



MANCHESTER AIRPORT

MAJOR LED UPGRADE HELPS
MANCHESTER AIRPORT REACH
SUSTAINABILITY GOALS.

Dextra
LIGHTING

ABOUT THE CLIENT

In 2015, Manchester Airport was once again crowned “Best UK Airport” at the prestigious Globe Travel Awards, after handling over 23 million passengers that same year, breaking its own record since opening in 1938. Owned by the U.K’s largest aviation group, M.A.G, the airport is now the third busiest in the country, with 70 airlines flying to over 200 destinations. The airport is also a key asset to the national economy, supporting more than 46,000 jobs in the region with a notable contribution of £1.7bn GVA to the UK economy.



As part of its Sustainable Development Programme, M.A.G declared its ambition to “maintain a balance between the benefits of growth and its environmental impacts” and achieve carbon neutrality in its operations by 2015. A central aspect of this government sponsored initiative was to continually monitor, assess and improve the efficiency of its facilities, incorporating state-of-the-art, energy-efficient technologies such as LED lighting, with sensor and dimming controls, to its building management system (BMS).

As winners of EMA Energy Management Team of the Year award in 2015, Manchester Airport Utilities Team is strongly committed to adopting the industry best practice for environmental management. As a result, it put an energy efficiency project out to tender to 14 major lighting manufacturers, to upgrade the lighting in its busy back-of-house and baggage sorting areas. The new scheme aimed to reduce energy consumption whilst improving lighting conditions for engineering and maintenance tasks.

THE BRIEF

In order to win the contract, Dextra Lighting had to ensure that the new installation provided:

- A minimum of 40% reduction in energy consumption
- Payback within 3 years
- Luminaires compliant to ECA criteria
- Improve illuminance levels
- Flexible Switch or Dali lighting controls and interface
- 4000k colour temperature
- 5-year warranty

In addition to these factors, the lighting upgrade was to conform to CIBSE guidelines to create a safer, more comfortable and productive working environment for staff. This goal was to be achieved by providing task-specific

illuminance levels, offer more pervasive, low-maintenance emergency lighting, and incorporate flexible and user-friendly lighting controls.

Dextra Lighting also had to manufacture a series of bespoke luminaires to integrate with the building's architectural design, boost efficiency, conform to specific airport wiring requirements by providing LSF (Low Smoke and Fume) cables and ensure compatibility with the airport's existing BMS where necessary.

With such a large scale project, huge financial savings could potentially be achieved through the reduction of installation and future maintenance costs. Manchester Airport also relied on Dextra Group's subsidiary – Dexreco, to promptly dispose of and recycle all obsolete lighting equipment according to current legislation.



THE SOLUTION

Back-of-House

Dextra Lighting delivered a total of 1460 luminaires directly to the airport to replace the existing lighting in the BOH corridors, plant and storage areas, and stairwells. The LED upgrade resulted in a 520,520 Kwh reduction in power load over the previous fluorescent system, generating energy savings of over 60% for M.A.G. The energy-efficiency of the new LED installation was enhanced using sophisticated lighting controls, manufacturing luminaires with bespoke lumen packages, and using High-Efficiency LED chips.

For the corridors, the Arcus LED recessed luminaire provided all the energy-saving and low-maintenance benefits of LED technology without compromising on aesthetic appeal and visual comfort. The luminaire's attractive gull-wing design and high-efficiency extruded diffusers brought a smart and contemporary look to the terminal, whilst offering a light output ratio (LOR) of 81% and uniform distribution of its high-quality Lumileds LEDs.

Available in a range of three standard sizes and two lumen outputs, three versions of the Arcus LED were supplied including a customised 1200mm x 300mm variant in a 3500lm capacity, designed to facilitate retrofitting in the corridors' suspended ceiling, and provide the desired illuminance levels for the area.

The Arcus was also linked, via DALI dimming controls, to the airport's BMS, allowing staff to continually monitor and improve the lighting's efficiency by adapting it to occupancy patterns throughout the day. The luminaire also offered full compliance to L2 and ECA performance criteria as requested.

The EcoPack LED batten luminaire offered a highly effective replacement for the previous fluorescent lighting in the storage areas. In addition to the many advantages of its LED source, the EPK's cost-effective installation features ensured greater returns on investment for the group. Its matching footprint to typical fluorescent battens and a practical two-part construction with separate rear spine, clip-on gear tray and diffuser for simplified mounting, allowed the airport's resident technicians, DC Emergency Systems Limited, to carry out a quick and easy one-for-one installation at a reduced cost for the airport.

The Ecopack's performance is optimised by its high-transmission curved opal diffuser offering high LORs whilst operating at an impressive 120 luminaire lumens per watt. Over 600 EPK luminaires were supplied in bespoke lumen packages of 2500lm and 4000lm to meet the required lux levels in the stores, with integral passive infra-red R21E sensors, manufactured in-house by Dextra Group's lighting control specialists – Dexasor, allowing the lights to switch on or off depending on occupancy patterns.



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THE SOLUTION

A comprehensive range of options including, lumen outputs, body sizes and types, reflectors, covers, dimming functions, sensors and emergency lighting packages, allow the highly versatile luminaire to be tailored to satisfy specific design requirements.

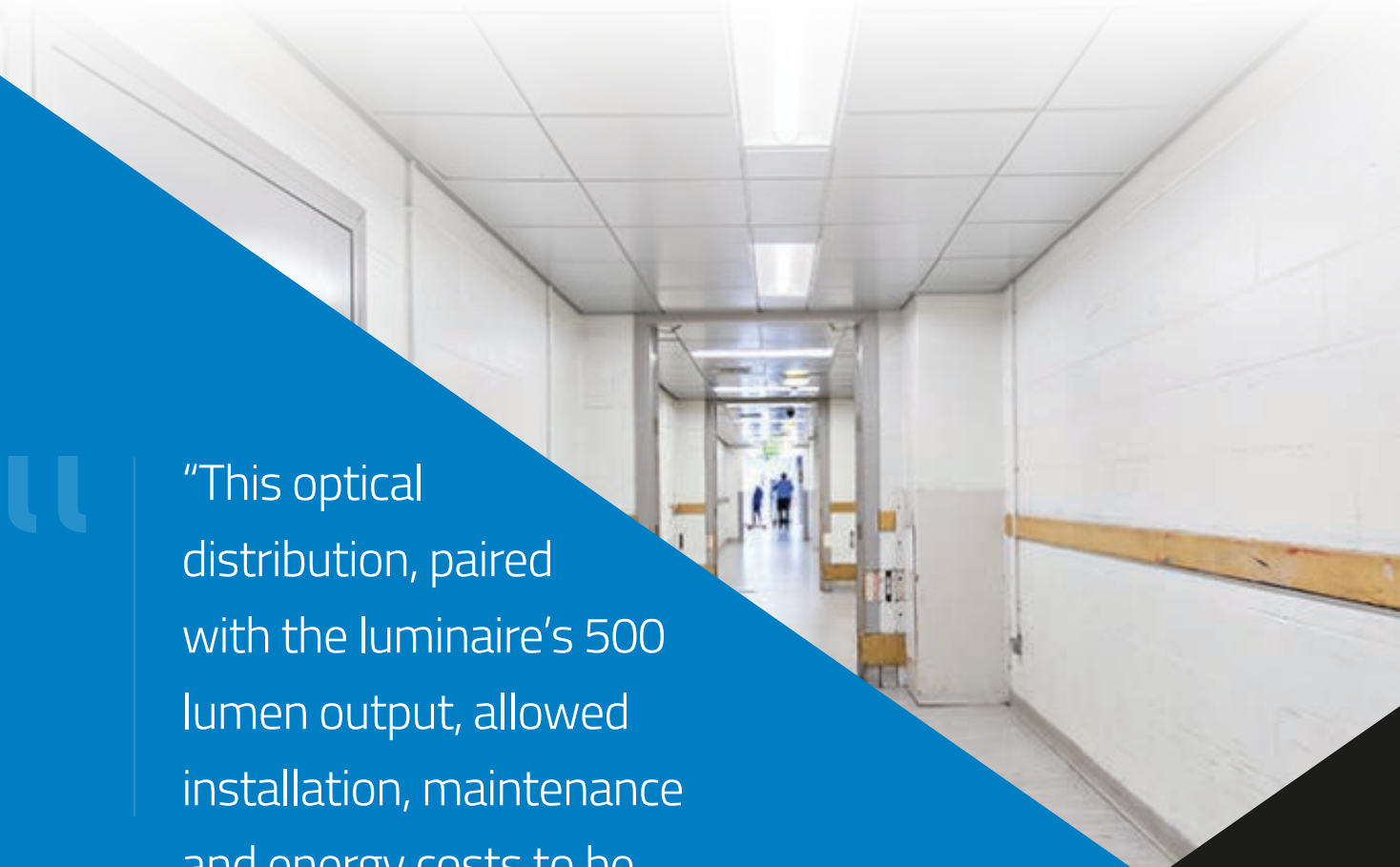
Engineered for maximum durability and efficiency, the Eco Impervia LED was chosen to withstand the tougher conditions of the plant areas, and to minimise running costs whilst delivering maximum output. The IP65-rated luminaire features a robust, glass reinforced polyester (GRP) body and polycarbonate diffuser secured by lockable stainless steel clips, offering resistance to temperatures between -20°C to +25°C and protection from dirt and dust ingress, water and light impact.

The energy-saving LED lighting system is designed to deliver the same performance of fluorescent equivalents using 28/35w or 54/49/80w sources, but with reductions of at least 60% energy consumption on a typical installation. The ECO Impervia range is also built with versatility in mind, offering lumen outputs between 2,600lm to as high as 13,200lm, across two sizes in single or twin body types. In the low-level plant room, 3,500lm and 4,500lm ECA compliant versions were installed to provide optimal illuminance levels and even coverage. With the Eco Impervia, installation was quick, cost-effective and hassle-free, as it is delivered on-site, fully assembled and ready to install.

To boost the energy efficiency of the installation further, the luminaire was supplied with the R25E microwave sensor, providing absence detection with an On/Off function. The Eco Impervia LED is also available with integral PIR sensors for daylight and presence detection (programmable using the user-friendly RE-AP remote control), corridor mode, and a wide range of dimming and emergency functions to suit a variety of applications.

The Amenity Decorative LED provided a safe, attractive and efficient solution for the stairwells and other circulation areas. The AMED LED was also supplied with the R25E microwave sensor to maximise energy savings.

The highly versatile luminaire was installed in both 1,500 and 2,000 lumen output packages with LORs in excess of 80%, giving a similar performance to current fluorescent alternatives but with reductions of approximately 50% in energy consumption. Alongside a wide range of dimming, sensor, emergency and installation options the AMED LED also offers a selection of customisable coloured ring attachments. Semi-recessing kits are also available for added flexibility at the point of installation.



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THE SOLUTION

Emergency Lighting

To add to the existing emergency lighting, a bespoke version of the Highspot LED emergency luminaire was purposely built to provide a cost-effective, low-maintenance and efficient solution for the back-of-house car parks.

Out of a range of three different lens types, the luminaire was provided with a customised Ultra Wide lens to achieve maximum coverage using the widest spacings possible. This optical distribution, paired with the luminaire's 500 lumen output, allowed installation, maintenance and energy costs to be kept to a minimum. Upon the clients specific request, the bespoke luminaires were designed to operate with a legacy 110V central battery system for back-up power.

The IP65-rated luminaire offers suitable protection for exterior applications and its emergency function can also be tailored to offer standard, self-test and auto-test options to ensure that the ongoing cost of emergency testing can be minimised.

Baggage Handling Area / Terminals 1 to 3 – Hydra LED

The Hydra LED provided a highly efficient and durable alternative to the existing lighting in the baggage sorting areas. To cater for the specific requirements of each terminal building, over 1600 luminaires were delivered in 2,200, 4,500 and 5,400 lumen output packages in 600mm and 1500mm sizes, making full use of the Hydra's range of customisable options. The large-scale one-for-one installation was carried out by appointed contractors, WH Good, both quickly and cost-effectively, using the site's existing fixing centres.

By utilising the latest Lumileds LEDs, the versatile luminaire can be manufactured in outputs ranging from 2,200lm to as high 13,200lm, in single and twin body types, all offering impressive LORs of over 90%. These reliable and long lasting LED sources not only improved the lighting conditions for the airport's engineering staff and technicians at a reduced electrical load, but also minimised maintenance costs for the airport.

Further energy savings can be achieved with this product by incorporating the use of its wide range of sensors and dimming functions. Sealed to an IP65 rating, the luminaire offers protection from dirt, dust ingress and light impact with resistance to temperatures ranging from -20°C to +25°C, making it ideal for a host of industrial applications. The luminaires were provided with stainless steel clips and tamper resistant screws to ensure tooled access in compliance with current regulations.



FEATURED PRODUCTS



HYDRA LED



HIGHSPOT LED



AMENITY DECORATIVE
LED



ECO IMPERVIA LED



ECOPAK LED



ARCUS