IKB STUDIO SCHOOL

FUTURE-PROOF LED LIGHTING FOR NEXT-GENERATION TECH ACADEMY.

Dextra LIGHTING

ABOUT THE CLIENT

Students at IKB relocate to a new, state-of-the-art £3.4m building in Keynsham, now illuminated by Dextra Lighting's precision-engineered LED luminaires. The new lighting was designed to support the school's innovative approach to teaching and a wide range of technical activities. The project has shown how LED lighting plays a key role in keeping development in the education sector both green and cost-effective.

The Wellsway Multi-Academy Trust is a partnership of schools serving the Bristol, Keynsham and Bath area. Following a new state school model, the Trust aims to deliver the highest quality academic and vocational teaching by fostering an innovative, hands-on approach to learning.

Amongst the registered list of prestigious academies is the IKB Studio School which offers specialised courses and facilities to pupils aged 14 to 18 related to Science, Technology, Engineering and Maths (STEM), with exclusive links to employers such as Kier, Arup, Hartwell Jaguar and the Ministry of Defence.

To continue to adopt its high-quality, personalised and creative approach to education, IKB recently invested £3.4m towards the development of a brand-new school building in Keynsham. The modern facility was designed with a strong technological focus – boasting cutting-edge equipment and exciting learning spaces.

WHY DEXTRA GROUP?

The Wellsway Trust put Dextra Group forward for the IKB project due to its advanced design and manufacturing capabilities, as well as a proven track-record in the education sector. As a result, the Dextra Lighting team was able to respond to the school's requirements quickly and efficiently.

The Trust was attracted by Dextra Lighting's ability to take LED's potential to the next level, as Dextra Lighting's luminaires are offered in a wide range of customisable options, featuring advanced optic designs and thermal management systems to allow the LED source to operate at its best, for longer.

Bespoke systems incorporating dimming and sensor controls also offer substantial energy savings and flexibility.

Finally, Dextra Group's attractive after-care package is well-suited to the needs of educational or other public sector establishments, offering quick and reliable support beyond purchase and comprehensive warranty for LED products.

THE BRIEF

IKB required a future-proof lighting solution that would support a wide range of technical and academic activities, whilst achieving a high BREEAM rating for sustainable performance and full ECA compliance. Dextra Lighting worked closely with – QED CONSULTANTS – providing luminaire samples, conducting thorough photometric tests, payback calculations and presenting numerous CAD designs to ensure the project met the high specifications of the the project.
To meet the standards of the BREEAM model, the new LED design came at a higher initial capital cost compared to fluorescent options proposed by competitors. However, with a well-designed LED system offering typical reductions in energy consumption of 60% and lower maintenance costs, IKB was set to recover this additional investment in as quickly as 2 years. With lighting accounting to around 25% of a school's total energy usage, the school would also receive financial gains through the CRC government scheme by significantly lowering its carbon footprint.

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Classrooms / Offices – MODLED Office

Learning is highly visual. Light intensity, uniformity and reduced glare are all central factors affecting the learning process – and have been shown to contribute positively to pupil concentration and interaction between staff and students. Optimum light distribution is crucial to achieve maximum visibility for writing, reading, tests, as well as for presentations using whiteboards or projectors. Purpose-built for environments requiring high levels of visibility and comfort, the MODLED Office, was chosen for both classrooms and staff offices.

The luminaire combines a central microprism optic with a high-transmission opal diffuser. This dual optic design offers excellent transmission and diffusion whilst providing BSEN 12464 compliant glare reduction to support the use of computers and IKB's integrated technology such as, Apple TVs and touchscreens. In addition to maximising overall visual comfort, this optic design also offers an attractive modern aesthetic, which matched the school's interior design. Microprism optics are ideal for classroom applications they reduce glare and create softer shadows that allow for higher contrasts to aid reading and writing.

Thanks to high-output Lumileds LEDs, glare reduction does not need to work against luminaire efficiency. To achieve the 400 lux average recommended by BSEN 1246 guidelines, luminaries were installed in both 4500 and 5500 lumen outputs using the widest spacings possible depending on the dimensions of the classroom. This meant that in addition to LEDs efficiency savings, IKB saved money by ordering fewer luminaires to do the job.

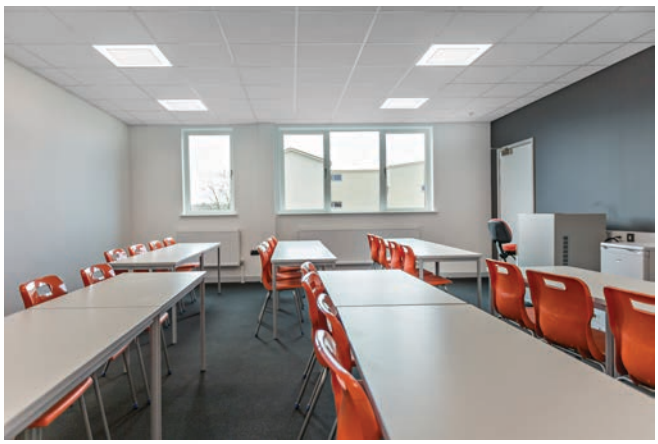
Engineered with versatility in mind, the MODLED Office is available in 3 body sizes, lumen outputs of up to 11,000lm and is suitable for both lay-in and pull-up installation. Plasterboard kits were also supplied to facilitate lay-in installation into the building's ceiling system.

To accommodate the school's varied and interactive approach to teaching, luminaires were installed with DALI dimming controls to offer the flexibility to adapt to a wider range of activities. As natural light is highly desirable for learning, many of the classrooms at IKB feature large, wall-covering window panes. Therefore, DALI dimming drivers were installed to work in conjunction with daylight regulation sensors, ensuring optimal light levels throughout the day and maximise energy savings.

Atrium, Lecture Theatre, Corridors & Amenities – Protec LED Downlight.

The popular Protec LED downlight was installed in multiple locations throughout the building. The luminaire demonstrated the full scope of its versatility as luminaires were supplied with customisable options including: IP44 front covers silicone-sealed to IP65 for bathroom use, specular (OptiSpec) and semi-specular (OptiSat) reflectors for optimal light distributions (Open Area or Narrow) in different areas; lumen outputs between 1100 and 3000 to achieve the desired light levels and uniformity throughout; grey and white bezels to match with the interior's colour scheme; high-frequency and DALI dimming drivers for flexible lighting control; and finally, integral three-hour self-test emergency in compliance to the building's safety regulations.

The Protec LED's adaptability is paired with outstanding performance, with its high-quality Lumileds LEDs and efficient anodised aluminium reflectors offering LORs in excess of 90%, whilst operating at power loads 60% lower compared to fluorescent equivalents. Flexibility with this range extends to installation, with a four-point self-clamping spring bracket allowing for a quick and easy fit into plasterboard, mineral fibre and metal tile of varying thicknesses.



Science Labs and Technology Workshops – Impervia LED & Hydra LED

The main design objectives for the labs and workshops were durability, optimal task visibility, and safety.

Durability
The Impervia LED and Hydra LED were selected for their robust IP65-rated constructions, offering protection against dirt and dust raised during the use of machinery and tools in the tech workshops. For lab experiments, this level of protection also offers water resistance.

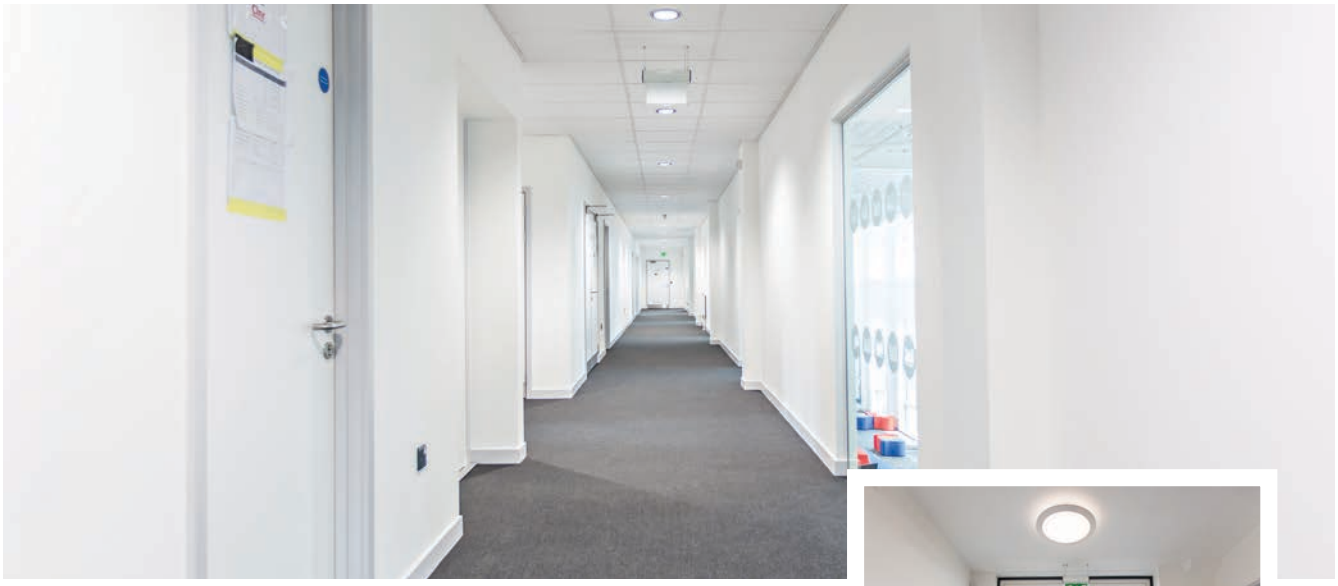
Task Visibility = Safety
Due to the potential hazards involved in these activities, optimal task visibility is essential to avoid errors in judgements in the operation of machinery such as, soldering irons, laser-cutting technology, electric saws and handling chemicals. With this in mind, the Impervia LED's advanced optic panel provides excellent diffusion with up to 93% transmission, whilst the Hydra LED's high-output Lumileds LEDs offer impressive LORs in excess of 90% and wide coverage.

The superior light quality offered by the latest Lumileds LEDs comes with energy reductions of around 60% compared to fluorescent alternatives, and minimal maintenance as no lamp replacement is required.

To achieve the higher recommended 500 lux level for these areas, the Impervia was provided in both 4500 and 5400 lumen outputs depending on the size of the lab, whilst the Hydra LED was supplied in a 5500 lumen package from a range of up to 13200lm.

In addition to their efficient optic designs, the luminaires were spaced to provide uniform light coverage, avoid unwanted shadows for overall visual clarity and safety.

The Hydra LED was mounted on sturdy tracks positioned directly above each work bench for maximum visibility. The installation was designed to complement the existing daylight for a bright and focussed working environment.



THE SOLUTION

Exterior Lighting – Amenity Exterior LED & Opus 2 LED Floodlight

The durable and efficient Amenity Exterior LED Circular bulkhead was wall-mounted around the perimeter of the building, providing clear and inviting external illumination during the evening. Available in three body styles – open front, grille cover and eyelid, in either black, white or matt silver, the luminaire can be tailored to suit the practical and aesthetic requirements of a variety of applications. For the building's external walls, the AMEX was supplied in a black, Eyelid body to minimise up-lighting, whilst ensuring the pathway is clearly visible to pedestrians.

The Eyelid variant is designed with efficiency in mind, and is available in low-energy lumen variants of 800 lumen and 1600 lumen with an optimised card design to minimise light loss behind the cover. Overall, the AMEX LED offers similar performance to fluorescent alternatives but with the energy-efficiency and low-maintenance properties of LED, making it an ideal choice for sustainable development projects.

The versatile luminaire is available with optional integral sensors, emergency, corridor mode or dimming functions to maximise efficiency and operate according to specific requirements and regulations. Its IP65-rated body makes it ideal for under canopy and other external areas, but is also suited to internal applications such as corridors, stairways, toilets and storage areas.

The efficient and low-maintenance Opus 2 LED floodlight was installed in strategic positions in wider areas surrounding the main building for maximum coverage. Other products featured in this project include: the MODLED Slim recessed luminaire (ECA and BS EN12464 compliant), the low-energy and reliable EXI LED emergency exit luminaire, and the attractive and energy-efficient Discalo LED.

To meet the building's safety regulations, luminaires in this project were provided with integral three-hour emergency. Integral emergency functions can be offered in either self-test or in addressable auto-test variants which produce regular reports of each luminaire, allowing maintenance staff to easily monitor an entire network of emergency lighting for any faults that may occur.

FEATURED PRODUCTS

MODLED OFFICE

PROTEC LED

HYDRA LED

ECO IMPERVIA LED

AMEX LED

OPUS 2 LED

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