



Dear Reader,

We've just closed the 2015 and, for Fael will be, without any doubts, an unforgettable year!

We are indeed proudly 50 years old. 50 years have passed since 1965, when Fael (Factory for Electrical Apparatus) began its adventure in the world of lighting and the company name immediately became the quality synonym. And since 50 years Fael LUCE defends, with pride, its origins: the totally Italian production plant and the brand Fael LUCE represent a tangible sign of MADE IN ITALY and the contribution that Fael offers to the "Italian Excellence".

50 intense years, characterized by technological development, cultural changes, alternate economic situations, intertwined with stories of men who have made this milestone reachable.

50 years of consistent company choices, with a strong vocation, targeted objectives, rewarding and beyond. We have developed a range of solutions that today represents our corporate assets. We see this anniversary as a stage of the undertaken journey, which will continue for a long time. We have the tenacity, the passion and the spirit of always, but, first of all, we still have many projects in the pipeline to which we intend to give the light, together with our partners who every day put their trust in our company.

That's why WE DO IT BETTER - WE DO IT TOGETHER!

We look forward to further strengthening these bonds in the decades to come, creating together extra-ordinary projects like those featured in this third edition of Project Book, focused on benchmark projects realized with our partners across the world.

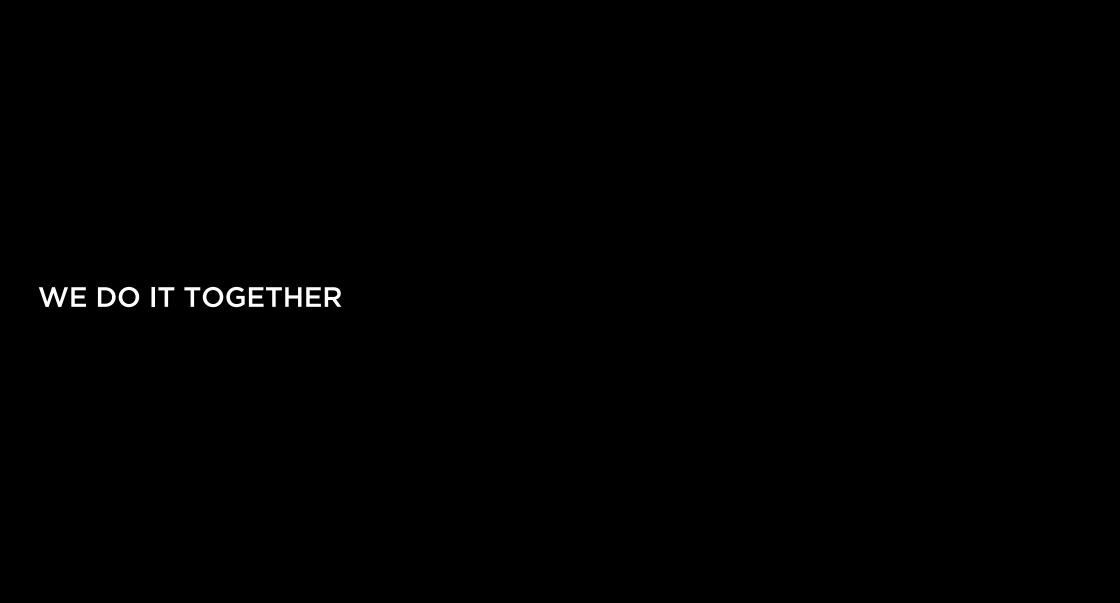
Enjoy the reading!

Luciano Parravicini

Chairman President Fael Spa



WE DO IT BETTER











#### **TREND WAY LED**

#### **GOZO PROJECT** Malta







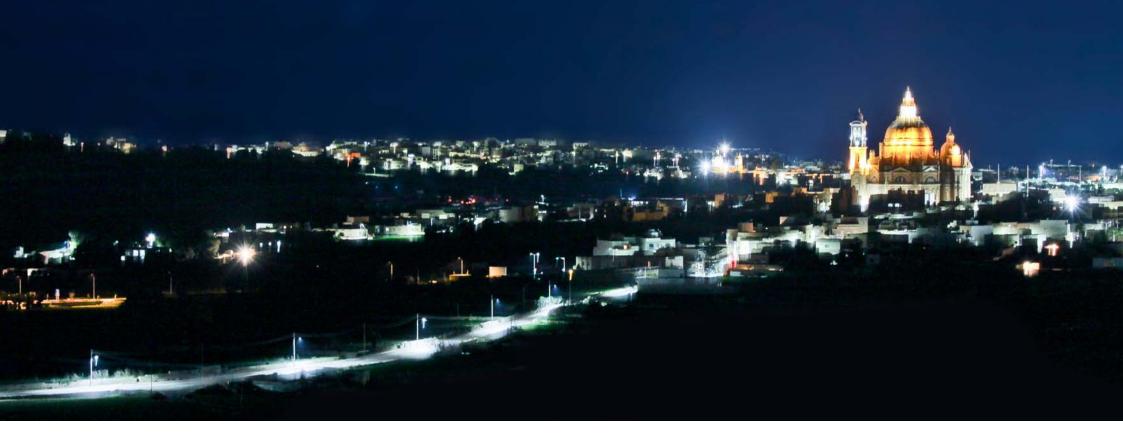




The island of Gozo forms part of the Maltese archipelago situated in the Mediterranean Sea, and is the second largest island after Malta. As part of the vision set to turn Gozo into an ecological island by 2020, hence the name of the project Eco-Gozo, one of the set targets is to lower energy consumption and improve efficiency through the use of LED lighting throughout the island.

This pilot project, partly funded by the European Union and co-ordinated by the Ministry of Energy in Malta, consisted of the upgrading of a total of 3900 low pressure sodium street lighting lamps with the latest technology LED lamps. These new LED lamps provide a white, more focused light, which consume a fraction of the energy of their older counterparts with a longer life-span. The product engineered and manufactured by Fael LUCE fit the specifications required by ENEMALTA in terms of flexibility of use, modularity and comfort.

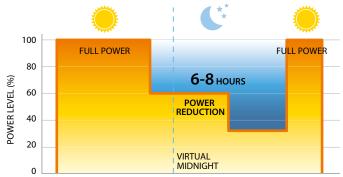
The chosen product, the TREND WAY LED series is the epitome in streetlight performance, responding to environmental conditions and giving maximum efficiency corresponding to operating times.

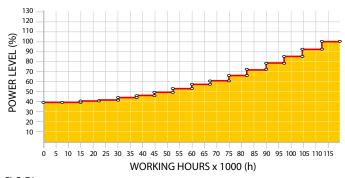




Fael LUCE has guaranteed to the entire island of Gozo a functional outdoor lighting, essential for road safety and for an urban comfortable feel.







#### **CLO Diagram**

#### THE TECHNICAL SOLUTION

Fael LUCE provided 3900 TREND WAY LED Series streetlights, produced entirely from recyclable materials. The guaranteed long durability of the streetlight performance result in minimized maintenance costs.

An accurate technical study of this streetlight series, together with an internal system of heat dissipation which allows heat generated by the LEDs to be removed quickly and evenly, have ensured the reliability and durability of the product.

According to European standards and specifications, the streetlights have been equipped with programmable drivers, in order to set the right drive current for the luminosity level or illumination desired, thus optimizing consumption. Power can be reduced during night-time hours, when traffic is limited, resulting in additional energy savings.

The most salient feature of programmable drivers is their dimming function and the CLO (constant light output). The light output from the LEDs inside the devices decreases over their lifespan. To compensate for this reduction, the driver can be programmed to gradually increase the level of drive current fed to the LEDs. In this way it is also possible to reduce emissions into the atmosphere and energy consumption till 50%.

Apart from cutting consumption by half, and the positive effects on the environment as a result of a drop in the amount of emissions, the maintenance costs of this lighting system is expected to dramatically decrease by 80% which comes as a great saving for the public purse.

Fael LUCE has provided and guaranteed to the entire island of Gozo a functional outdoor lighting solution, essential for road safety and urban comfort. The luminaires provide perfect visibility at night for drivers, cyclists and pedestrians alike, which in the long run should also help in reducing the number of road accidents. As a result of this project and the products supplied by Fael LUCE, Gozo is now experiencing a higher luminous efficiency, greater security and an improved quality of life in the urban environment.

#### WE DO IT BETTER - WE DO IT TOGETHER

Floodlights type:

TREND 4 WAY LED TREND 5 WAY LED

# THE PLEASURE OF THE SHOW





#### **LIGHTMASTER ONE 2000W HF**

## **DACIA ARENA**Udine, Italy











With a capacity of 25,000 spectators, the new DACIA ARENA represents an iconic project with a strong component of innovation, evident from the outside observing the original structure covered with a diamond cladding, a real jewel among the sport venues that will represent a model in Europe from many points of view, including the particular attention to the environment in which the structure was conceived and designed and safety standards revolutionaries. It will, in fact, the first venue in Italy without barriers, which will enrich, for the audience, the pleasure of the spectacle of the game field. A perfect mix between a large theater and arena exciting and engaging.

The main purpose of the project was indeed to create a modern, safe, sustainable sports facility to offer a unique experience to all users that can represent a positive hallmark for the morphology and architecture of the territory.

For the lighting aspect, the Udinese Calcio Company has chosen Fael LUCE to illuminate its own team. The proposed solution is perfectly in line with the objectives of the entire project and able to allow a reduction of the installed power, ensuring an energy requirement for night events lower than at present, maintaining the same levels of illumination.

The professional lighting design has ensured compliance to all applicable standards and best practice. The on-site results also ensure high lighting performance, safety and energy efficiency, by providing the correct lighting levels at all game times.

Mr. Cogo, Fael LUCE's Lighting Designer, who made up the project lighting design scheme, explains: "During this ambitious project, the biggest obstacle has been represented by the very delicate conditions under which we had operated. We have operated on several fronts, developing the lighting project in three phases, thus ensuring the practicability of the structure during the Serie A National Football Season and, at the same time, the stadium renovation."



Fael LUCE is official supplier of Udinese Calcio Company. Recommendation: FIFA Edition 2011



With a capacity of 25,000 spectators, the new DACIA ARENA represents an iconic project with a strong component of innovation: a real jewel among the sport venues that will represent a model in Europe.







#### THE TECHNICAL SOLUTION

In total, Fael LUCE delivered 410 LIGHTMASTER ONE, of 2000 and 1000W with a vertical and horizontal average illuminance higher than 2000 lux. A result that goes far beyond the expectations, considering a level of illumination required by the project equal to 1500 Lux and in accordance to UEFA 2016 that states the average vertical illuminance at 1650 Lux.

The renovation project included three phases. During the Phase 1, completed in August 2014, few days before the opening of the National Football Season, Fael LUCE provided 214 LIGHTMASTER ONE of 1000 and 2000W placed on the edge of the arc of the main stand, under the cover and on three temporary light towers positioned on the opposite side of the main stand (each one with 24 floodlights, at an installation height of 27 meters). This was a temporary lighting system able to ensure 1500 vertical Lux, as required by UEFA, that allows the Udinese Calcio Company to carry out both home games of the National football season and any international matches.

During the subsequent Phases 2 and 3 Fael LUCE provided the remaining floodlights, while the construction of the new NORTH covered stand, the construction of the SOUTH covered stand and grandstand (opposite the main stand) were finishing.

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Floodlights type: LIGHTMASTER ONE 2000W HF

#### **KEY FIGURES**

Horizontal Illuminance (Eh)	2200 Lux	Vertical Illuminance (Ev) main TV Camera	2150 Lux
Horizontal Uniformity		Vertical Uniformity	
U1	0.83	U1	0.68
U2	0.92	U2	0.78





#### **PROXIMO**

# RHO-MONZA HIGHWAY *Milan, Italy.*











"Feeding the Planet, Energy for Life", was the theme of Expo 2015, the Universal Exposition that Italy, and in particular the city of Milan, hosted from May 1 to October 31 2015. The Site of Expo 2015, that covers about 1 million of square meters, is located just north-west of Milan, in the middle of a rich and integrated infrastructure system, further strengthened through the enhancing of Rho-Monza highway. This way of communication, along with the Milanese trait of the A4 Turin-Venice highway gives the access to exhibition site, thus representing an important and strategic crossroads as part of Expo 2015.

Fael LUCE, in collaboration with "Autostrade per l'Italia", the European leader among concessionaire for the construction and management of toll highways, has provided, for these two important traits, PROXIMO streetlights, in order to ensure an effective transport system and an essential service to the mobility that, in this region, will play a crucial role from now onwards.

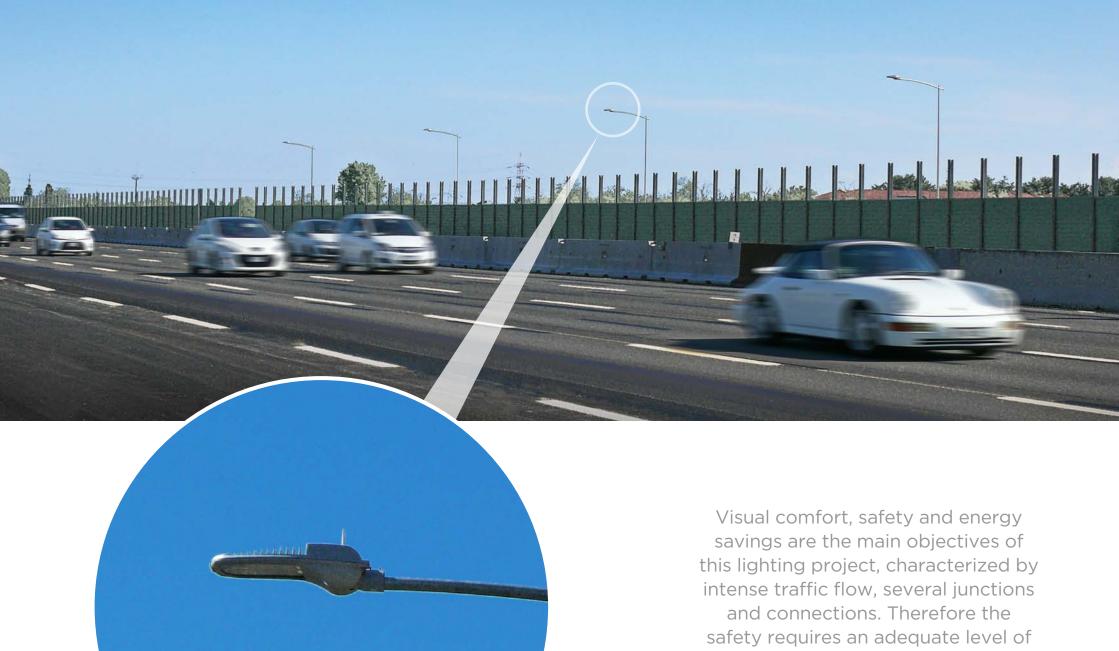
#### THE TECHNICAL SOLUTION

Visual comfort, safety and energy savings are the main objectives of this lighting project, characterized by intense traffic flow, several junctions and connections. Therefore the safety requires an adequate level of illumination to ensure full visibility along the entire route. In this framework, Fael LUCE provided PROXIMO with 42 and 49 LEDs, with a power consumption between 112 and 157W.

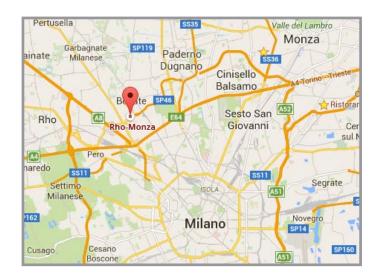
The streetlights are equipped with optic especially designed and in-house patented by FAEL Spa, which, in order to fully satisfy the CIE recommendations and the international street illumination engineering norms, and in accordance also with the recommendations against light pollution, developed a mixed refraction/reflection system.



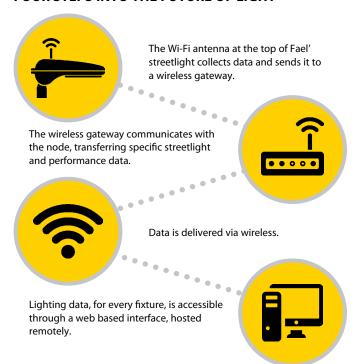




illumination to ensure full visibility along the entire route.



#### SMART LIGHTING FOR SMART CITY: FOUR STEPS INTO THE FUTURE OF LIGHT



In the perspective of the power consumption reduction and an intelligent management of the lighting systems, Fael LUCE streetlights have been provided with a Wi-Fi communication system which transforms the lighting system in a real network, allowing the transmission and processing of millions of data and translated into real actions.

#### **BEYOND THE LIGHT**

The solution proposed by Fael LUCE therefore exceeds the border of traditional lighting, providing, thanks to lighting-technology combination, an integrated system that makes possible the remote control system, allowing adjustment of the light flux by time slots or in different situations (for example in cases of emergency, during the night or in road maintenance times of greater or lesser traffic), the constant emission of the luminous flux during the lifetime streetlights and the real-time detection of the power and possible faults for every single device.

The lighting system realized by Fael LUCE allows a saving of approximately 40% of electricity consumption, compared to traditional solutions with discharge lamps, ensuring an average life of the device four times higher, smart and less onerous maintenance, placing the project as part of the smart city and thus opening the door to new smart lighting scenarios.

#### WE DO IT BETTER - WE DO IT TOGETHER.

Streetlights: PROXIMO

#### **KEY FIGURES**

Average illuminance on the carriageway > 1,5 cd/mq (Street lighting category: Me2).	Length of Rho-Monza: 9,2 Km.
Pole installation height (above the ground): 10 mt.	Length of Milanese trait of the highway A4 Turin-Venice: 11 km.
<b>Pole distance</b> (according to the characteristics of the carriageway): between 30 and 37 mt.	





#### **LIGHTMASTER MAX 1000W**

# **ABU DHABI INTERNATIONAL AIRPORT** *Abu Dhabi, U.A.E.*











For the Abu Dhabi International Airport, the second largest U.A.E. airport, ADAC (Abu Dhabi Airports Company) has selected an international firms consortium which Fael LUCE is a privileged partner. ADAC, with a strong Corporate Social Responsibility policy and mainly oriented in the development of a sustainable future in aviation, imposed project criteria totally focused on energy efficiency, low cost of ownership at a competitive pricing.

The Abu Dhabi International Airport is the fastest growing airports in the world in terms of passengers, new airline operators, and infrastructure development. Its expansion is part of the Abu Dhabi 2030 MasterPlan, aimed to transform the desert into the 'Garden of the Gulf' through a design that responds to its natural environment, while meeting the needs of the rapidly expanding capital.

Thought as the gateway to the city, the Midfield Terminal Building (MTB), so called for its placement between two runways, is the centerpiece of this expansion program. Raised up from the road level, it gives the appearance of sitting on its own plateau, a dominant and awesome structure silhouetted against the horizon.

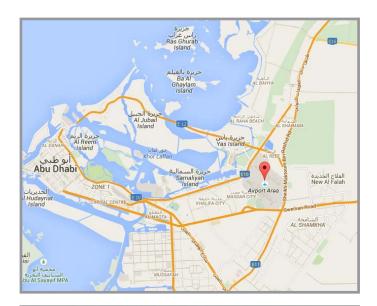


Recommendation: ICAO

Only the asymmetric floodlights allow to minimize to zero the emission of light output toward the sky up, thereby comply with the national and international recommendations regarding the light pollution.









#### THE SOLUTION

Fael LUCE team, thanks to the several years of experience in lighting industry, suggested LIGHTMASTER MAX, the asymmetric solution aimed to clear the "obtrusive light". This professional asymmetric solution satisfies any relevant design requirements, achieving highest lighting efficiency. The studies of specific asymmetric optics allowed to reach significant results and high luminous efficiency combined with elevated uniformity, that leads to obtain large energy savings in any facilities, in compliance with requirements of protection against light pollution.

Only LIGHTMASTER MAX allows to minimize to zero the emission of light output toward the sky up, thereby comply with the national and international recommendations regarding the light pollution.

Such solution allow the following benefits:

- More convenience in servicing and loading in terms of visibility and security;
- Does not cause glare in the eyes of the pilots, passengers and service personnel;
- Ensures lighting uniformity;
- · Insures lighting values established by ICAO.

In this project, FAEL Engineering staff suggested an asymmetrical solution to meet perfectly all the requests of the International Hub to minimize zero spill light emission as well a comfortable illumination values for the different Aircrafts operations.

#### WE DO IT BETTER - WE DO IT TOGETHER

Floodlights type: LIGHTMASTER MAX asymmetric trapezoidal beam















**BATE BORISOV STADIUM** Borisov, Byelorussia



There is no football player who did not play in the most modern and innovative of the European football stadium. The Slovenian architects OFIS Arhitekti exceeded all unthinkable milestone by designing FC BATE BORISOV and allow Engineering staff of Fael LUCE to give a light simulation of the light pitch which is illuminated of twin bulbs technologies: metal halide and LED.

The structure boasts an original architectural beauty: rounded lines wrapped in an aluminium' skin with oval openings along the façade, which makes it similar to a beehive completely surrounded by nature. The design requirements dictated for a solution that would integrate seamlessly into the overall project. The results have been reached with the installation of LIGHTMASTER ONE 2000W HF (223000 Lumen) and the newest LEDMASTER 3. The used floodlights really accomplished all the needs in terms of lighting design National and International Games in presence of Color Tv cameras (CTV): in front of such a sight, viewers will only be amazed.

Floodlights type: LIGHTMASTER ONE 2000W HF / LEDMASTER 3

The four elements (fire, air, water, earth) come together in a unique architecture of its kind: the Poliedro de Caracas.

A world-class multi-disciplinary venue which can be easily set to host various events, from sport and musicals shows even to government-sponsored political events.

The venue is characterized by the outer shell made up of stainless steel ribbons that create a large mosaic of light in which, every part, can be illuminated with different colours, making it possible to display a spectacular variety of combinations according to the nature of show is playing there.

For this astonishing project Fael LUCE provided LIGHTMASTER ONE floodlights with circular optics of R5, R6, R7, R9 beams, ensuring the achievements of incredible lighting values, representing now a scenario of international standard, able to welcome more than 13.000 spectators.

Floodlights type: LIGHTMASTER ONE













#### **LIGHTMASTER ONE**

## **POLIEDRO DE CARACAS**

Venezuela





Homologation: FIBA LEVEL I















#### **INNOVA**

#### **KISH ISLAND PROJECT**

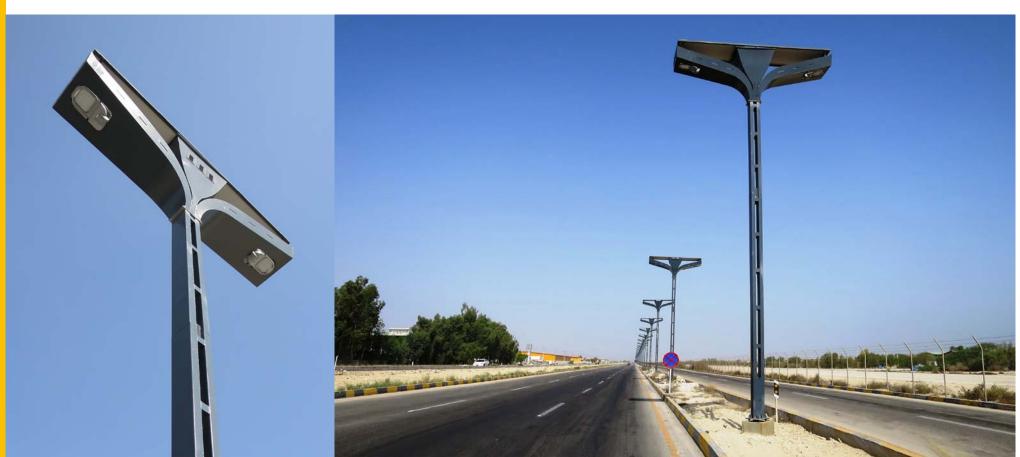
Kish Island, Islamic Republic of Iran

Kish Island, the pearl of Persian Gulf, is part of the Hormozgān Province of Iran and ranked among the world's 10 most beautiful islands by The New York Times.

The Green Ring Project is the largest lighting network projects in Iran developed around the major roads, high and low-speed lanes, as well as pedestrian and bicycle lanes and green sidelines which are in harmony with the island's shape. This ring-road provides access to every part of the island in short distance and time. For this extra-ordinary project, Fael LUCE supplied 2670 INNOVA streetlights, up to 100w, with top brand LED and multilayer optic designed and patented in-house to guarantee an high level of uniformity even in the unlikely event of individual LED failure. The streetlights have been integrated into the photovoltaic system that converts solar energy into electricity, accumulating during the day and releasing at night. The skillfull use of renewable energy combined with high-performing streetlights allowed considerable energy savings contributing to environmental protection and CO2 emissions.

Fael Luce has provided a lighting solutions that go beyond the "simple" streetlights, delivering an authentic lighting system that can satisfy even the most extreme ambient temperatures.

Streetlight type: INNOVA





Alkmaar Zaanstreek, better known as AZ Alkmaar or simply AZ, is a professional football club from the north of The Netherlands. The club plays in the Eredivisie, the highest professional football league in this Country. AZ plays the home games at the AFAS Stadion, located in the southern part of the city of Alkmaar. The stadium, which is owned directly by the club, replaced the old Alkmaarderhout venue as the DSB Stadion. The stadium currently has a capacity of more than 17.000 people.

For this project, Fael LUCE provided LIGHTMASTER ONE 2000W with Osram lamp HQI-TS 2000W/D/S 6100K, 210.000 lumen that, with its unmistakable design, represents the ideal solution to light up medium and large stadiums with HD cameras.

Floodlights type: **LIGHTMASTER ONE 2000W** 

#### **KEY FIGURES**

Lamp: Osram HQI-TS 2000W/D/S	Vertical Value:	Horizontal Value:
6100K, 210.000 lumen	1425 lux MainTVcam	1871 lux













#### **AFAS STADIUM**

Alkmaar and the Zaanstreek, The Netherlands



**UEFA-FIFA Class IV Regulations** 













#### **PROXIMO**

# **DUKE HIGHWAYS** *Kuala Lumpur, Malaysia*

Duta–Ulu Klang Expressway, DUKE-E33, formerly known as the Kuala Lumpur North East Expressway (KLNEE), is the main expressway network in Klang Valley, Malaysia. The 18 km-expressway provide the missing link to complete the Kuala Lumpur Structure Plan 2020. The studies of this plan have based on detailed analysis on the alignment that feed the next three years, including Environmental Impact Assessment and Public Opinion.

Before & After. The previous installed 400W HPSV streetlights have been completely replaced by Proximo of 200W, helping the Expressway, thanks to the improved and exceptional illuminance and luminance values, in achieving the best performance in lighting and providing the 120.000 vehicles per day a safer street lighting. The fixture not only assures safety and comfort improvement but also guarantees to save up to 50% electricity energy and a constant reduction of  $CO_2$  emissions.

Thanks to the technical contribution of Fael LUCE, now the entire Expressway is now able to have every year important energy savings, general cost reductions and eco-sustainability.





In the heart of the Russian capital opened "Moskvarium", the center of oceanography and marine biology, recognized as the biggest in Europe. With a total area of the complex is 53 thousand square meters, 80 aquariums, 8000 species of sea creatures from all over the world, including 500 species of fishes, killer whales, three meter sharks, dolphins and Russian sturgeon, 1.2 thousand people can attend it at a time.

For this amazing project, Fael LUCE provided 300 pieces of MACH LED Series, with rotosymmetric optic. The floodlights, in die-cast alluminium, with the primary alloy with a low copper content, have proved to be the ideal solution for such environments, particularly exposed to a high moisture level.

The color temperature is a key feature both because it impacts directly on the health of corals and it changes the color tone of the tank, influencing the appearance that has to be as natural as possible.







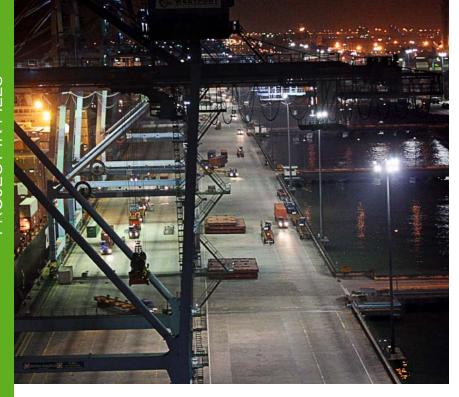






**MOSCOW ACQUARIUM** (MOSKVARIUM),

Moscow, Russia





#### **WESTPORTS MULTI-CARGO TERMINAL**

Port Klang, Malaysia



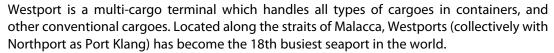












As part of the privatization exercise by the government of Malaysia in the early 1990s, Port Klang was subdivided into 3 terminals which are now known as Northport, Southpoint and Westports.

Located on the island of Pulau Indah (formerly Pulau Lumut), Westports have transformed the island's natural swamplands and sands into a multi-cargo seaport terminal. With the current quay length of 3.2 kilometers, which includes 5 container terminals, Westports have grown into a seaport terminal and helped Port Klang to be among the ports in the world.

Floodlights type: MACH 5 COSMO WHITE 315W



#### MACH 2

#### MARINA BAY SANDS RESORT

Singapore









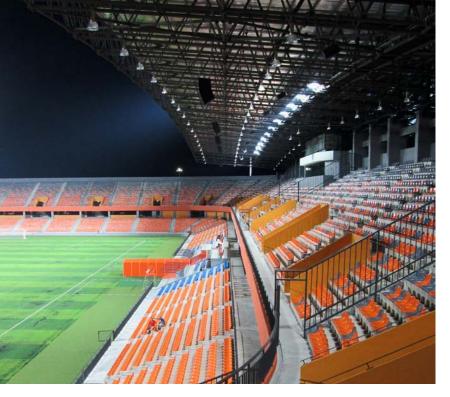




Fael LUCE contributed to light up the most famous building of Singapore, the Marina Bay Sands Complex, designed to accommodate the largest luxury resort of the entire Asian continent.

The complex, characterized by its architecture, consists of three towers covered by a structure shaped like a boat that houses one of the top ten hotel rooftop pools. During the night, the building gives a spectacular view through the play of light and reflections created on the water below.

Floodlights type: MACH 2





#### STADIUM FELDA UNITED FC

Bandar Pusat Jengka – Pahang, Malaysia











Stadium FELDA United FC is a Football stadium located at Bandar Tun Razak, Jengka Pahang, West Malaysia. It is currently being used solely for football matches.

The stadium is the home ground for FELDA United Football Club which is own by Federal land Development Authority. The football team was initiated by FELDA and it was officially launched by the Prime Minister. The construction started in year 2013 and completed in 2015. This stadium is the first stadium to be played on synthetic field for Malaysia Super League for Malaysia.

For this stunning project, Fael LUCE provided a combined solution between circular and asymmetric optics: the two Lightmaster, to light up a master stadium!!

Floodlights type: **LIGHTMASTER ONE 2KW HF** (High Mast Lighting) **LIGHTMASTER MAX 2KW HF** (Roof Lighting)



#### **LIGHTMASTER MAX 2000W**

## PANAMA CANAL EXPANSION

Panama











The enlargement of the existing Panama Canal is one of the largest and most important engineering projects in the world.

Fael LUCE has provided the floodlights to illuminate the building site that is working on the expansion of the Canal. This kind of lighting must ensure high standards of safety, so that the laborers, involved day and night in the realization of the enlargement, can work in a safety environment, properly lighted up.

The Panama Can will be completed in 2018.

Floodlights type: LIGHTMASTER MAX 2000W

CHERNOMOREC STADIUM Ukraine



HANDBALL IZBOR Oman



PRUSZKOW NATIONAL VELODROME Polond



KONIAMBO NICKEL PLANT New Caledonia Australia





KOLUMNA CASTLE Polond



MAYBANK TOWER Singapore



KUANTAN COURT Malaysia



**SVETICKHOVELI MONASTERY** *Republic of Georgia* 





SHA LU OVERPASS Taiwan



RED BULL X-FIGHTERS Egypt



FIAT DEALER Bari - Italy





COMMUNICATION ROUTES Italy



**RECIFE ROUTE** *Brasil* 



AUTOSTRADE PER L'ITALIA Italy



CENTRO
DIREZIONALE
COLLEONI
Italy





STADE LOUIS II
DE MONACO
SALLE OMNISPORTS
France



HONG KONG STADIUM Hong Kong



GIULIO ONESTI OLYMPIC SWIMMING POOL Rome - Italy



PAICHADZE NATIONAL STADIUM TBILISI Republic of Georgia



WESTPORTS MULTI-CARGO TERMINAL Malaysia



PALACE OF FENCING MAGINI Italy



SENEGAL INTERNATIONAL AIRPORT Sénégal



COMPLEXE SPORTIF PRINCE MOULAY ABDELLAH Morocco



METRO
COLOMBO URBAN
DEVELOPMENT
PROJECT
Sri Lanka



TAIPEI TIEN MU BASEBALL FIELD Taiwan



AL AIN EQUESTRIAN SHOOTING AND GOLF CLUB U.A.E.

CHANDNI CHOWK FLYOVER Islamic Republic of Pakistan



TRINITAPOLI INDUSTRIAL AREA Italy



AL FORSAN INTERNATIONAL SPORTS RESORT U.A.E.



RADISSON BLUE HOTEL Ukraine





ESTADIO RAMIREZ VILLEGAS Colombia



CAVALLERIZZA DI PINEROLO Italy



GONG BADAK STADIUM Malaysia



GLOBAL CHAMPIONS TOUR Austria





FELDA STADIUM Malaysia



SALUT STADIUM Russia



S3 HIGHWAY Poland





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