GATWICK AIRPORT - NORTH TERMINAL

"MORE IS LESS" - GATWICK UPGRADE TO LED FOR A BRIGHTER, MORE COLOURFUL AND ECO-FRIENDLY TERMINAL

Dextra LIGHTING

ABOUT THE CLIENT

London's first carbon-neutral airport hits energy management KPIs with precision-engineered LED system - Dextra Lighting and LEDextra took on the challenge to create a bespoke solution for Gatwick Airport's North Terminal that would produce more light with less than half the electricity. The customised retrofit solution saved the airport 54% in energy usage, reduced maintenance and minimised waste by re-using some existing luminaire housings.

In spring 2017, Gatwick Airport launched a five-year investment plan worth over £1bn to upgrade and expand its facilities. This year alone, the airport will spend an estimated £240m on the transformation project, aiming to attract new customers, cope with rising demand and boost operational efficiency.

Despite years of record growth, Gatwick has set an example for sustainable practice in the aviation sector. Through its Decade of Change Programme, the airport has strengthened its green credentials by making steady progress in its ambition to reduce energy consumption by 20% and carbon emissions by 50% (against a1990 baseline) by 2020.

Competition amongst London Airports is fierce but Gatwick has managed to stay on top, growing by a record 3.2 million passengers last year (8% compared to 2015/16) increasing its share of the London market to 26%. Despite this, the airport strives to balance growth with sustainability, as construction director Raymond Melee confidently states: "As we plan to grow towards 50 million passengers per annum, we will focus on efficiency and service so that our passengers continue to receive the airport experience they expect, in the most sustainable manner possible."

When Dextra Lighting was finally approached for the latest upgrade of Gatwick's North Terminal facilities, it was clear that the airport would not compromise on either sustainability or service excellence. The partnership reflected the airport's Energy Management Action Plan as the project involved investing in low carbon technology and "working with partners to drive improvements in waste management that improve our energy consumption profiles".

Competition for the large-scale development contract was also tight. Gatwick goes the extra mile to procure not only the highest quality products, technology and services for the development and maintenance of its facilities, but also ensures that partnering contractors and suppliers would reflect its strong commitment to the environment.

With a portfolio of successes at a number of UK airports including Manchester, Liverpool and Belfast, Gatwick were reassured that Dextra Group had the manufacturing, design, transport and recycling capabilities to meet the high-specifications of the project, not to mention the extensive range of precision-engineered LED products and intelligent lighting controls.

THE BRIEF

Dextra Group (working to concept designs developed by Gatwick based Lighting Design Consultancy – StudioFractal) was to provide its total service deploying its various subsidiaries – from surveying and design, manufacture and assembly, right through to delivery and installation.

Gatwick allocated a total of £19.2m for the upgrade of its North Terminal baggage reclaim and check-in areas. A portion of this budget was dedicated to updating the existing fluorescent lighting to a sensor-controlled LED system. Airport terminals are portals from one country to another. This is where impressions count and lighting designs are crucial to maintain a strong visual identity and communicate to the passenger.

The main design aim was to increase light levels and quality whilst reducing energy usage and maintenance costs compared to the existing fluorescent fittings. The airport specifically wanted to include high-output luminaires in the design but make drastic cuts to energy consumption. All products were to conform with the airport's modernised brand and renovated interior design and offer full compliance to airport safety and emergency regulations.

The project would test Dextra Group's bespoke and design capabilities - customising some existing products to suit the application as well as providing retrofit solutions that would integrate seamlessly and efficiently into the existing infrastructure. Retrofit solutions would adapt to the airport's Building Management System (BMS), connection points, and architecture and existing central battery units.

By selecting high-quality products featuring the latest LM80-verified LED sources and reliable drivers, the new installation would require minimal maintenance by eliminating the need for frequent lamp changes compared to conventional fluorescent alternatives.

Old fittings and electrical equipment were to be disposed of or recycled quickly and efficiently according to WEEE regulations.

The Runway Surface/Suspended Continuous - Main Entrance & Check-In Area

The Runway range of luminaires is designed for maximum design flexibility. At once architectural and practical, the luminaire can be seamlessly integrated into any interior or configured, and reconfigured, to dramatic effect.

The Runway can be fashioned into a discreet or show-stopping solution depending on what is needed. With the versatility to be surface-mounted or suspended, standalone or in continuous runs, combined with corner sections, output packages in various lengths and optional bi-directional distribution - the luminaire allows designers to be creative with layouts and lighting effects to transform any space into an attractive and alluring environment for occupants enjoy.

The list of options does not end there, however. The luminaire is also available with integral emergency, white tuneable and dimming options, two optic styles, minimalist opal finish or microprism for compliance with the BSEN12464 3000 candela limit and UGR (Unified Glare Rating) 19 for areas where monitors are in use. Taking this flexibility a step further, LEDextra, Dextra Group's specialised components subsidiary, stepped in to customise this product to Gatwick's exact requirements - allowing the Runway to offer options beyond those already at its disposal.

A seamless showstopper - An impeccable retrofit solution using the latest RGB LED sources and bespoke gear trays

With the aid of LEDextra's extensive range of high-quality components and on-site assembly capabilities, the Runway's gear trays were manufactured in custom-sized lengths to fit the measurements of the previous fluorescent installation, which were then assembled in raft formations. These square configurations were suspended within deep skylight niches in the ceiling which, due to the reflectances produced by the luminaire's bi-directional optics, acted as glowing light chambers.

The luminaires were equipped with the latest high-performance Lumileds RGB LED sources from LEDextra and DALI dimming drivers, allowing each niche to be tuned to a desired colour and dimmed as required.

The modified Runway gear trays were customised for high-level applications offering an increased light output and wider distribution.

Bespoke connection points and DALI compatibility were also made in-house for easy wiring and full control from the terminal's centralised BMS system. Staff can now adjust the level and colour of the lights to suit changes in corporate theme as well as benefit from the existing energy-saving sensor functions for daylight regulation.

With LEDextra's modifications, the luminaire features a bi-directional distribution that produces white 4000k light, directed downward, to aid the checking of documents and interactions with staff whilst a red or blue uplight offered a decorative and colour branding purposes. The colours also help passengers locate certain check-in areas from a distance, making it easier to navigate by dividing the large open plan into clear sections.

The wide corridor of the main entrance was brightened up by bespoke luminaries fitted in close succession to one another - filling up the grooved recesses in the ceiling. Here, the gear trays provided were also tailored to seamlessly fit into the existing trunking system, enabling a hassle-free and cost-effective installation. By increasing the number of luminaires in each row, lux levels were significantly raised compared to the previous, sparser luminaire arrangement.

Comtec LED – General lighting

The versatile Comtec LED downlight was supplied in a new high output of 4000lm ideal for taller ceilings and large open spaces. LEDextra's bespoke retrofit gear tray allowed for direct installation into the original luminaire housings and enabled DALI connection to the airport's lighting control system for dimming and sensor control. The LED retrofit solution was installed with ease and minimal modifications to the airport infrastructure, saving money, time and labour by reducing waste, avoiding the need for re-wiring and minimising maintenance.

The circular bespoke gear trays were custom-sized and contained high-quality components including the latest 3535 Lumileds LED source and DALI dimmable Philips driver and can be easily removed or replaced to be either serviced or upgraded. The luminaires acted as additional general lighting to support the Runway suspended rafts, balancing light coverage throughout the premises.

Both the surface and recessed versions of the Comtec LED is normally available in lumen outputs of between 1100 and 3000, in either recessed or surface-mounted variants which were both utilised for areas with suspended grids and solid sections of the ceiling respectively.

To minimise installation costs, the non-bespoke recessed luminaires are usually supplied in standard 210mm size (typical of fluorescent downlights) to simplify installation into the building's existing cut-outs; avoiding further modifications to the ceiling. Adapter rings for larger cut-outs and adjustable brackets to accommodate a range of ceiling thicknesses are also available for either tiled or plasterboard ceilings.

Thanks to its anodised aluminium reflector and extruded aluminium heat sink, the Comtec LED Surface makes efficient use of its high-quality Lumileds LED source, offering a Light Output Ratio of over 90% with exceptional thermal management. Its recessed counterpart features a similar optic design offering superb light quality and higher outputs whilst operating at an efficiency of up to 118Llm/w. Compared to fluorescent downlights, the Comtec LED delivers a typical reduction of 70% whilst offering improved light quality, longevity and performance.

The Comtec LED Surface's attractive spun aluminium housing with die-cast bezel painted white (also available in black) brought a high-quality contemporary finish to the installation, matching the renovated terminals style and standard. Similarly, the recessed version was provided in a clear IP40-rated glass cover for durability and aesthetic appeal. Both variants can be customised with a range of attachments including opal (frosted) and drop glass covers, ensuring that aesthetics are not compromised in pursuit of efficiency.

The highly efficient Rubix Recessed LED was installed outside the lifts, combining style, premium performance and modern functionality – making it ideal for today's airport terminals.

With nine individual cells and a surrounding diffused back-lit halo at its disposal, the flexible luminaire offers precise optical control by offering different lighting modes. Staff can now switch between using the main cells or the surrounding low-level back-light, or combine them for maximum illumination. The background light can also be activated for emergency lighting purposes.

Although provided in a standard 600 x 600mm version, the luminaire is also available in 500 x 500mm and 750 x 750mm and can also be supplied in lay-in and surface-mount versions. Presence detection and daylight regulation sensors can also be incorporated into the surrounding trim or air-handling channels – saving the time and cost of modifying the existing infrastructure for additional standalone control gear or HVAC units. All variants of the Rubix LED are available with all mainstream dimming and emergency options.

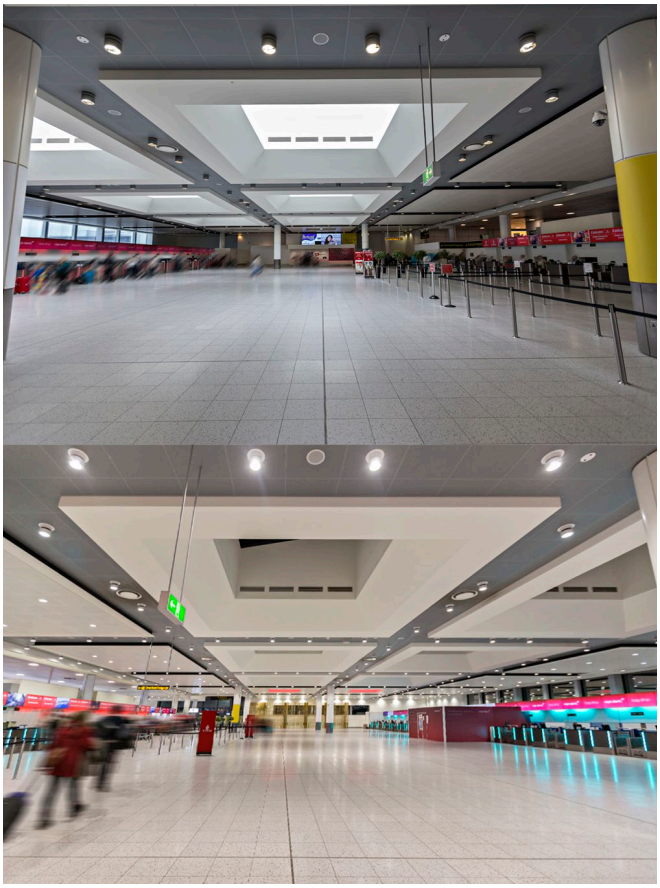
RESULTS

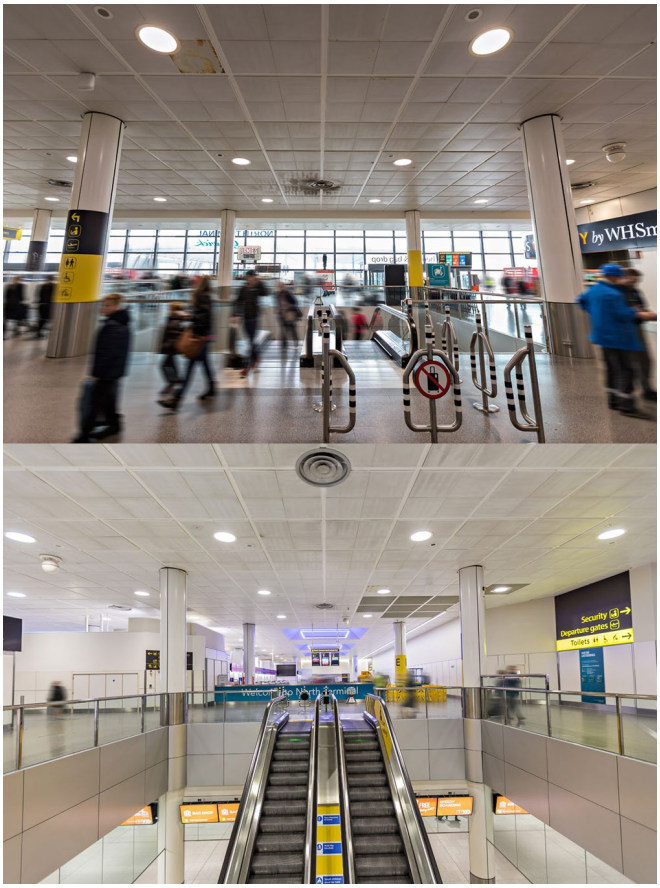
The installation generate an energy saving of 54% compared to the previous fluorescent system despite more luminaires being installed at higher outputs. The saving is equal to £39,132 per annum which will free up capital for other improvements at the airport. Luminaires are now virtually maintenance free as their durable LM80-verified Lumileds LED sources have now eliminated the need for costly and time-consuming lamp changes.

By reducing its carbon footprint further, Gatwick Airport will improve its already stellar green credentials, benefitting also financially from ranking higher in the government's Carbon Reduction Commitment league table.

A retrofit approach meant that the airport minimised the amount of electrical equipment being wasted saving money and the environment in the process. Any old electrical materials that needed to be removed, was promptly disposed of and recycled according to WEEE regulations by Dexreco's dedicated team.

All LED products were covered by Dextra Group's 5 year warranty.





FEATURED PRODUCTS

PROSPORT LED

PROTEC DISPLAY LED

HYDRA LED

GRADUATE LED RECESSED

Dextra GROUP PLC

(+44) 01747 858100

www.dextragroup.co.uk