



MENAI SCIENCE PARK

Menai Science Park unveiled
with future-proof LED
lighting system

LEDextra
PREMIUM LIGHTING SYSTEMS

ABOUT THE CLIENT

The state-of-the-art technological research centre is now open to new tenants in the low-carbon, energy and environmental sectors. Dextra Lighting's precision-engineered luminaires and LEDExtra's bespoke lighting solutions help fulfil the architect's inspiring vision whilst allowing the building to achieve an excellent BREEAM rating for sustainability.

March this year saw the proud unveiling of Bangor University's Menai Science Park in Gaerwen, Anglesey. After five years of planning and development, the £20m state-of-the-art facility, funded by the European Regional Development Funding through the Welsh Government, was delivered on time and on budget and is now a thriving hub for hi-tech companies in sectors such as low-carbon, energy and environment and ICT.

M-SParc's 30-year vision has been ambitious and far-reaching, aiming to propel the technology industry to new heights and forge new scientific research partnerships in North Wales that will have a global impact. As Neil Rowlands, chairman of Anglesey Enterprise Zone's advisory board stated, the project has been "a fantastic example of government and academia working with the private sector to create a world-class facility."

Bangor University has full ownership of the park making it a SME in its own right. With more than three-quarters of its research being "world-leading or internationally significant", the university's students and tenant companies will enter a mutually beneficial exchange of skills, research and knowledge that will boost economic growth, plug the skills gap in the region and provide post-graduate students with invaluable industry experience.

The science park was created to become an industry hub for tech companies in the low-carbon environmental sectors, and as such, sustainability was high on the agenda. The building, designed by award-winning Faulkner Browns Architects with input from various partnering companies and built by Wilmott-Dixon, was to set an example for sustainable practice, making use of cutting-edge technology such as the latest solar panels, BMS systems and Dextra Group's energy-efficient LED lighting solutions.

Demand and interest in the building has been high and on the rise. Before handover, 37% occupancy was secured, comfortably beating its target of 15% thanks to Wilmott-Dixon's marketing campaign - allowing prospective tenants to view with virtual reality glass the facility before completion.

Dextra Lighting and LEDExtra joined forces to ensure the new sensor-controlled LED lighting solution would satisfy the project's high-specification and technological requirements whilst conforming to the building's innovative architectural design. By combining its advanced manufacturing capabilities and access to the latest high-quality components, Dextra Group were able to help Bangor University to create a world-class facility to be leased to both local and global companies.



THE BRIEF

From its inception the vision for M-SParc has been to innovate, impress and inspire. The Science Park was to stand as an emblem of technological advancement and environmental sustainability, whilst demonstrating future-proof levels of operational efficiency and functionality. The lighting would have to reflect the bold and futuristic design of the landmark building; seamlessly integrating with the architecture.

Wales' first dedicated science park spans over 31,200 sq ft of land and offers 45 office spaces ranging in size from 156 sq ft to 2,690 sq ft, 23 laboratories and two double-height workshops. Total capacity for the three storey building stands at 700 employees.

A wide selection of versatile lighting solutions were to be provided for each area - supporting a range of activities by offering flexible and automated lighting controls, task appropriate light levels and superb light quality. A stimulating and comfortable ambience would be achieved alongside safety and efficiency.

Luminaires selected would utilise the latest LM80-verified 3535 HE Lumileds LED sources offering 90% lumen maintenance for the first 60,000 hours of operation. The installation would thereby minimise maintenance compared to conventional lighting by eliminating the need to frequently change failed or rapidly depreciating lamps. These high-

performance sources, paired with efficient optical designs, allow each luminaire to offer high light output ratios whilst consuming at least 70% less energy than fluorescent or HID equivalents.

The products in Dextra Lighting's LED range, satisfy the criteria outlined by the Energy Technology List (ETL) for energy efficiency making them eligible for the governments Enhanced Capital Allowance scheme for 100% tax levy for the first year of purchase. The new LED system will therefore allow Bangor University to minimise its carbon footprint whilst enjoying the financial benefits of environmental tax incentives for further ROI.



THE SOLUTION

Rubix Suspended - Meeting Rooms

Meeting rooms are about first impressions – convey a sense of trust as well as reflect the standards and values of a company to visiting business partners. A closer eye for detail and aesthetics in the design of these areas is crucial in order to impress whilst creating a comfortable and inviting atmosphere to facilitate negotiations.

The Rubix Suspended was selected for its stylish modern design and versatility, allowing it to harmonise with different décors, features and furnishings. In one meeting room for instance, the Rubix's bi-directional light distribution produced brilliant reflectances on to an overhanging, lacquered copper ball whilst the uplight created an attractive glow for added illumination and a refreshing sense of space.

In the executive conference rooms on the other hand, the Rubix was supplied in parallel continuous runs, using cut-to-size rigid suspension cords to adapt to the changes in ceiling heights and elegantly hang above the luxurious desk. This balanced two-point suspension is both discreet and quick to install saving money through a cost-effective fitting process without compromising aesthetic appeal.

With a range of output packages and cell-configurations to choose from, the luminaire was provided in both 3140lm and 5010lm versions to achieve the CIBSE recommended light level of 500Lux depending on the size of the room, ensuring all the desks and seating areas were uniformly lit. The luminaires were provided in both 1200mm and 1500mm lengths, accompanied by 6-pole through-wire blind units where required, offering easy wiring and full compatibility with

a range of dimming controls. To match the interior's colour scheme, the luminaires featured a clear cell surround which is also available in either blue, orange or red variants.

The Rubix Suspended's optical design consists of either four or six light cells with semi-specular aluminium reflectors divided into two sets to offer precise optical control for a direct and controlled light distribution at wide luminaire spacings of up to 3 x 3m. Its 50% / 50% bi-directional distribution adds a dimension to the luminaire's effectiveness, creating a balance between a focused downward light and a more open uplight. Paired with the latest Lumileds LEDs the luminaire offers a high LOR and operates at an outstanding efficiency of 127 Llm/w.

To support activities ranging from presentations, the use of monitors and projectors, product demonstration, conference calls and the usual meeting scenarios, luminaires were supplied with DALI dimming controls from a wide range of dimming variants. This will allow staff to easily and accurately adjust the light levels for each occasion from a user-friendly digital interface.

To add to this functionality and maximise energy savings, the Rubix Suspended is also compatible with integral and standalone sensors including the Reacta 24H minihead and Easy Air Wireless linking sensor for daylight regulation and presence detection.



THE SOLUTION

The Runway Surface/Suspended - Offices, Laboratories & Circulation Areas

The Runway range of luminaires is designed to offer premium performance and integrate neatly into its surroundings. With a wide selection of customisable options, the luminaire gives designers the freedom to create installations for unique environments like M-SParc.

Available in output packages of between 871lm to 4244lm in two different lengths, continuous runs or standalone format, two diffuser options and bi-directional distribution, the Runway Suspended can be tailored to satisfy the lighting and architectural needs of each application with precision and style.

The Runway's slimline white, anodised aluminium housing (also available in black) offers an elegant minimalist form - a perfect match for M-SParc's architectural style. Its essential design will also make it adaptable to the aesthetic requirements of future tenants.

By incorporating the latest mid-output 3535 Lumileds LEDs, the Runway is able to deliver high levels of energy-efficiency with minimal maintenance whilst ensuring that light levels can be met without compromising on visual comfort. Combining these high-quality LED sources with high-transmission opal diffusers, the luminaire offers a high Light Output Ratio at an efficiency of up to 109lm/w.

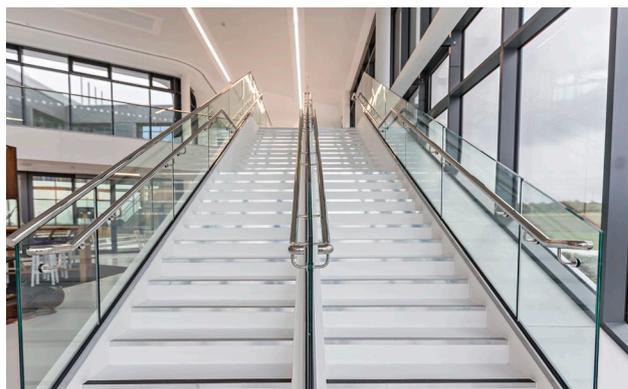
Over 500 luminaires were supplied to cover large open plan workspaces and smaller more personal offices. 1500mm standalone versions of the luminaire were suspended in rows which were partitioned by custom-built baffles. A 3990lm output was used, featuring an optional microprism insert achieved the recommended 400lux for office use whilst reducing glare to comfortable levels for staff using computers.

In various corridors, a higher output of 5586lm with bidirectional output was utilised, offering a higher light intensity and even coverage in higher ceiling areas. These luminaires were surface-mounted onto both the ceiling and the wall. In corridors where the luminaire was wall-mounted, the bi-directional effect produced an attractive wall-wash effect above the doorways, acting both as general and ambient lighting.

The Runway is designed to provide flexible control - whether manual or automated, analogue or digital. From a wide range of dimming options, the luminaire was supplied with DALI dimming functions that allow light levels to be programmed and adjusted from user-friendly digital interfaces.

The luminaire's high-quality Philip's DALI dimmable drivers can also be combine with a range of integral or standalone sensors for daylight regulation and presence detection, to maximise energy savings.

The fitting process was fast, simple and cost-effective, thanks to the luminaire's practical gear trays with quick-release clips for ease of installation into the trunking system.



THE SOLUTION

LEDextra Bespoke Lighting Solution / Ceiling Integration - Atrium

What makes M-Sparc such an impressive architectural achievement is not just the structure itself but the unique details that characterise it. Amongst these is the lighting design for the building's open-plan main hall and large mezzanine level leading to the conference rooms and offices.

The challenge here was to provide a continuous curved channel of lighting outlining the shape of the atrium that would illuminate both floors evenly and provide appropriate lux levels throughout the day from such a high ceiling level.

An average 500lux was to be achieved for the area to provide a refreshing and comfortable atmosphere in the communal lounges and canteen areas as well as the stairs and walkway leading to the first floor.

LEDextra supplied and installed 120M of the Osram LinearFlex LED tape to faithfully reproduce the architect's vision. Currently the highest output flexible strip on the market, LinearFlex is ideal for bespoke applications requiring an architectural or decorative approach and can be conveniently cut and bent to create unique patterns. A self-adhesive back simplifies mounting in restricting or hard-to-reach areas and slashes installation times. The strip's hidden electronics and seamless light without shadowing complemented the modern minimalist aesthetic of the science park.

The strip consists of highly durable, long-life LEDs (up to 50,000 operating hours), ensuring that the system will operate at maximum efficiency with minimal maintenance. Rows of powerful LEDs provide a high luminous flux suitable for general lighting and can be dimmed using a variety of common dimmers and comes in a wide range of light temperatures.

MODLED Slim / MODLED Office - Circulation areas & Offices

The highly popular MODLED family of luminaires is designed to offer superb light quality with maximum efficiency and low maintenance to serve a variety sectors and applications.

Many of M-Sparc's circulation areas are now lit by the 1200x300mm version of the MODLED Slim recessed luminaire. From an extensive choice of outputs ranging between 1250lm and 12160lm across three body sizes, lay-in, pull-up or clip-in installation formats to suit a range of ceiling types, optional perforated panels, BSEN-12464 compliant versions, compatibility with all mainstream dimming protocols (DALI, DSI, Analogue 1 - 10v, Switch dimming) and integral sensor options, the luminaire provides the flexibility to adapt to most applications.

By utilising a 2436lm output the recommended 100lux for corridor use was achieved to offer visual clarity, comfort and safe passage across the building. Lay-in versions were installed into plasterboard ceilings whilst the clip-in format was selected for the type of ceiling installation required.

As the name suggests, the MODLED Office is purpose-built for office areas where computers are in constant use. The recessed panel luminaire was specified in different outputs (1925lm, 3328lm and 3711lm) to create a comfortable and productive office environment for staff to enjoy. To achieve this, the luminaire uses a central microp prism optic with a high-transmission opal diffuser surround allowing each installation to comply with the latest BSEN-12464 glare requirements for both the 3000 candelas per metre squared limit above 65 degrees and UGR 19.

To ensure a balance between visual comfort and optimal light output, the MODLED Office combines a glare reduction technology with high-output Lumileds LEDs. With an LOR of 75% and excellent efficiency of up to 123lm/w, the installation achieved the CIBSE recommended light level of 400lux using the minimal amount luminaires, capital cost and energy consumption.

For further flexibility in design, the luminaire can be customised with two optics, lay-in or pull-up installation formats, output packages of up to 7422lm across three different sizes, and is also compatible with a wide range of dimming, sensor and emergency options to maximise energy savings and abide to all safety regulations.



THE SOLUTION

IMPR LED - Clean Workshop

The IMPR LED, with its IP65 rating was installed to suit the arduous workshop subjected to dirt, dust and water. Dextra Lighting worked in close collaboration with other professionals to ensure the lighting solution met the strict requirements for these controlled environments.

The lighting for the workshop revolved around containment, concealment, efficiency and low maintenance. The IMPR LED was therefore selected for its robust steel housing, injection moulded ABS frame and liquid poured polyurethane gasket which offer IP65 protection from dust, and water ingress. These materials also stand up to rigorous cleaning procedures.

This IP65 luminaire is designed to have the front cover removed to allow maintenance without contamination. The rear of the luminaire is sealed so removing the cover doesn't allow access to the ceiling void. In addition to its reinforced construction, the IMPR LED is built for premium performance, with its advanced optic panel offering a high LOR with 93% transmission and excellent diffusion of its high-quality Lumileds LED source whilst operating at an impressive efficiency of up to 127 Llm/w.

Outputs for this products range from 2528lm to as high as 11356lm in three body sizes and is suitable for plasterboard, concealed grid and suspended T ceiling systems. To offer the appropriate illumination of 500lux for technical, chemical and engineering tasks from a relatively high ceiling, the luminaires were supplied in a 3262lm versions which were installed at optimum spacings for uniform light coverage and efficiency.

Simple and easily-accessible manual wall-switches were installed in convenient locations around the workshops. However, where further lighting control is needed, the IMPR LED can be supplied with a number of dimming and emergency options.

The Discalo LED was wall-mounted in various stairwells offering excellent energy efficiency, functionality and low-maintenance paired with the decorative touch of its attractive white halo effect (also available in blue). The luminaire was 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 highly customisable and efficient Protec LED downlight for breakout areas and WC-facilities, where the luminaire was provided with a IP44 glass cover which was silicone-sealed in-situ for added protection to dirt, dust and water. For the storage areas and plant rooms, the IP65-sealed Hydra LED provided a robust and maintenance-free solution with LORs in excess of 90%. The Hydra's stainless steel clips and screws ensured tooled access in compliance with regulations. The Hanging Blade Emergency luminaire provided highly efficient, low-maintenance 24 hour emergency exit signage in all required locations to ensure a clear and safe evacuation of the site at all times.

