lighting studies are carried out on demand.

### **CLASS II**





### **RESULTS - FLOODLIGHT MAX**

Em= 206 Lx Uo= 0.50 Total installed power: 21,600 W

Product	EAN	No. of floodlights	Number of masts per track	No. of floodlights per mast	Mast height (m)	Floodlight power (W)
FL MAX 1200W 5700K SYM 10	4058075 <b>580664</b>	6	4	1-2	24	1.200
FL MAX 1200W 5700K SYM 30	4058075 <b>580671</b>	6	4	1-2	24	1.200
FL MAX 1200W 5700K SYM 60	4058075 <b>580688</b>	6	4	1-2	24	1.200

<sup>1</sup> All lighting studies are standard calculations. To know the specific data of each installation, it is necessary to carry out a bespoke study.



# TAKE ADVANTAGE OF THE LEDVANCE SERVICE FOR A CUSTOMIZED LIGHTING DESIGN

### PROFESSIONAL LIGHTING DESIGN

### **DIALUX AND RELUX**

LEDVANCE collaborates with the developers of the DIALux and RELUX software. So now you can easily integrate LEDVANCE products into your lighting designs.

Our luminaire data are also BIM compatible.

### **EVEN MORE CONVENIENT**

LEDVANCE can perform custom calculations and offer you a personalized solution for your lighting needs, all in one go.

### YOUR BENEFITS AT A GLANCE

- Good and uniform light distribution
- Accurate watts per square meter
- Maximum calculation of the necessary amount of VIVARES luminaires and components

### **OUR LIGHT FOR YOUR PROJECT**

Do you have a special project that requires a special solution? Whether you are looking for a custom installation method, connection type, light output, light management features or even a completely custom luminaire, we can tailor products to your needs.

Get in touch with us!

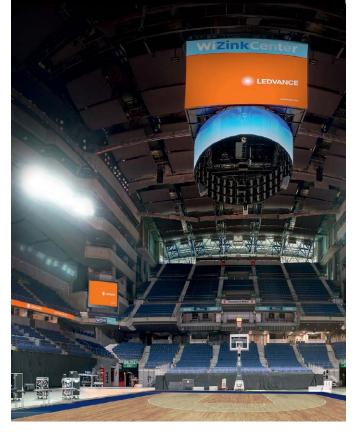


# **ELITE SPORTS LIGHTING WIZINK CENTER**

LEDVANCE developed the new lighting system for the WiZink Center pavilion in Madrid. The new lighting meets all the requirements of FIBA and EUROLEAGUE regulations, significantly improving the lighting experience of sporting events and greatly reducing maintenance efforts.

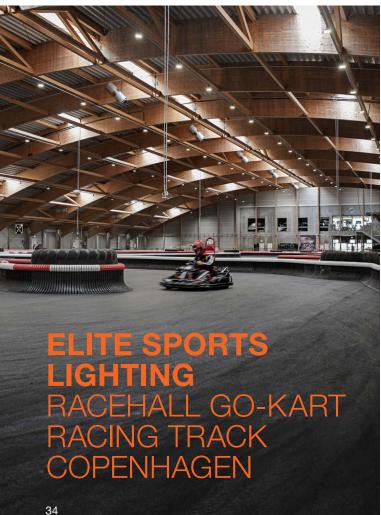
More information about the Case Study at ledvance.com/projects





### **BENEFITS OF NEW LIGHTING**

- Compliance with FIBA and EUROLEAGUE regulations for Class I basketball games and television broadcast
- Improvement of the lighting level on the track, uniformity and reproduction chromatic
- Regulation system for creating spectacular scenes



LEDVANCE equipped RACEHALL, the world's largest indoor go-kart racing track in Copenhagen, Denmark, with a powerful and uniform LED lighting solution for the world's largest indoor go-kart racing track that fulfilled all the requirements of DIN EN 12193 sports facility lighting regulation.

### **BENEFITS OF NEW LIGHTING**

- Uniform lighting on the track for drivers visual comfort
- Bright illumination to ensure maximum driver safety and performance
- Compliance with DIN EN-12193 regulations

More information about the Case Study at ledvance.com/projects





### **BENEFITS OF NEW LIGHTING**

- UEFA requirements of a minimum average vertical illuminaince of >350 lx in all directions
- Level-D guidelines of UEFA have now been met

More information about Case Study at ledvance.com/projects

# ELITE SPORTS LIGHTING ULRICH HABERLAND LEVERKUSEN STADIUM

LEDVANCE accompanied the modernization of the new lighting in the women's Bundesliga stadium of Bayer 04 Leverkusen to ensure it complies with UEFA's Level D requirements through comprehensive project management - from planning and coordinating through to final implementation.



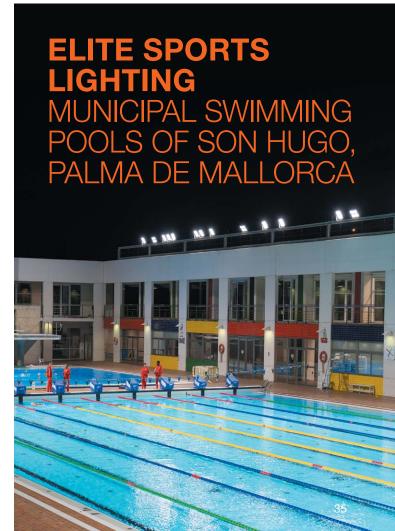
LEDVANCE carried out the comprehensive modernization of the entire sports facility at the Son Hugo municipal swimming pools in Palma de Mallorca. With this change, it was possible to increase energy savings and improve the quality of light to meet the Class I requirements that allow hosting local, national and international swimming competitions.

### **BENEFITS OF NEW LIGHTING**

- Reduction of energy costs of around 50%
- Increasing luminous flux by up to 48%
- Compliance with DIN EN-12193 regulations to house local, national and international swimming competitions

More information about the Case Study at **ledvance.com/projects** 





# GOOD LIGHTING FOR ALL SPACES COMPLETE THE LIGHTING OF YOUR SPORTS FACILITIES

Changing rooms, gyms, offices and other areas that make up a sports facility also need good lighting. At LEDVANCE we offer a wide variety of products and lighting management systems for these applications that will ensure that you meet all lighting requirements.

BIOLUX HCL

With the right light at the right time, **Human Centric Lighting (HCL)** creates an environment that **simulates changes in natural light** 

with its visual, biological and emotional effects.

To achieve this, the luminaires are controlled by an intelligent

control system with appropriate light modes.

Spaces like the **Bayer Leverkusen players' gym at the Ulrich Haberland Stadium** have been illuminated with the Biolux HCL System to generate a positive impact on the players.



### **ULRICH HABERLAND STADIUM: SPACES FOCUSED ON PLAYERS**



In addition to lighting the football field at the Ulrich Haberland Stadium, LEDVANCE was also responsible for updating and renovating the players' gym with the Biolux HCL System. The gym had traditional lighting with 18W T8 fluorescent tubes that were replaced with Biolux panels. With this system, energy savings have been achieved thanks to the efficiency of the LED panels and natural lighting focused on the circadian rhythm of the players.



### AWARD WINNING SYSTEM BY DESIGN, FUNCTIONALITY AND INNOVATION:



reddot winner 2020





### HCL HAS A POSITIVE IMPACT - ALSO ON THE PERFORMANCE OF YOUR COMPANY

HCL promotes and supports the most valuable resource you have: your employees. That is reflected in your productivity.



**OFFICE**12% higher employee performance



PRODUCTION
Worker productivity increases by up to 18%



**EDUCATION**14% improvement in learning and grades



Up to 25% increase in sales

# **VIVARES SYSTEM**

**VIVARES**, LEDVANCE's future-ready IoT lighting management system (LMS), brings light to life. makes it **easier and more flexible than ever to produce optimal lighting conditions** for defined requirements.

The system can be maintained remotely, increasing economics beyond general maintenance and energy savings. LEDVANCE offers you everything from a single source: all LMS components and the corresponding LED luminaires.



For more information visit our website



### VIVARES DALI STANDARD REDEFINED

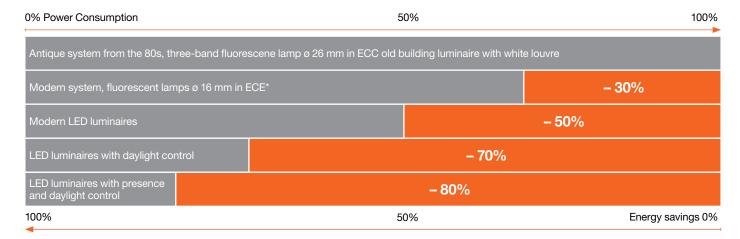
The system is suitable if the control lines can be wired and the requirements for allocating light distribution are long-term. All VIVARES DALI products are DALI-2 certified and technically adapted to perfection. Since it is an open system, it is also compatible with other DALI-2 products.

# VIVARES ZIGBEE WIRELESS, MODERN, FLEXIBLE

The VIVARES Zigbee wireless system is ideal for retrofitting existing buildings where rewiring is not an option. LEDVANCE offers you a wide selection of compatible LED luminaires that provide energy-efficient lighting. The system can connect to a cloud application to generate maintenance and energy consumption reports.

### **BETTER LIGHT AND ENERGY SAVINGS**

A look at numerous offices shows that many lighting systems are outdated and far from future-proof. The modernization sustainably reduces energy consumption, saves costs and provides a significant increase in lighting quality. Example of potential savings in an office:



 $<sup>^*\, \</sup>text{Low power loss fluorescent lamps, luminaires with modern directional lighting technology.} \, \text{Source: licht.de}$ 

With subsidiaries in more than 50 countries and business activities in over 140 countries, LEDVANCE is one of the world's leading companies in the field of general lighting for professional customers and end users. Emerging from OSRAM's general lighting division, LEDVANCE's portfolio includes a wide range of LED luminaires for a variety of applications, intelligent lighting products for smart homes and smart buildings, one of the most comprehensive offerings of advanced LED lamps in the lighting industry, and traditional lamps. Beyond lighting, LEDVANCE offers vertically integrated, renewable energy solutions for the building sector. Together, the lighting division and the renewable energy division form a comprehensive ecosystem for residential, commercial, and industrial buildings.

For more information, visit www.ledvance.com.



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LEDVANCE is the expert partner for installers and lighting professionals. To match our LED luminaires, we also offer a wide range of LED strip systems and a wide range of innovative LED lamps of excellent brand quality. More information about our range of products and services available at ledvance.com