

LEDs provide major benefits for emergency lighting luminaires and exit signs

In a building emergency, fast panic-free evacuation can make the difference between life and death. This is why UK legislation requires reliable, good quality emergency lighting. Bernard Pratley, Technical Manager at ICEL, the emergency lighting arm of the Lighting Industry Federation (LIF), argues that the latest LED emergency lighting makes this easier to achieve. There are benefits too for installers and hard-pressed maintenance people.

White LEDs have been suitable for exit signs for about three years, but the technology has been improved to the extent that there are now LED equivalents for many conventional lamp types, and the cost is coming down all the time. Therefore, LEDs are now suitable for not only many general lighting applications and exit signs, but also for other emergency lighting luminaires. They bring many benefits for lighting designers, building managers and occupants, plus installers and maintenance staff.

Emergency lighting and escape route illumination must make it easy for people evacuating a building to see clearly enough to safely and quickly make their way out, using the nearest and shortest designated exit paths. Most people unfamiliar with a building tend to leave it the same way they entered it, often ignoring shorter escape routes not clearly marked (Figure 1).

Compliance with BS EN 60598-2-22, the emergency lighting luminaires standard, and EN50172 (BS 5266 series), the emergency escape lighting application series of standards, together ensure that there will be sufficient illumination for people to see

Mf...

...2

and be directed towards emergency exits, with exit or directional signs being in view at all points along the escape route (Figure 2).

Benefits for emergency lighting

Modern white LEDs produce bright, uniform light. Advantages include relatively high energy efficiency, long life and well-directed light output. They are also unaffected by extremely low temperatures and are nearly unbreakable. LEDs can be designed into buildings, structures and materials in ways that are impossible with conventional lighting. Emergency lighting luminaires can be designed that are exceptionally sleek, modern, unobtrusive and sometimes unusual (Figures 3 and 4).

Because individual LEDs are almost point light sources, control is simple, and well-designed LED emergency lighting luminaires - with their special optics - use virtually all the light emitted. The resulting high optical efficiency means that the designed illumination is less initial (light) flux than would be needed from a conventional light source, such as a fluorescent lamp. Compared with equivalent fluorescents, good LED emergency luminaires and exit signs often show energy savings of 30% or more; meaning significant money saved over the installation's life.

LEDs typically have a 60-degree beam, so when correctly installed at 3m mounting height at recommended spacings, emergency lighting luminaires should have no trouble achieving the required 1 lux at the floor, using just two 1W LEDs, plus LED control gear (driver), inverter and a three-hour non-maintained 3.6V battery. Figure 5 shows a P4 luminaire with three LEDs for greater light source integrity.

Exit signs must be sufficiently well lit to be clear even at maximum viewing distances, according to application standard EN1838 and the luminaire construction standard EN60598-2-22, which define minimum luminance levels that signs must achieve. LEDs are most effective in 'edge light' signs.

Mf...

...3

Savings on maintenance

Maintained emergency lighting and exit signs provide the best building safety, but maintenance costs will be higher than for a non-maintained installation because of lamp ageing. LED lamps have a significantly longer life, and will significantly reduce maintenance costs and disruption to offices etc. Therefore, there are clear benefits for installers and maintenance staff.

In summary, LEDs are well suited to emergency lighting solutions, so there is every reason today to use the latest, good quality, LED emergency lighting products from reputable manufacturers. As a safeguard, purchasers should check that the proposed supplier is an Industry Committee for Emergency Lighting (ICEL) member.

Auto-testing

BS5266 requires that the 'responsible person' must ensure that emergency lighting systems are regularly tested, so that they are maintained in full working order. This demonstrates that the required duty of care has been exercised - essential, because the 'responsible person' may be asked to prove in court that the requirements have been met, and installers are not immune. Such testing can be lengthy and difficult to achieve whilst keeping the building in a legal, fully working state, so emergency lighting systems equipped with an automatic testing facility may be the solution (Figure 6). This is more reliable than manual testing and can be very cost-effective, providing also peace of mind.

ENDS - Word Count: 756

CAPTIONS:

CAPTION 1 (file - ORBIK_Master.jpg)

Figure 1: Emergency and escape route illumination must make it easy for people evacuating buildings to safely and quickly get out, using the nearest and shortest designated exit paths (photo Orbik).

CAPTION 2 (file - EMERGILITE_Serenga_Escape_Route.jpg)

Figure 2: Emergi-Lite's LED-powered Serenga escape route sign. This provides excellent soft illumination with energy and space savings.

CAPTION 3 (file - ORBIK_Geneva_LED.jpg)

Figure 3: The Geneva recessed 8W or LED emergency luminaire by Orbik.

CAPTION 4 (file - P4_StairwayLED.jpg)

Figure 4: P4's Stairway emergency lighting system is an excellent example of LEDs allowing designers free reign with their imaginations.

CAPTION 5 (file - P4_TRILED_EscapeRouteLum.jpg)

Figure 5: This very compact LED-powered escape route fitting by P4 shows what is possible in terms of innovative design.

CAPTION 6 (file – ADVANCED_ELEC_Lx_Family.jpg)

Figure 6: Lx system emergency lighting products from Advanced Electronics. The Lx control panels provide cost-effective emergency lighting testing and monitoring.

Notes for editors:**1) About ICEL**

ICEL (www.ichel.co.uk) 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) BS 5266-1

Building Regulations require that systems comply with BS 5266-1, the Code of Practice for emergency lighting. The design guidance document, BS5266 Part 10: 2008, provides guidance on the method of assessing the requirements for emergency lighting to high risk areas, with recommendations for a number of selective examples. These include kitchens, plant rooms refuges, first aid rooms and fire control equipment. Typically, the recommended illumination level is 10% of the normal lighting level on to the task, either horizontally or vertically. ICEL's 1006 document could also be consulted to establish the types of risks that may be encountered in many premises; included in this is a model risk assessment plan.

BS5266-1 is currently being revised. Until recently, it has been treated as a prescriptive standard, but now the legal requirement is that non-domestic buildings must be safe at all times, even if mains power failure occurs. Therefore, nearly all such buildings must

have emergency lighting fitted. However, any risks associated with individual buildings, established by a risk assessment to be carried out by owner/occupiers, must be 'limited to tolerable levels'. The one size fits all approach will no longer be sufficient; emergency lighting must now be targeted at individual buildings far more than used to be the case. For example, although BS5266 doesn't call for emergency lighting in small rooms, if the risk assessment shows a need for emergency lighting, then it should be fitted. Previously, Fire Officers carried out such assessments, but the 'responsible person', such as some facilities managers, is now among those involved.

3) 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.

Contact: Bernard Pratley

ICEL

Ground Floor, Westminster Tower,
3 Albert Embankment, London SE1 7SL

Tel: 020 8677 0718

Email: info@icel.co.uk

Web: www.icel.co.uk

Contact: Bernard Pratley

Lighting Industry Federation (LIF)

Ground Floor, Westminster Tower,
3 Albert Embankment, London SE1 7SL

Tel: 020 7793 3020

Email: info@lif.co.uk

Web: www.lif.co.uk

Contact: James Hunt

54 Applesham Avenue, Hove,
East Sussex BN 3 8JJ

Mobile: 0775 247 2812

Tel: +44 (0) 1273 725322

Email: james.a.hunt@talktalk.net

PRESS RELEASE