Key to emergency lighting **effectiveness**

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How installers can support organisations to select emergency lighting equipment that upholds the wellbeing of building users and ensures maximum life safety system efficiency.

Emergency lighting is a vital life safety feature in any development, and essential for the modern-day built environment. In the case of an emergency, such technology is there to illuminate escape routes, enable building occupants to see their way clearly and avoid obstacles to evacuate the structure as quickly and safely as possible. Without lighting equipment in place, people are far more likely to lose their lives in a fire.

With these benefits in mind, a growing number of organisations in Africa have, in recent years, begun to incorporate emergency lighting technology into their buildings. This growth in use is both to optimise the safety of employees and visitors and to ensure compliance with legislation, such as Part T (Fire Protection) of the National Building Regulations [1] in South Africa, and similar laws being implemented across the continent.

To help organisations meet these increasingly stringent regulations, many installers are recommending and specifying fire safety and emergency lighting equipment that has received certification to European performance guidelines, such as those issued by the British Standards Institute (BSI). Such marks of third party approval are rightly seen to demonstrate the quality and effectiveness of the life safety technology to which they have been awarded, helping to reassure organisations that their buildings will be compliant with even the strictest legislative requirements.

So how can installers ensure they recommend and install the most appropriate emergency lighting equipment for the needs of their customer's building?

When advising on these types of systems, it is crucial for installers to consider whether the solutions offered and the design of the emergency lighting meets the requirements of key international standards.

The BSI's BS 5266 [2] code of practice for emergency lighting, for example, has strict guidelines on the positioning of luminaires, minimum light levels, acceptable glare levels and minimum routine testing schedules. These codes are increasingly being used by both installers and organisations across Africa as a baseline for best prac

BSI – British Standards Institute
CPD – Continuing Professional Development
LED – Light Emitting Diodes
TCO – Total Cost of Ownership

Abbreviations/Acronyms

tice when it comes to choosing fire safety and emergency lighting systems and fitting them in buildings.

There are clear recommendations provided by BS 5266 [2] regarding the 'points of emphasis' within the building – mandatory locations within a structure where specific hazards need to be highlighted with luminaires, as well as safety equipment and signage. These include areas near stairs, changes of level, at each change of direction on the escape route, near firefighting equipment and manual call points. The final exit, first aid points, exit doors and safety signs also require illumination. It is imperative that any emergency lighting system selected for the building should be suitable for use at all points of emphasis.

Achieving the correct light level – or 'Lux' (lumens per square metre) - from emergency lighting equipment is a necessity to comply with fire safety regulations and optimise the wellbeing of building occupants. BS 5266 [2] recommends a minimum level of one Lux in escape routes, and 0,5 Lux in open areas at floor level to help people navigate through the building even in heavy smoke. It also suggests positioning luminaires in such a way to reduce glare, which can also reduce visibility.

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For non-domestic multi-storey buildings primarily used by disabled occupants, BS 5266 [2] also advises that refuges for anyone unable to easily use emergency exits or stairs be lit to a higher level of illumination than the rest of the escape route - to make sure they are clearly visible in the event of a fire. It also suggests that kitchens, first aid rooms, treatment rooms, plant rooms and reception areas all have emergency lighting fitted that offer higher Lux levels.

No two manufacturers' products are the same, offering slightly different levels of illumination. As such, installers will need to fit their chosen luminaires at different locations and in different quantities depending on the manufacturer, to ensure the correct Lux level for each area of the building. Many manufacturers provide spacing guides to help installers calculate the minimum number of products they need to be compliant and what the system design should look like.

At the same time as considering compliance with regulations, installers should think about the maintenance and aftercare requirements of the emergency lighting equipment they recommend for their customers. All emergency lighting systems need to be regularly and correctly maintained by the organisation in charge of the building to minimise the risk of a lighting failure during a genuine emergency. However, irregular maintenance can lead to premature degradation in system performance, which can require components to be repaired or replaced more regularly than otherwise necessary. This simply increases downtime further, raising costs and impacting on safety and business efficiency.

With all this in mind, it is imperative that installers consider the maintenance requirements of their chosen emergency lighting solutions over their lifetime. Systems that require additional maintenance will end up costing more to look after than those that need less care. Similarly, products that have not been built to withstand environmental conditions will degrade prematurely, requiring extra care and costly repairs. All of this will adversely affect process efficiency for building owners and increase the system's total cost of ownership (TCO).

It is also crucial to think about system reliability, as this too can have an impact on TCO. A less reliable system, for example, may suffer from unexpected problems, which will cost organisations time and money to repair. Replacement components may also vary in terms of price, particularly if the emergency lighting system is not easily compatible with technologies from different suppliers, further impacting on the cost of aftercare. Selecting a system produced by a manufacturer that offers a comprehensive warranty can help installers mitigate the effect and costs of unforeseen repairs on their customers.

Another key consideration for installers seeking to support customers in reconciling safety with efficiency is the energy consumption of the emergency lighting system in question. A system that requires more electricity to operate will end up costing considerably more over its lifetime than one that consumes less.

In addition, organisations operating in rural, or emerging economic areas, may find themselves vulnerable to brown-outs when mains electricity is significantly curtailed for at least part of the day, relying on personal generators to mitigate the economic impact. In such circumstances, systems that consume a lot of electricity will be a considerable drain, impacting on the performance of other equipment in the building.

With these considerations in mind, installers should look carefully at the energy efficiency ratings of the emergency lighting systems they intend to install for customers. There are emergency lighting

solutions that incorporate low-voltage cabling and energy-efficient light emitting diodes (LEDs), which together consume less electricity than standard lighting.

Some surveys suggest an energy reduction of up to 95 % utilising luminaires featuring LED technology compared to those with standard fluorescent tubes (*Based on a maintained system of 100 LED luminaires compared to 100 traditional fluorescent tube light fittings). Using new technology such as this can go a long way towards reducing operating costs and minimising the organisation's reliance on mains electricity.

Online efficiency calculator

There is plenty of help available to installers to enable them to select emergency lighting solutions that meet the particular needs of their customer's building and its occupants while also optimising efficiency.

For example, Hochiki Europe, has developed an online Efficiency Calculator to support installers in accurately assessing an organisation's existing equipment.

The tool quizzes users on performance status of the building's current fire detection or emergency lighting technology, as well as providing guidance on methods of improving it to both maximise efficiency and uphold regulatory compliance.

Many fire safety system manufacturers provide Continuing Professional Development (CPD) training programmes for installers to give them the knowledge and skills they need to fit emergency lighting equipment to the latest international standards. A number also have technical experts on hand to offer guidance when designing the most suitable lighting solution for the safety and efficiency needs of the building in question, as well as meeting local legislative requirements. Taking advantage of this help can enable installers to support organisations in protecting the well-being of their building's occupants as efficiently as possible. Having emergency lighting installed across their buildings is crucial for organisations to ensure compliance with South African fire safety regulations, as well as legislation in a growing number of countries across Africa.

Conclusion

However, there is no 'one-size-fits-all' emergency lighting solution. Each building has its own particular safety and design needs that must be taken into consideration by installers to ensure they choose the most appropriate technology for their customers. Installers should talk to their life safety experts to ensure they get the support and guidance they need to choose the right emergency lighting technology for their customers. Doing so, they will ensure they provide optimum safety for customers' building occupants, while also maximising the efficiency of their emergency lighting equipment.

References

[1] National Building Regulations and Building Standards Act, South Africa, 1977: http://www.thedti.gov.za/business_regulation/acts/building_standards_act.pdf

[2] BS 5266. Series. Fire Industry Association standards.

[3] BS 5839. Series. Automatic fire detection systems.

Robert Head joined Hochiki Europe over ten years ago as part of the Technical Support Team providing first line support and product training to customers both in the UK and overseas. During his time as a technical support engineer Robert gained a detailed understanding of life safety systems and qualified in design, installation and commissioning for both BS 5839 [3] and BS 5266 [2]. His knowledge of Hochiki Europe's customer base enabled a natural progression into sales and for over the last three years Robert has managed its growing business across the African continent.

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