

The Philips logo is displayed in a white rounded rectangle with a purple bottom section. The word "PHILIPS" is written in blue, bold, sans-serif capital letters.

Outdoor lighting



Case study:
Sheikh Zayed Bridge, Abu Dhabi

LED road lighting:
better light; less
energy



“ The departments of Municipal Affairs and Abu Dhabi Municipality are committed to achieving sustainability in lighting upgrades. We are one of the first local authorities in UAE to recognize that the use of low-energy, low-maintenance products such as LED luminaires enable us to create a sustainable society through innovation, without reducing the quality of lighting ”

Eng. Ahmed Saif Mohamed H. Al Saedi,
O&M of Internal Road Street Lighting and Public Realm Team



The project

Abu Dhabi Municipality has replaced the road lighting of the Sheikh Zayed Bridge with the latest Philips LED luminaires. The result – a massive reduction in the carbon footprint of the lighting systems emissions, together with savings in maintenance costs. In addition, the light quality is improved for better, safer and more comfortable vision.

Background

The Sheikh Zayed Bridge, named after the country's principal architect and former president Sheikh Zayed bin Sultan Al Nahyan, connects Abu Dhabi Island with the mainland. Cantilevered

road decks suspended from steel arches provide a four-lane highway, and the stunning design of the arches provides a visual flow that is sinusoidal in nature.

Carriageway lighting was originally provided by traditional HID metal halide 250W and 400W luminaires; the best option at the time in terms of light quality and energy efficiency. Problems with the installation were the ones faced by most local authorities: recurring faults with frequent visits for scouting, repair and lamp replacement causing traffic disruption and road closures as well as large maintenance bills. In addition, the lighting was perceived as being inadequate for a four-lane highway, presenting a safety issue.



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The challenge

The major challenge was therefore to reduce maintenance and energy costs and at the same time to improve the light quality and therefore safety. In addition, the team considered it essential that the new lighting met modern design standards with maximum reliability. Impact on the environment also needed to be minimized as part of the Municipality's sustainability strategy. Also the new installation must comply with DMA standards.



The solution

The chosen solution was the Philips Luma LED luminaire, installed on the existing poles at 14m height and therefore providing a simple, straightforward installation. A total of 186 Luma 1 LED luminaires were installed to achieve the required lighting levels and uniformity, and to meet all relevant lighting standards. The modular concept of REVOLED within Luma 1 allows for the lighting scheme to be easily set up to meet the precise lighting requirements, enabling energy savings to be maximized.

Benefits of the new installation

The lighting upgrade from HPI to LED has reduced energy consumption by more than 72% compared with the previous installation, from 345,152 kWh/year to 96,132 kWh/year – a massive annual carbon emission reduction of 133.7 tons towards Abu Dhabi's sustainability target.

In addition, the LED's have a guaranteed service life time of 50,000 hours (around ten years) which means effectively that they last as long as the installation. There is therefore little or no need for repair or replacement, drastically reducing maintenance costs.



“ Currently, we are upgrading the lighting specifications to implement the latest lighting technology. The lighting specifications are applicable to roadway/parking, tunnels/underpasses, lighting poles and public lighting management system for the the entire Emirate of Abu Dhabi. The lighting retrofitting of the Sheikh Zayed Bridge is the first project of many in which Abu Dhabi is working towards a more sustainable Emirate by installing LED energy efficient lighting ”

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Luma LED's produce high-quality white light which improves visibility, a major contributor to road safety as it enables drivers to detect movement sooner and at a greater distance, giving them more time to stop. A spin-off benefit is provided by Luma's constant lux circuit, which automatically increases LED current throughout LED life to compensate for lumen depreciation. This not only stabilizes light levels, but can save energy by avoiding over-lighting when the installation is new.



Luma 1 LED luminaires

Martin Valentine (MSc MSLL PLDA), Lighting Expert Abu Dhabi Municipality, commented: “The use of innovative LED road lighting luminaires to reduce our carbon footprint has proved to be an excellent way of moving towards sustainability throughout Abu Dhabi.”

Serviceability of the new lighting is excellent. Martin Valentine comments: “The LED luminaires have proved to be reliable, cutting maintenance costs, and this, added to the energy savings, can make scheme upgrades self-funding. The, light quality has improved which ensures better visibility ,thus , creating roads that are not only more pleasing to use but safer too”.

Facts

Client:
Abu Dhabi Municipality

Project:
Sheikh Zayed Bridge

Location:
Abu Dhabi, United Arab Emirates

Luminaires:
Luma 1



