



LEDs bring flexibility to emergency lighting design

Fast panic-free evacuation from burning buildings is crucial, which is why UK legislation demands reliable, good quality emergency lighting. Bernard Pratley from ICEL, the emergency lighting arm of the Lighting Industry Federation (LIF), explains how the latest generation of white light LEDs provide highly effective escape route lighting.

Emergency lighting and escape route illumination must make it easy for people evacuating a building in an emergency, especially where fire is concerned, to see sufficiently clearly to quickly and safely make their way out to a place of safety.

Most people unfamiliar with a building tend to leave it the same way that they entered, often ignoring poorly marked but shorter escape routes. However, compliance with the emergency lighting luminaires standard BS EN 60598-2-22 and the emergency escape lighting application standards BS 5266 series (incorporates EN 1838 and EN 50172), ensures that there is sufficient illumination for people to see and be directed towards emergency exits, with exit or directional signs being in view at all points along the escape route.

Today, nearly all emergency lighting applications are fulfilled using luminaires fitted with either traditional fluorescent lamps or the latest high quality white LEDs. The highly successful and economic fluorescents will be around for many years yet, but increasingly, modern LED lamps are providing significant advantages for certain applications.

LEDs for emergency lighting

LEDs have their own very significant advantages for both general and emergency lighting, and have been used in exit signs for some years. However, the pace of development has been such that the latest versions are now being used in many emergency lighting luminaires.

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Because individual LEDs are virtually point light sources, control of where the light is aimed at is simpler to achieve. Well-designed LED emergency lighting luminaires, with their dedicated optics, can use virtually all of the emitted light. The resulting high optical efficiency provides the designed illumination for less initial flux (light) than would be needed from a conventional light source. This is one reason for the low energy usage of LED lighting, which typically boasts up to 30% better energy efficiency than good fluorescents. So, correctly spaced LED emergency luminaires complying with the applications standard BS 5266 should achieve this with minimum power consumption.

Other LED benefits

In addition to the greater energy efficiency, high quality LED lamps bring many other benefits. For example, they can provide a very long life of around 50,000 hours at 70% lumen depreciation. Furthermore, LEDs are highly reliable and virtually unbreakable, so this mix of energy efficiency, reduced lamp replacement and maintenance costs brings lower total cost of ownership over the life of the installation.

Moreover, LEDs are unaffected by extremely low temperatures, so are ideal outdoors in cold climates, or in retail and industrial refrigerated areas. Being small, groups of LEDs can be made into modules of many shapes and sizes, so they can be designed into buildings, structures and materials in ways that are impossible with conventional lighting. This brings great flexibility for designers and customers alike, avoiding the need for unattractive plastic bulkheads.

Unobtrusive and attractive LED emergency lighting is available in many forms, including flush-mounted recessed luminaires, exit signs and escape route lighting, including lines of LEDs on strips partially buried in the ground. LED emergency lighting modules can also be retrofitted into suspended lighting systems and spotlights in applications ranging from retail outlets, hotels, pubs and nightclubs to reception areas.

Good quality LED emergency lighting products today meet the current emergency requirements in EN 60598.2.22, and are typically based upon two 1W white LEDs, plus control gear and a three-hour non-maintained battery. Maintained versions are also available. Such fully integrated LED emergency lighting is quick and easy to install, with battery and control gear often housed in a remote pod using plug-in connectors. A green

LED indicating that the charger is working still requires manual checking by maintenance personnel. However, automatic test systems, which should comply with BSEN 62034, can be incorporated to measure all basic operation circuitry automatically, and this can be indicated on the luminaire or on a test panel for easy observation and record keeping.

Installation considerations

Where LEDs are being offered as user replacement items in maintained luminaires using T8 fluorescent lamps, they must be checked to ensure they operate in the emergency condition and that their light output is adequate for the emergency duty.

Before installing emergency lighting and mains lighting luminaires modified for emergency lighting use, it is essential to leave batteries disconnected until the un-switched supply is no longer subject to frequent disconnection and/or switching, as often happens in new buildings. This will ensure that all emergency lighting luminaires do not need to be re-lamped or have their batteries replaced before commissioning. Advice should be sought from emergency lighting manufacturers about the suitability of lamps – including LEDs - to operate with their equipment to ensure full compatibility.

ENDS – Word Count: 818

CAPTIONS:

EMERGILITE_Serenga_EscapeRoute.jpg

The Serenga LED-powered escape route sign by Emergi-Lite.

P4_StairwayLED.jpg

How LED flexibility can benefit emergency lighting design – this is P4's elegant Stairway LED emergency lighting system.

ORBIK.jpg

LEDs are now suitable for exit signs and emergency lighting luminaires, bringing many benefits for lighting designers, building managers and building occupants (photo by Orbik).

ORBIK_Cella_Brass.jpg

Orbik's Cella is an affordable recessed LED (or fluorescent) emergency lighting luminaire. This version has an edge-lit exit sign attached.

P4_TriLED.jpg

P4's TriLED escape route luminaire is powered by three LEDs.

Thorn_VoyagerLED.jpg

Thorn Lighting's Voyager LED Series provides an emergency lighting scheme that uses fewer fittings and is better looking than conventional solutions.

Notes for editors:

1) About ICEL

ICEL (www.ichel.co.uk) is a trade association that is the foremost UK authority on emergency lighting, and its members are manufacturers of components and products for emergency lighting fittings. ICEL's representatives serve on BSI and International Standards committees, developing harmonised product and application standards. Therefore, ICEL members are well placed to give advice on product selection and can be expected to provide good quality emergency lighting products.

2) Emergency lighting under BS EN 60598-2-22

Self-contained luminaires - These provide maintained or non-maintained emergency lighting in which all the elements (such as the battery, lamp, control unit, and test and monitoring facilities where provided) are contained within the luminaire or adjacent to it (within 1m cable length).

Centrally supplied (slave fittings) - In these fittings, the lamp and some of the control gear is located in the luminaire, but the charger and battery (and often the changeover device) is located remotely, providing the supply to a number of luminaires. Central power units may supply the luminaires with a range of DC voltages, or at 230V AC from an inverter. To operate on DC, some are specifically designed as emergency luminaires; others are converted mains luminaires.

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