



ROBERT FERGUSON PRIMARY SCHOOL - CARLISLE

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INVESTS IN SUSTAINABILITY WITH
FUTURE-PROOF LED SYSTEM

Dextra
LIGHTING

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Dextra Lighting helps Robert Ferguson School improve its facilities whilst investing in a green and financially sustainable future. The new sensor-controlled LED system will unlock streams of revenue for the school by drastically reducing energy and maintenance costs as well as providing tax benefits. The money saved can then be channeled towards other areas in need of improvement.

LED and sustainable education

With the Department for Education's budgetary projections for 2020, stringent environmental law, the continuous increase in energy prices and rising student numbers, schools in Cumbria, as with most of the UK, are under pressure to meet the standards expected of them.

Cutbacks have been made in all aspects of service from teaching and support staff, to funding for much needed renovations of facilities and equipment. Efficiency measures and a conscious move towards sustainable practice however, have allowed schools to rescue, as well as generate, revenue and funds towards maintaining a high level of service.

As lighting usually accounts for 25 to 30% of a school's energy usage, LED upgrades have rapidly become a widespread solution to help schools and universities balance the books and tackle climate change in a single and immediate step. Dextra Lighting's precision-engineered LED luminaires and smart controls, are designed to make upgrades affordable and efficient without compromising on quality and performance.

The majority of Dextra Lighting's products are manufactured with the latest LM80-verified Lumileds LED sources, feature highly efficient optical designs and are compatible with intelligent lighting controls. These high quality components

comfortably meet the ETL (Energy Technology List) performance and efficiency criteria, providing eligibility to the government's ECA (Enhanced Capital Allowance) tax scheme or access to a wide range of funding schemes including 0% interest energy efficiency loans, which allow applicants to pay for new lighting systems via the energy savings accumulated over the following years.

In addition to reducing energy usage by an average of 70% compared to typical fluorescent or HID lighting, the luminaires' high-quality Lumileds LEDs offer 90% lumen maintenance for the first 60,000 operating hours, which will drastically cut maintenance costs by eliminating the need to frequently replace failed or rapidly depreciating lamps.

Schools now have options available to them to lighten the burden of raising enough capital for the initial purchase at once and the ongoing running costs in the long-term; making investment far more accessible than ever. Once installed, and the payback period has terminated, the accumulating savings will free up revenue to for other projects aimed at providing the best education possible for students. An investment in LED will also improve institution's green credentials, allowing it to perform better in the national Carbon Reduction Commitment programme for further tax benefits.



ABOUT THE CLIENT

Robert Ferguson Primary School appointed Pettit Singleton Associates, one of the North West's largest Building Services Engineering Practices, to vet a number of lighting suppliers to perform a comprehensive lighting upgrade in several locations. After a rigorous tendering process and previous successes with PSA, Dextra Lighting were chosen from a list of competitors to deliver a high-quality, fully compliant lighting solution that would not only significantly reduce energy and maintenance costs for the school, but would be cost-effective, and help create a comfortable and stimulating learning environment for staff and pupils to enjoy.



THE BRIEF

The lighting design for the school's new extension and rewired areas was to fulfil the following key objectives:

- Reduce energy and maintenance costs compared to the previous system
- Abide to relevant task illumination criteria to support different activities held in each room
- Provide flexible user friendly lighting control
- Keep installation times and costs to a minimum
- Successfully integrate with the architecture and interior design of the school in a practical and aesthetically appealing way
- Adhere to relevant CIBSE guidelines and British Standards for light levels, colour rendering and temperature, uniformity and glare control
- Emergency lighting to be provided
- Work within a tight schedule during summer holidays
- Dispose of old fittings in accordance with WEEE legislations.
- Offer Dextra Group's comprehensive 3-year warranty for LED products

THE SOLUTION

The Runway Continuous/Suspended with DALI dimming controls - Multi-purpose halls

The Runway Continuous range offers the flexibility to create striking installations that are both practical and seamlessly integrated into the surrounding architecture.

The modular lighting system can be customised with surface or suspended variants, which can be supplied either as individual luminaires, or as continuous runs that can be configured to provide the best layout and desired effect for the area. By making full use of its corner sections, blind units, choice of optical designs, wide range of low to high output packages and luminaire lengths, the Runway brought style, functionality and performance to the school's busy halls.

The Runway was assembled to form two wide rectangular configurations at each end of the multi-purpose hall, with its bi-directional distribution allowing for 25% of the total output to be projected upwards on to a backdrop of suspended panels. The bi-directional output helped create an attractive interplay of reflections onto the panels, transforming the lighting installation into an architectural feature.

To complete the lighting design a single continuous run of luminaires was also installed between both the rectangular sections - ensuring the entire area was uniformly lit at the centre of the hall as well as in each corner.

For the gym, a wider rectangular layout was created covering the entire ceiling, with a continuous run suspended at its centre. Here, the bi-directional distribution helped emphasise the curvature of the arched ceiling, with the reflectances creating a modern and elegant lighting effect as well as brightening up the hall.

The luminaire's slim line anodised aluminium housing and contemporary minimalist design, offer both versatility and aesthetic appeal for a wide range of environments.

The luminaire was provided in high-output versions to provide the correct task illumination from the hall's high ceilings. For the general purpose hall, a 3331lm version was installed to achieve the CIBSE recommended average illuminance of 300lux. With its high-transmission opal diffuser and mid-output Lumileds LEDs, the luminaire produces a bright yet balanced quality of light – offering a high light output ratio and uniform coverage at low energy costs. At medium to low outputs, microprism inserts can be provided to reduce glare to the BSEN 12464 3000 candela limit and UGR 19 for both visual clarity and comfort.

To offer the right lighting for all activities held at the gym hall, the Runway was provided in a 4244lm version; the highest output package in its range. This provided higher light levels of up to 500lux for sports, dance and other physical activities demanding greater visibility.

Due to the wide range of activities held in both halls including: school assemblies, music and dance sessions and performances, sports and events, flexibility was essential. Available in all mainstream digital and analogue range of dimming options (White Tuneable now also available), the Runway was provided with DALI dimming controls which will allow staff to accurately adjust the lighting using wall switches installed in various locations. Dimming functions can be paired with compatible sensors such as the Reacta 24 Minihead and Easy Air Wireless linking sensor, for daylight regulation and presence detection to maximise energy savings for further return on investment.

The bespoke lighting configurations were simple and cost-effective to install. All the trunking and matching gear-trays were provided in the required lengths and were easily assembled with practical quick release clips.



THE SOLUTION

The Graduate LED & Graduate Recessed LED - Classrooms

The Graduate family of LED luminaires has become an increasingly popular choice for a large and growing number of schools, colleges and universities around the UK. Its success however, has not been limited to this sector, and has spilled into a variety of industries including healthcare and retail due to its versatility, premium performance and energy-efficiency.

As the classrooms had different ceiling types, luminaires with varying installation formats had to be provided accordingly. The Graduate LED was surface-mounted in rooms where no recessed lighting could be installed. Available in outputs of up to 11,734lm across three different lengths, 1500mm versions of luminaire were supplied in 3052, 3924 and 4800lm outputs packages, depending on the room size and ceiling height, to achieve the recommended 300lux for classroom activities. The selected output packages are all compliant to BSEN 12464 glare limitations making them ideal for lessons aided by computers or other monitors and general visual comfort.

The Graduate LED's sturdy, high-efficiency polycarbonate diffuser is designed to provide the durability and the optimal light quality for busy modern school environments. By combining the efficiency of this optic with the latest LM80-verified Lumileds LEDs, the luminaire offers high LORs with excellent diffusion whilst operating at efficiency of up 138 luminaire-lumens per circuit watt in the selected output. The opal diffuser and integral gear tray also conceal the point source and components, offering uniform light coverage and an attractive finish whilst its screw-retained end caps provide easy access for maintenance.

To maximise energy savings for the school, the luminaire was installed with an integral Reacta 25 microwave sensor offering presence and daylight detection - switching individual luminaires off when natural light reaches a certain level and when the classroom is vacated. To minimise the time and costs of installation, all luminaires were supplied fully assembled and ready to install.

Lay-in versions of the Graduate Recessed LED were installed in classrooms with suspended ceiling systems. A 4292lm output package provided task appropriate illumination for the larger classroom - with its pre-coat aluminium gull-wing reflectors and prismatic opal extruded diffuser making the most of its high-quality Lumileds source for maximum visibility and comfort. The central optic can be adjusted to a semi-recessed position to suit the application.

The versatile luminaire can be tailored to a range of environments with outputs of up to 7132lm in 600x600mm or 1200x600mm sizes, BSEN 12464 compliant versions, lay-in or pull-up installation formats, and wide range of dimming and emergency lighting options. A 25 litres-per-second Air Handling option is also available, offering clutter-free and cost-effective integration within existing HVAC infrastructure.



THE SOLUTION

Amenity Decorative / Amenity Plus LED & Discalo LED - Circulation Areas

A selection of highly efficient, low-maintenance bulkheads and downlights from Dextra Lighting's LED range illuminated the building's passageways. The IP20-rated Amenity Decorative LED bulkhead was selected for stairways and corridors and was fitted with an integral Reacta 25E microwave offering an on / off function for presence and daylight detection. From a range of four outputs, 1234lm and 1636lm versions were installed offering a light output ratio in excess of 80% whilst operating at efficiency of 122Llm/w.

In addition to sensor control, the luminaire is compatible with Switch, DALI, HFR 1-10v Analogue and Digital dimming options to suit the application.

The Amenity Decorative is manufactured from injection moulded polycarbonate with an opal diffuser and can be customised with a range of optional coloured ring attachments and semi-recessing kits.

Manufactured in robust polycarbonate, the IP65-rated Amenity Plus LED was installed in semi-outdoor areas requiring added protection to dirt, dust and water ingress. Integral sensors

were also provided for further energy savings. The luminaire is available in either circular or square body types in various sizes, in either black or white to suit the practical and aesthetic purposes of the design.

The Discalo LED was both wall and ceiling-mounted in various stairways offering the efficiency, functionality and low-maintenance of the Amenity LED range but with an added decorative touch with its attractive white halo effect (also available in blue). The luminaire was also offered with an integral microwave sensor for presence detection and a bright-out function. The sensor can now be set to an on / off mode, or with a bi-level dimming function to dim the LED to 10% output, proving continuous background lighting in accordance with health and safety guidelines and to reassure pedestrians.

Other products used in this project include the versatile and highly-efficient Comtec LED for the entrance area and the IP65 Avalon Wallpack LED for external areas.



Emergency

All the luminaires are available with integral three-hour emergency lighting in either standard, self-test or auto-test variants and saved the school the costs of installing standalone emergency units around the building. Automatic emergency testing systems economise on the time, money and inconvenience of manual procedures by signalling faults via LED indicators or on a dedicated digital interface. Once installed, these hassle-free systems ensure each luminaire's emergency functions meet BSEN 5266-1 emergency lighting requirements with accuracy and ease. In addition to the integral emergency lighting, the efficient and low-maintenance Hanging Blade LED luminaire, provided clear emergency signage to safely and clearly lead occupants to the nearest exit.



FEATURED PRODUCTS



RUNWAY CONTINUOUS
SURFACE/SUSPENDED



RUNWAY RECESSED



AMENITY DECORATIVE
LED



AMENITY PLUS LED



DISCALO LED



AVALON WALLPACK LED



RUBIX FLUSH



RUBIX SUSPENDED