# Floodlights



# Large Area Lighting

Few sectors require as much attention to security and precision as air traffic. Efficient, functional apron lighting can substantially enhance security, meeting all necessary standards with reliability and durability.

ewo is the forerunner in the use of LED technology for large areas and the company's work represents the highest standard in airport and logistics lighting. Our products are installed in varying environments, from large global hubs to small regional airports, proving themselves robust enough for a Siberian winter and reliable enough for Arabian heat. LED technology reduces the need for maintenance, with ewo modular construction substantially simplifying repair process. On-site workers report that ewo LED lighting is perceptively brighter than traditional systems, and its higher color rendering index improves legibility of workplace documents. Precise custom lighting design avoids dazzling, thereby reducing workplace stress and tension, aiding productivity, increasing safety and supporting general airport security.



# Utilising the full potential of LEDs, for large area illumination.

We have focussed on high mast large area illumination systems for over 15 years. ewo gained important experience in the field of secondary reflector systems, and we were pioneers in the industrywide conversion to LED technology. Our innovation was to use one LED lighting unit as the building block for large area lighting—this supplies performance comparable to floodlight systems, while using up to 70 percent less energy, requiring less maintenance than traditional systems.

The modular nature of the technology and its diverse configuration options make it possible for us to fine-tune production techniques precisely to the task at hand. With thorough planning, we create the right solutions for every project. Our systems meet major challenges, such as precise light directionality and reliable temperature management, using high quality components.

# Reference Projects:
# Airport



| | | | | | |
|---|---|---|---|---|---|
| AAL | Aalborg Airport | FNI | Aéroport Nîmes-Alès-Camargue-Cévennes | RIX | Riga International Airport |
| AAR | Aarhus Airport | FRA | Frankfurt Airport | RTM | Rotterdam The Hague Airport |
| ABJ | Abidjan Airport | GRJ | George Airport | RTW | Saratov Airport |
| ABZ | Aberdeen Airport | HAJ | Hannover-Langenhagen Airport | RUN | Roland Garros Airport (Réunion) |
| ADL | Adelaide Airport | HAM | Hamburg Airport | SIN | Singapore Changi Airport |
| ARN | Stockholm Arlanda Airport | HEL | Helsinki-Vantaa Airport | SJC | San José Airport |
| AUS | Austin-Bergstrom International Airport | HSH | Henderson Executive Airport (Las Vegas) | SLC | Salt Lake City International Airport |
| BOS | Logan International Airport (Boston) | INN | Innsbruck Airport | STR | Stuttgart Airport |
| BQN | Rafael Hernández Airport (Puerto Rico) | JED | King Abdulaziz International Airport (Jeddah) | SXF | Berlin-Schönefeld Airport |
| BRN | Bern Airport | JRO | Kilimanjaro International Airport | SYD | Sydney Airport |
| BTH | Hang Nadim Airport | KMS | Kumasi International Airport | THU | Thule Air Base (Grönland) |
| CDG | Paris Charles de Gaulle Airport | KUL | Kuala Lumpur International Airport | TRN | Turin Airport |
| CPH | Copenhagen Airport | LNZ | Linz Airport | TSV | Townsville International Airport |
| DEN | Denver International Airport | MEL | Melbourne Airport | TXL | Berlin Tegel Airport |
| DOH | Hamad International Airport (Doha) | MKY | Mackay Airport | VCE | Venice Marco Polo Airport |
| DPS | Ngurah Rai International Airport (Denpasar) | MUC | Munich Airport | VFA | Victoria Falls Airport |
| DUS | Düsseldorf Airport | MST | Maastricht Aachen Airport | VIE | Vienna International Airport |
| DXB | Dubai International Airport | NRT | Narita International Airport (Tokio) | WRO | Wrocław–Copernicus Airport |
| EBJ | Esbjerg Airport | OAK | Oakland International Airport | YKS | Yakutsk Airport |
| EIN | Eindhoven Airport | OOL | Gold Coast Airport | YPL | Pickle Lake Airport |
| ELS | East London Airport | OSD | Åre Östersund Airport | YQR | Regina International Airport |
| ETZ | Metz-Nancy-Lothringen Airport | OSL | Oslo Airport | YVR | Vancouver International Airport |
| EUX | F.D. Roosevelt Airport (St. Eustatius) | PUF | Pau Pyrénées Airport | ZCO | Aeropuerto Maquehue Araucania |
| FAT | International Airport Fresno Yosemite | RDZ | Rodez Marcillac Airport | ZRH | Zürich Airport |
| FDF | Martinique Airport | RIL | Rifle Garfield County Airport | | |

# The R-System provides flexible and long-lasting high performance lighting.

The modular construction of the R-System floodlight family consists of individual panels, grouped by performance capability (R1–R4) depending on the required output. Each panel can be tilted, and consists of 128 high-performance LEDs. The glass cover of the panels offers additional protection for the lens optics and makes simplified cleaning possible.

The panels are manufactured in a die-cast aluminium, available in untreated aluminium and polyester powder coated finishes. The powder-coated variant offers additional protection for use in demanding environments where corrosion is a risk, such as seaside scenarios.

Our variety of lens optics allows flexibility for all manner of applications. In addition to large area lighting and custom distributions for airport apron and production hall areas, spot optics are also available for a narrower, more targeted illumination. Our tried and true multilayer concept forms the basis for this development: each optical surface illuminates the entire assessment field, and the lighting intensity on a given surface is achieved through layered light distribution from each LED. Even if one fails, evenness is maintained.

The R-System provides a higher lumen output with significantly less electrical consumption. The product also offers efficient heat management. Heat dissipation takes place by means of cooling fins which, as a result of their special arrangement, avoid detritus build-up, therefore guaranteeing long term functionality.

Compact construction and form corresponds exactly to the size of conventional floodlights, making a one-to-one retrofitting of existing systems possible. Two mounting variants are available, a mounting bracket and an adapter for cable hanging. The R-System can be controlled by means of DALI, but it also allows for wireless radio control. The high-performance lamp control gear, developed specially for this product, allows partial switching and dimming of individual panels.





Product R4
Finish: polyester powder coating



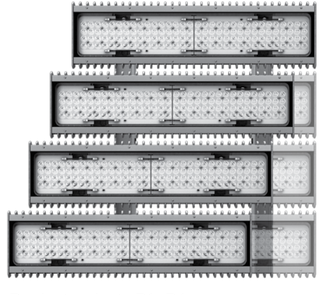
Product R1



Product R2



Product R3



Product variants R1–R4



# Technical Details

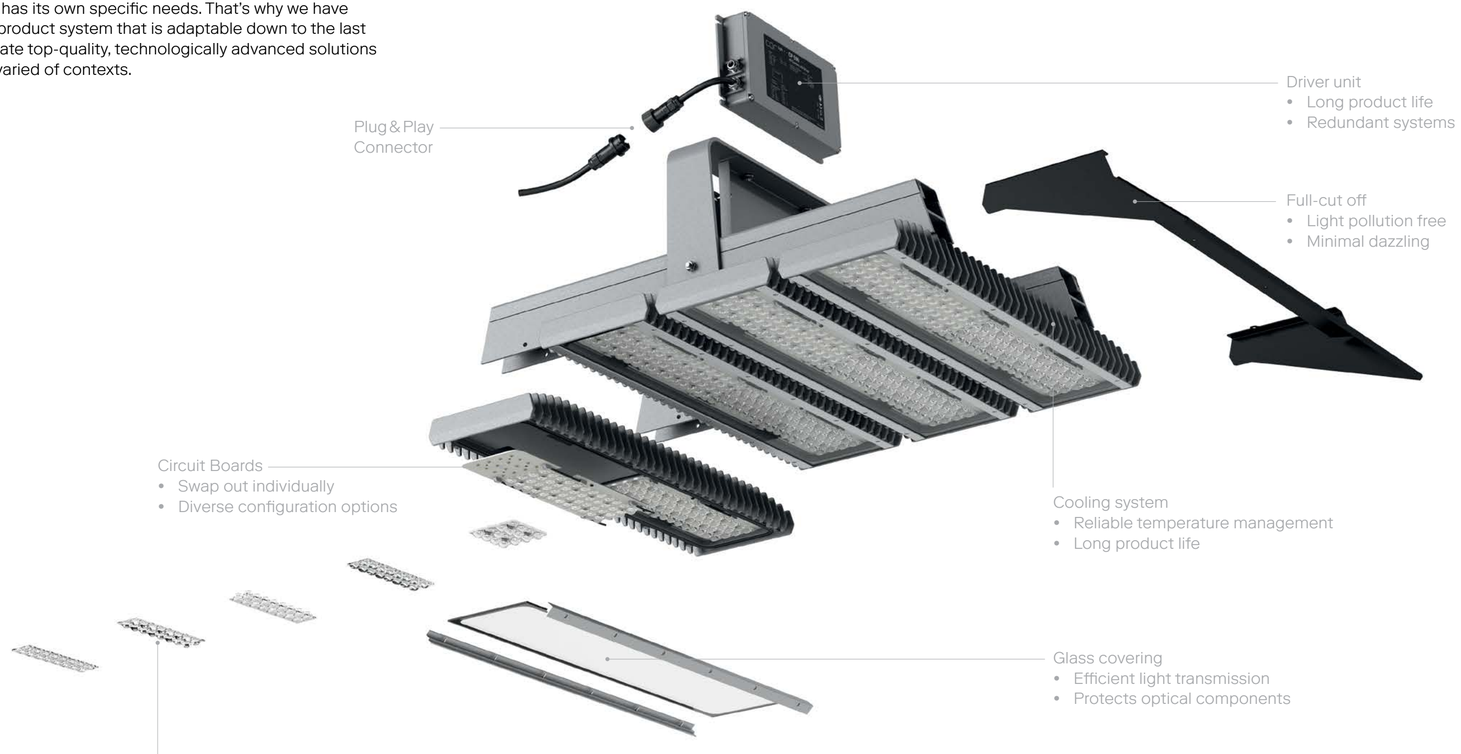
1 Housing accommodates up to 4 panels, each panel 1 DALI address
2 Current feed: 400 mA (19,800 lm, 155 W)–800 mA (139,350 lm, 1,250 W) depending on ambient temperature (R-System UL max. 700 mA)
3 Electronic operating device with DALI interface or 1–10 V
4 Allowed ambient temperature range –40 to +55 °C
5 Various light distributions for large area, high bay or street lighting
6 AG01, AG02, AG03, AG04, AH02, AP04-L, AP04-R, AP04-L/R, AP05, AP07, AS06, AS07, AS08 (also available in satiné version, spot optics excluded)
7 Lens made from PMMA
8 Lamp housing in die-cast aluminum, cover in single-pane safety glass (ESG)
9 Bracket made of hot-dip galvanized steel, holder made of aluminum
10 Finish: polyester powder coating, silver (RAL 9006/DB 701)

IP66 RoHS IK08

↘
ewo.com/r-system

# Modular Design, Highly Flexible Solutions

Every project has its own specific needs. That's why we have developed a product system that is adaptable down to the last detail. We create top-quality, technologically advanced solutions for the most varied of contexts.



Plug & Play Connector

Driver unit
- Long product life
- Redundant systems

Full-cut off
- Light pollution free
- Minimal dazzling

Circuit Boards
- Swap out individually
- Diverse configuration options

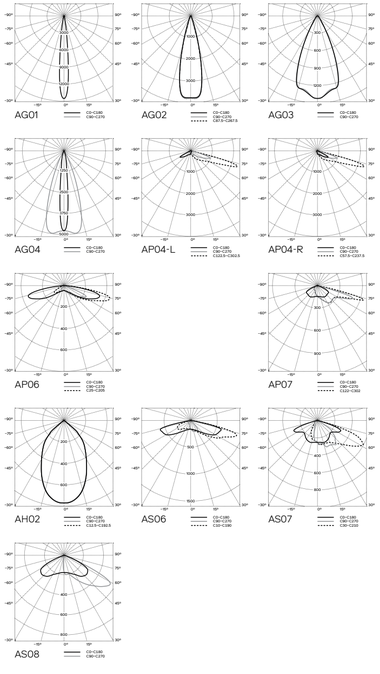
Cooling system
- Reliable temperature management
- Long product life

Glass covering
- Efficient light transmission
- Protects optical components

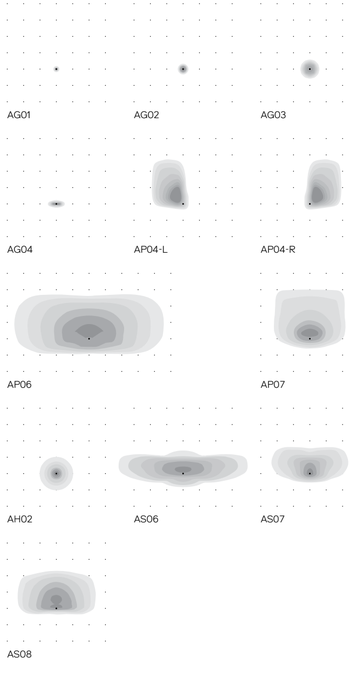
Lens optic
- Discoloration-free PMMA
- Various light distributions



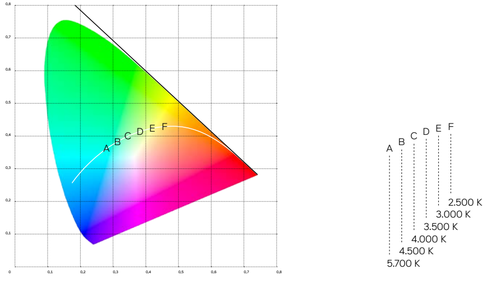
## Polar diagram




## Light distributions

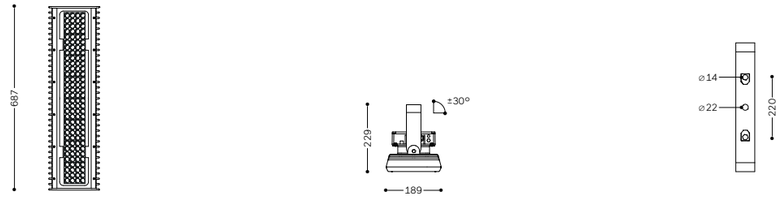



## Colour temperature



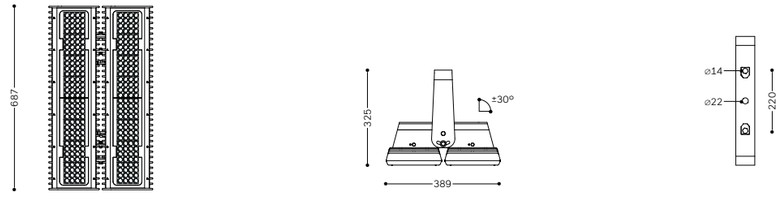
## R1

7.5 kg
3 kg Driver



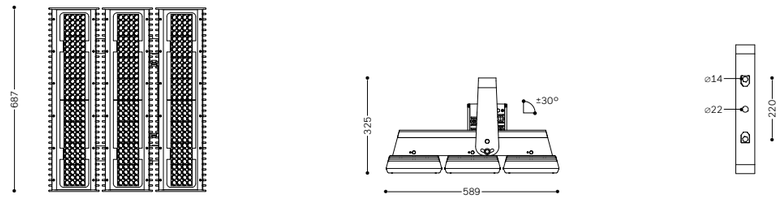

## R2

20 kg
3 kg Driver



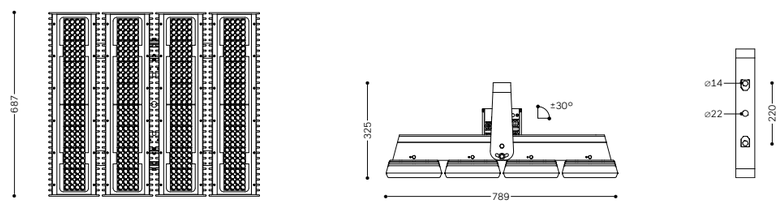

## R3

27 kg
5 kg Driver




## R4

34 kg
5 kg Driver








| Current [mA] | Luminous flux* [lm] | Power [W] | Luminous efficacy [lm/W] |
|---|---|---|---|
| **R1** | | | |
| 500 mA | 103,080 | 775 | 133.1 |
| 600 mA | 119,753 | 932 | 128.4 |
| 700 mA | 135,842 | 1091 | 124.6 |
| 800 mA** | 148,705 | 1250 | 118.9 |
| **R2** | | | |
| 500 mA | 77,310 | 581 | 133.1 |
| 600 mA | 89,814 | 699 | 128.4 |
| 700 mA | 101,882 | 818 | 124.6 |
| 800 mA** | 111,529 | 938 | 118.9 |
| **R3** | | | |
| 500 mA | 51,540 | 387 | 133.1 |
| 600 mA | 59,876 | 466 | 128.4 |
| 700 mA | 67,921 | 545 | 124.6 |
| 800 mA** | 74,352 | 625 | 118.9 |
| **R4** | | | |
| 500 mA | 25,770 | 194 | 133.1 |
| 600 mA | 29,938 | 233 | 128.4 |
| 700 mA | 33,961 | 273 | 124.6 |
| 800 mA** | 37,176 | 313 | 118.9 |

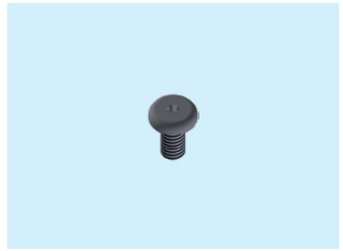
All values refer to the lens AP04.
The UL version of the R-System may be found on our website: ewo.com
* Luminous flux tolerance ±7 %
** Upon request

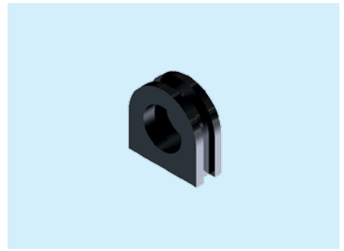
# Efficient, Sustainable Spare Parts Management

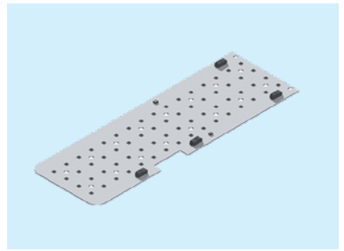
The R-System is easy to upgrade, repair and adjust. Central components of the lighting system, including LED circuit boards, are easy to swap out, thanks to the intelligent design of our modular system. Maintenance and repair costs are kept to a minimum, while quality standards remain consistent.

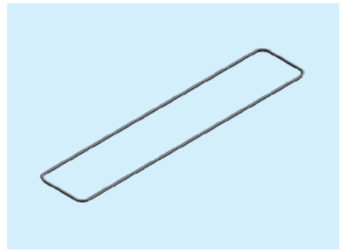
Samples of easily swappable parts include:

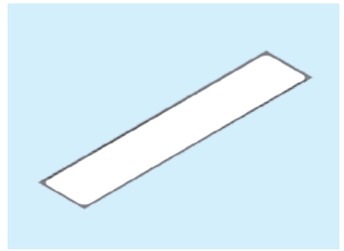

Ventilator element

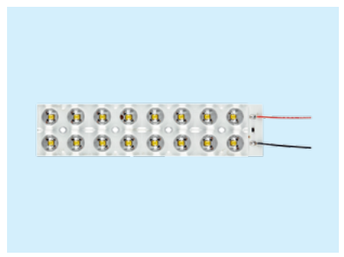

Lens head screw M4 × 8 Torx


Cable feedthrough


PCB circuit board


Gasket


Glass covering


Lens optic

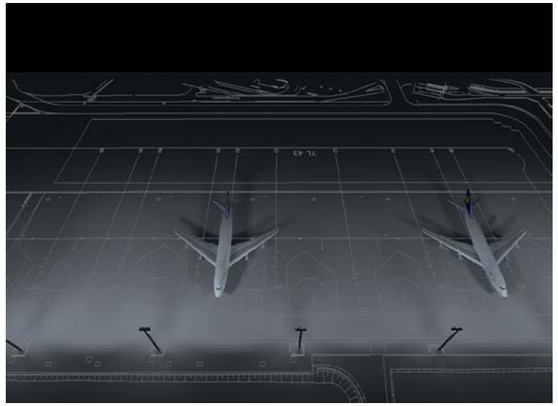

Clamp

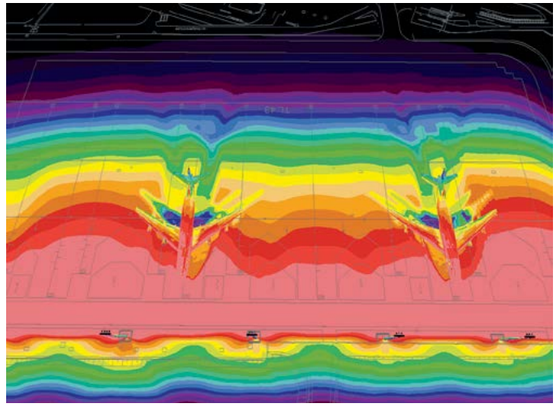

CP590 driver

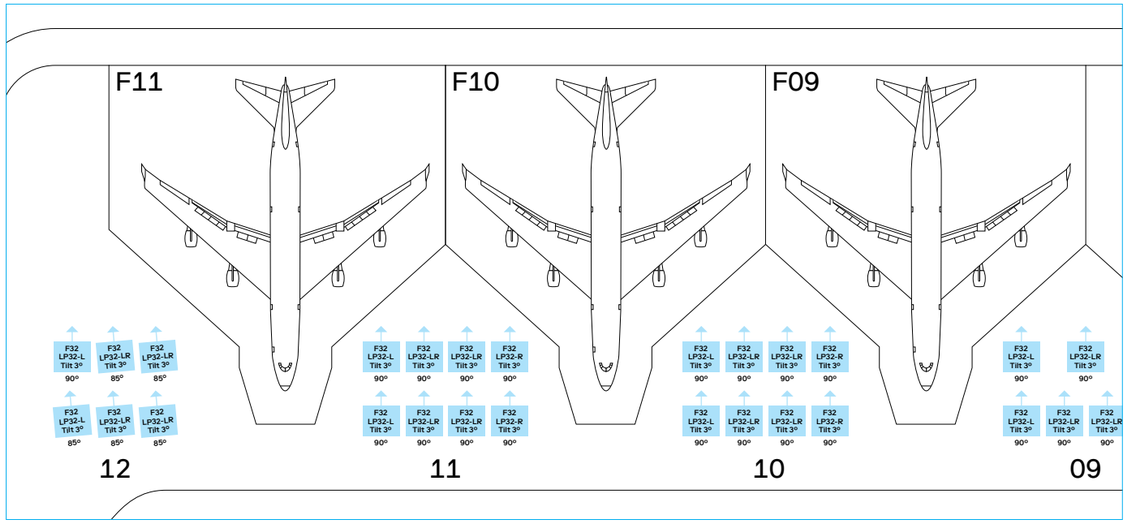


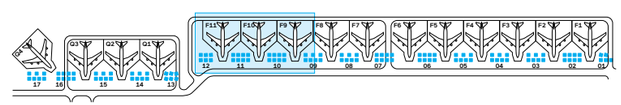
# Support for Integrated Solutions

Alongside its apron floodlights, ewo equips airport customers with a complete lighting package including design and planning support. Our experienced lighting engineers work closely with leading airfield lighting designers worldwide, providing fully compliant designs in accordance with the most common international standards including ICAO, EASA, MOS and ISNEA. In addition to lighting design, we offer on-site support and detailed pole mounting and installation instructions.


Light distribution simulated in 3D

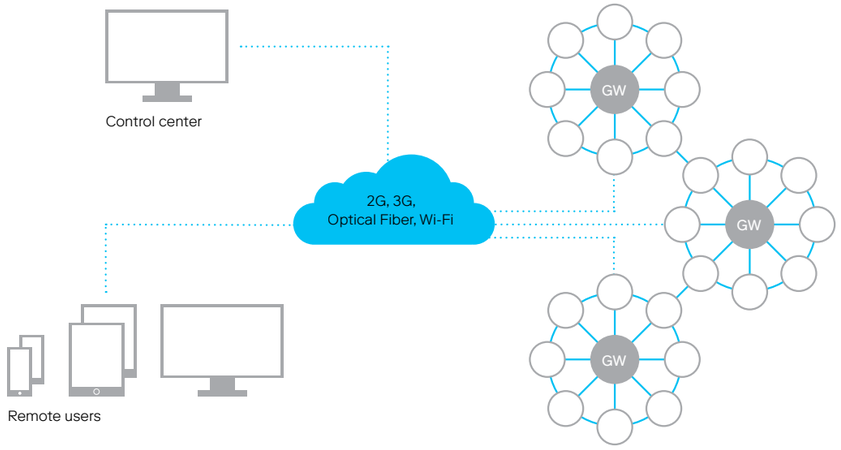

False color rendering demonstrating product illuminance



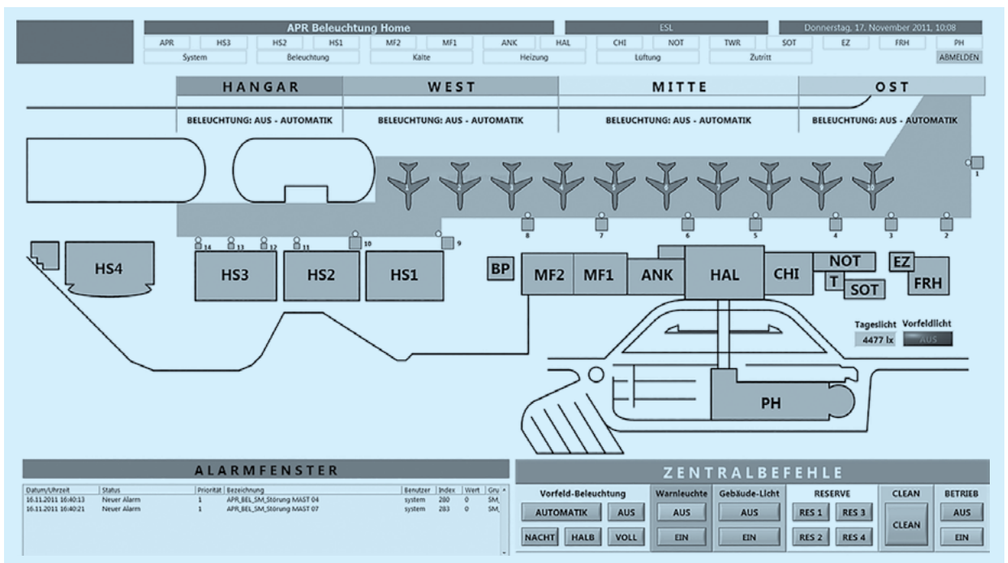


Light positioning schematic

# Radio and light control

Our products may be fitted with a system to allow for wireless data communication within your networks. Two-way communication between floodlights and control software enables full control and monitoring of the lights, for more cost-effective, responsive usage and maintenance.




Multi control with up to 100 street lamps
per cluster / gateway (GW) for optimal performance

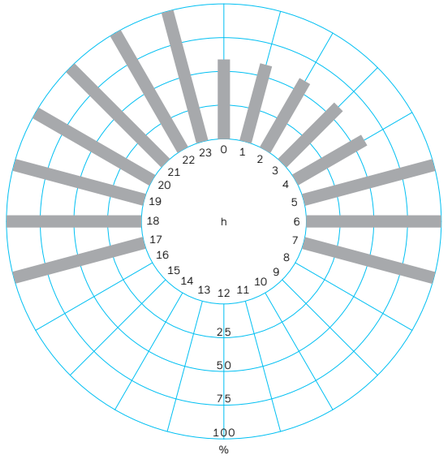



User interface

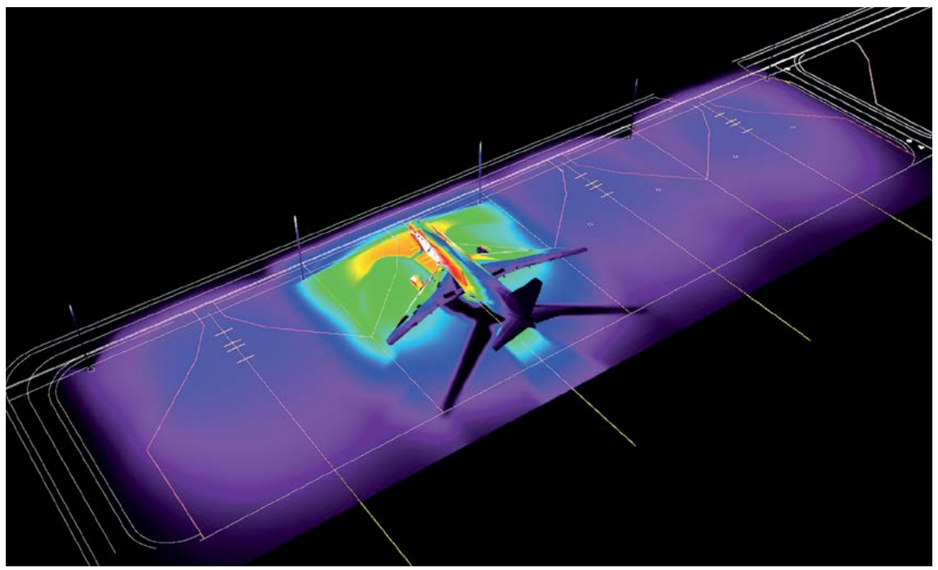


# Greater control and efficiency

Our system harnesses the full potential of LED technology with an intelligent wireless floodlight control system. A single dynamic apron dimming scale creates further energy savings (up to an additional 50 percent) and increases LED product life.




Time-triggered dimming



False color rendering demonstrating product dimming capabilities

# Munich Airport
# Terminal 1, P185

Munich airport is a wonderful showcase project for energy-efficient apron lighting systems: Two existing high mast systems were fitted with six high-performance LED floodlights, which reduced energy consumption of each system by 46 percent. The typology and geometrics of this system are based on tried and tested established standards, so that existing masts can easily be converted and equipped with the new, energy-efficient LED technology. The connection to light management systems provides further energy savings. Simple light source controls enable the creation of numerous lighting scenarios to suit required specifications perfectly. In addition to substantial energy reduction, the LED solution provides a significantly reduced maintenance need, alongside a service life of more than 50,000 h, making an important contribution toward a more sustainable operation of the lighting system.

# Munich Airport
# Terminal 1, P185



The LED floodlight is mounted onto the existing holder.



White light has a considerably higher color-rendering value than NAV lamps, creating a clear yet relaxed sense of vision.



Each panel is fitted with 152 lighting units from the DP31 product line.



In direct comparison with the existing NAV system, LED technology consumes 46 percent less energy, while maintaining compliance with all specifications.



Technological Comparison

Before
High mast systems:
- High-pressure sodium lamp:
  4 × SAP – 1,000 W per pole
  2 × SAP – 400 W per pole
- Electromagnetic ballast, η = 90 %
- Power consumption in total: 147.84 kW
- Upward Flux Ratio: 3 %

After
High mast systems:
- LED Lighting units:
  5 × F32 5,700 K, 388 W per pole
  1 × F16 5,700 K, 166 W per pole
- Electronical driver, η = 92 %
- Power consumption in total: 59.82 kW
- Upward Flux Ratio: 0 %

Savings*

## 59.5 %

- 512,682.00 kWh/year
- 307,609.00 kg $CO^2$/year
- 76,000.00 €/year

* $CO^2$ calculation at an energy mix of 600 g/kWH, saving at <0.15 €/kWh and 4,500 hours in service per year

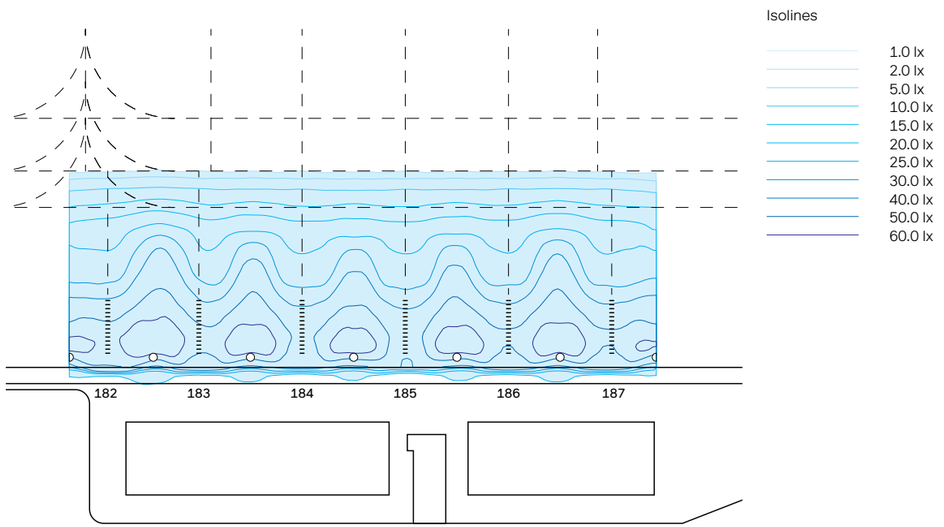
Technical Data

Classification in compliance with
12464-2: ICAO Annex 14
Illuminance, Em = 30 lux, U = 0.25
Area illuminated: 120,000 m²
Power consumption/area: 0.49 W/m²
Power consumption in total: 59.82 kW

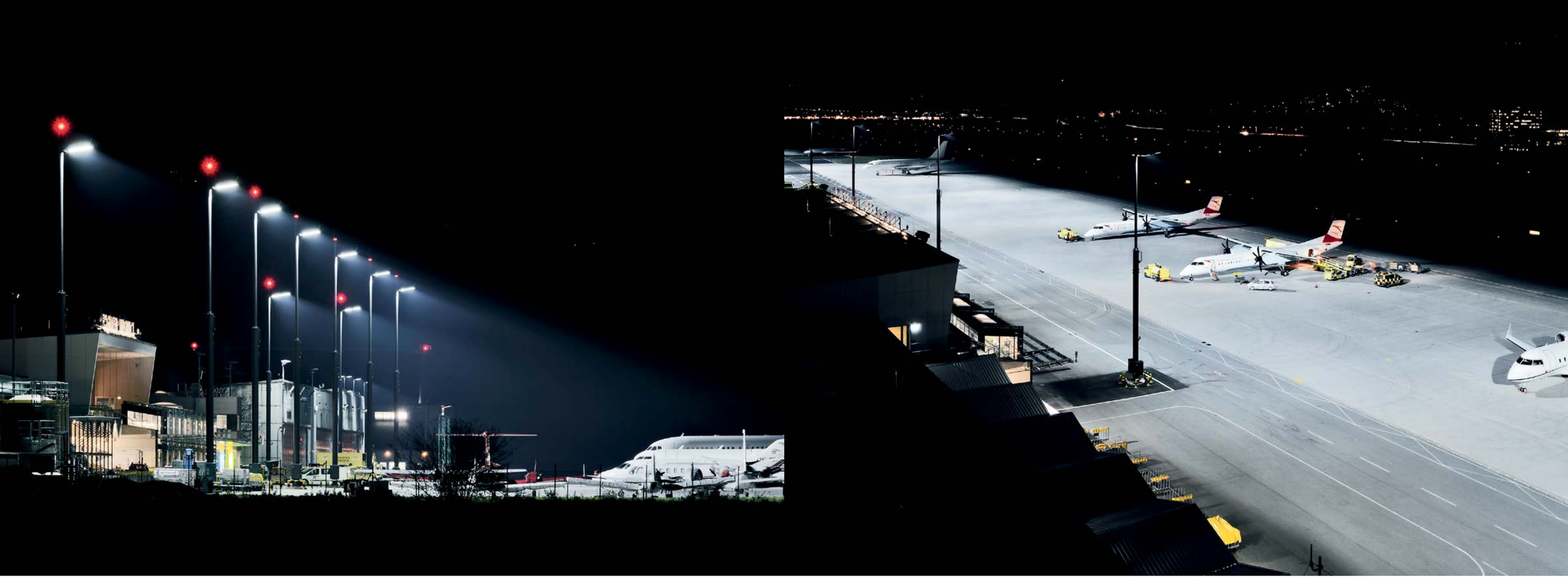
Lighting system
- Lighting systems: High mast systems
  5 × F32 (350 mA)
  1 × F16 (300 mA)
- Mounting height: 34.0 m

Lighting technology
- Lighting unit in operation: LP32
- LED: Luxeon M, 159 lm/W
- Light colour: Cool white, 5,700 K
- Number of LEDs: 3 × 1 Multichip
- Current feed: 350 mA
- Connected power: 388 W

Lighting management
Light control over DALI
- Constant light output regulation
- Automatic lowered night-time lighting (50 %)
- Remote maintenance




Due to the use of various optical lenses, both the apron and the taxiway can be provided with the optimum level of light in compliance with the respectively applied specifications.



Innsbruck Airport, Austria, 2011
The realization that LED technology provides improved light quality with lower costs while protecting the climate and the night sky was the deciding factor: the Innsbruck Airport, as the first one in the entire world, engaged ewo to switch over the entire apron illumination to LED.



Stuttgart Airport, Germany, 2015
In a multistage project, ewo supplied the airport with over 60 F-32 floodlights. This showed, once again, the effectiveness and sustainability of switching from existing conventional lighting systems to LED. The new, intelligently-controlled apron lighting dims automatically when the apron is not in use—cutting costs and reducing environmental impact.






Melbourne Airport, Australia, 2014–15
With 50 floodlights of the F32 model on six high mast systems, the first Australian airport is switching over to LED lighting. The functioning method of the system has been coordinated with the high ambient temperatures.

# Additional Usage Options

Roads and traffic



Logistics




Harbor



Container terminal





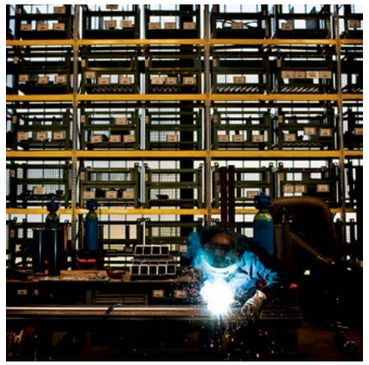
# ewo

For 20 years, ewo has illuminated picturesque walking trails, urban gathering points, streets, buildings, cultural venues, and airports, in addition to other transport-related and industrial settings. Our expertise comes from harnessing the current state of technology in order to create the best custom-tailored solutions.

At our facility in South Tyrol, we develop and craft high-quality products for distributing, controlling and regulating illumination in public spaces. Our innovation revolves around a modular LED lighting unit. It is the starting point for precise and sustainable global lighting scenarios, deliverable on any scale.

We bring passion and curiosity to every individual challenge, be it a specific lighting effect, a special design requirement, the color and material of our luminaires, durability for extreme settings, or precise technical requirements. We also place great importance on cultural and artistic issues, as well as on experimental interaction with architecture, art, and design.

ewo is a family business. We value clear communication—not only with each other, but also with our clients, project partners, and suppliers. Our solutions emerge out of an environment of mutual exchange, with a creative and open mindset. These values have turned us, together with our products, into a pioneering force in the industry.







## Contact

We understand that special locations require light to be dealt with in a special way. That is why we consider direct dialogue with you so important. It serves as the basis for our developing a lighting system that fulfills your individual needs.

We are always happy to advise you, simply give us a call.

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## Imprint

ewo
Large Area Lighting

| | |
|---|---|
| Copyright | © 2018 ewo srl/GmbH |
| Concept | Lukas Dusini, Tamara Larcher and Jasmine Deporta, ewo |
| Design | NORM, Zürich |
| Photography | Oskar DaRiz, Nicolò Degiorgis, Flash Studio Photography, Premago, formAxiom |
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