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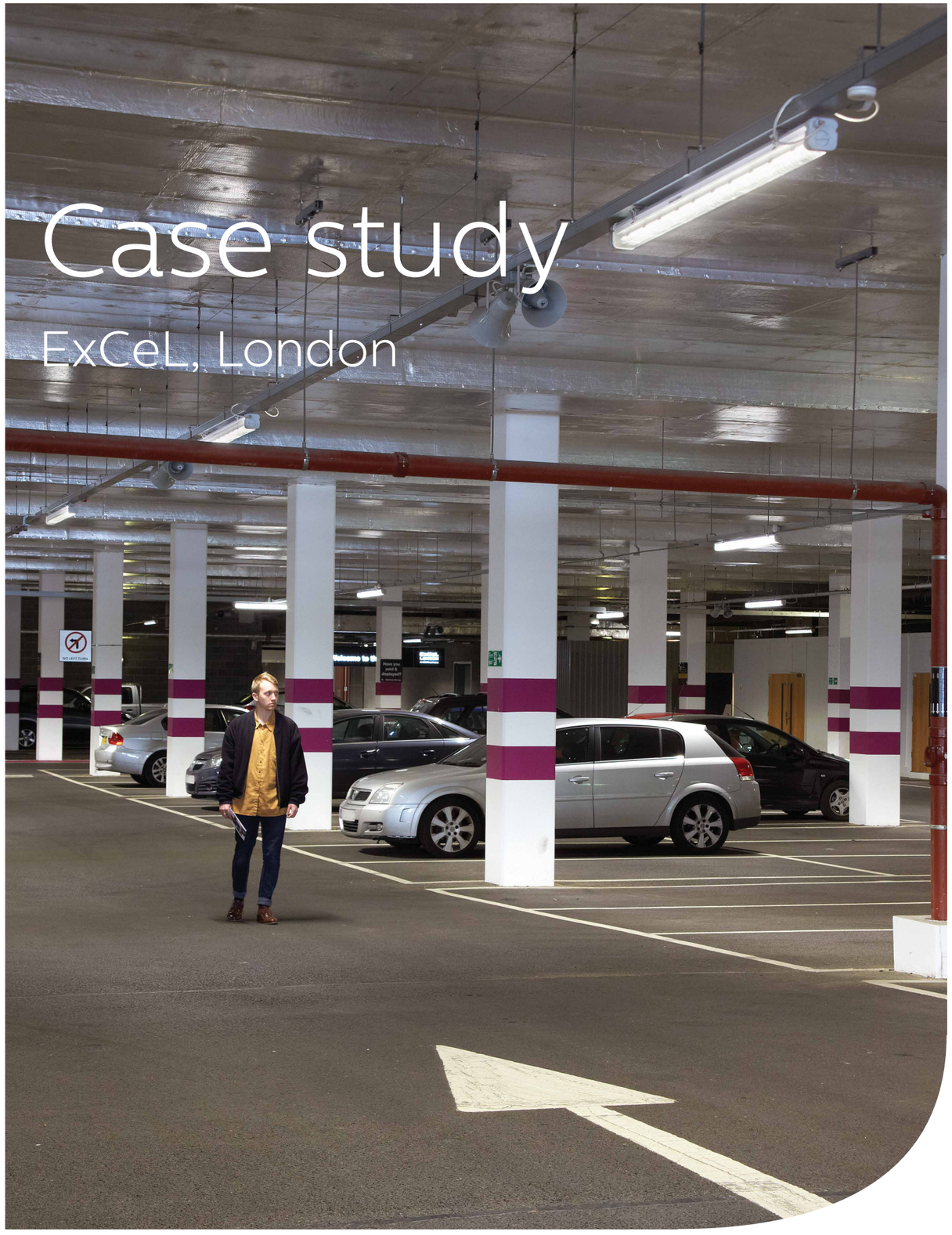
Case study

ExCeL, London

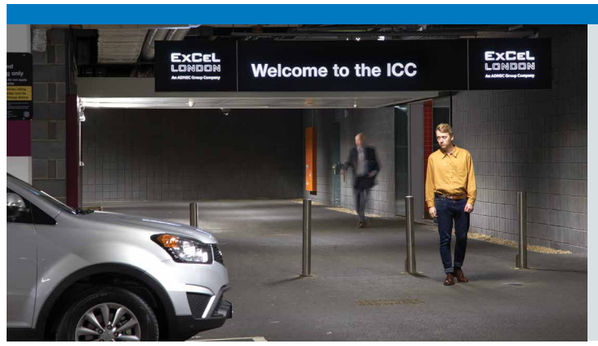


Location | Royal Docks, London
Philips Lighting | Philips Pacific LED Green Parking System

“Our calculations showed that upgrading the car park lighting would deliver a payback within 1.5 years through energy savings, so this was clearly a very worthwhile investment.”

Brian Cole, Operations Director, ExCeL

The Philips Pacific LED Green Parking System has enabled ExCeL London to greatly enhance its car park lighting while delivering around 84% energy savings, as well as reduced lifecycle costs



Fast Facts

Customer
ExCeL London
Location
Royal Docks, London
Philips Products
Philips Pacific LED Green Parking System
Project Partners
Elite Renewables

Background

ExCeL London is located in London’s Royal Docks and has 100,000m² of exhibition and conference space, accommodating 3.6 million visitors and exhibitors each year.

Following the success of an earlier project to upgrade lighting in the halls to Philips GentleSpace high bay LED luminaires, ExCeL saw an opportunity to achieve further energy and carbon savings by upgrading to LED lighting in the car parks. A survey of the existing lighting systems indicated that the smart Pacific LED Green Parking System, which includes zoned dimming, would deliver significant cost and environmental benefits. This was the first installation of the system in the UK and the largest installation of this system in the world.

ExCeL’s Operations Director Brian Cole explained: “We are continually assessing opportunities to improve energy efficiency to offset the rising cost of energy and reduce our carbon emissions. Our calculations showed that upgrading the car park lighting would deliver a payback within 1.5 years through energy savings, so this was clearly a very worthwhile investment.”

The two undercroft car parks at ExCeL London are directly beneath the exhibition halls and cover an area of 90,000m², providing 2,100 parking spaces. Since the venue was constructed the car parks have been extended in phases, resulting in varying light levels from a mix of different light fittings and light sources. These included 250W metal halide, 58W T8 fluorescent and 2D compact fluorescent fittings – 1,817 fittings in total.

The Solution

The existing lighting has now been replaced with LED lighting throughout, using 1,141 Philips Pacific LED fittings. As well as providing energy efficient performance with a high lumen output, the Pacific LED fittings have excellent glare control to ensure good visibility for drivers.

Most of the Pacific LED fittings are connected to occupancy sensors via a wireless control network, the exceptions being in areas where the lighting will not be dimmed, such as under walkways. The use of a wireless control network has avoided the need to run control cabling throughout the car parks, reducing both the time and cost of installation. The LED Green Parking System uses the ZigBee wireless communication protocol that operates with low power devices yet is able to transmit data over long distances.

As a result of the upgrade the installed electrical load has been greatly reduced, as has the total number of lighting points. The design of the system also provides even illumination throughout the car parks, with cleaner lines across the ceilings compared to the previous lighting.

The energy savings achieved by upgrading to LED lighting are further enhanced through the control strategy. The previous discharge lamps used simple on/off switching, so that the lighting was running at full output for much of the time, irrespective of occupancy. The new zoned system uses a network of 225 occupancy sensors to dim lighting to 10% of full output in unoccupied zones, ramping up to 100% when a person enters the zone. Use of LED light sources ensures true linear dimming, so that lumen outputs and illuminance levels are totally predictable.

The ability of the system to dim on a zone-by-zone basis ensures a safe and comfortable environment for users of the car park, thereby providing the optimum balance between visibility, perception and energy performance.

One of the challenges faced by the Philips team was that the car parks have several entrances and exits, so the routes taken by people to and from their vehicles are unpredictable. This was addressed by creating a zone plan aligned to the parking zones and potential routes of pedestrians, using careful positioning of the sensors to ensure people are detected whichever route they take.

Initially the roadways were lit to 100% all of the time. However, subsequent evaluation of the responsiveness of the system has shown that the illumination of the roads can also be reduced to 10% when no vehicles are using them, with no compromise to safety.

As well as reducing its energy consumption and carbon emissions, ExCeL will benefit from reduced maintenance costs due to the long life of the LED light sources and will no longer need to stock a range of different light sources for replacement.

“We are delighted with the new car park lighting, which has improved safety for drivers and pedestrians – and security overall. It has also made life easier for our traffic staff to inspect permits,” Brian Cole continued. “Philips provided a complete solution service including project management, commissioning and installation services, working closely with installers Elite Renewables. They were able to schedule the work around our many events, ensuring that there was no disruption throughout the installation. The feedback from regular users of the car park has been very positive,” he added.