

LightingEurope Position Paper

Emergency lighting: maintenance and the cost effectiveness of automatic emergency lighting testing

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Emergency lighting, as a safety critical component, is well understood and carefully regulated with well-prescribed procedures, quality accredited devices and clearly defined boundaries. Or is it?

It would be good to think that after specifiers and installers of this vital safety equipment have diligently followed the requirements of National and International standards and have provided well designed and legally compliant installations that these installations would be tested and maintained to ensure correct operation through life.

There is however sufficient anecdotal evidence to suggest that a significant proportion of people are less than scrupulous about the way they test and maintain emergency lighting installations. This begs the question “Why?”

- Perhaps people are confused by the changing requirements over the past 10 years or so?
- Perhaps some of the requirements are ambiguous, with loopholes that can be too easily exploited?
- Perhaps the penalties, financial and also to reputation or even liberty, are insufficient to enforce action?

The European Standard EN 50172 requires that an emergency lighting system is checked on a regular basis to ensure that it is operating correctly, that it is maintained according to manufacturer’s recommendations, and states that the results of these checks have to be recorded and reported to the person responsible for the building. Any repairs or remedial work identified by this report or work performed as planned

maintenance must be actioned within a reasonable time frame and all changes to the installation shall be recorded.

Why test emergency lighting?

At its simplest an emergency lighting system needs to operate in the event of a mains power failure to allow the safe evacuation of a building. But how many buildings fail this most basic of criteria, creating a dangerous situation which could result in injury or loss of life?

Like any equipment or system that is poorly maintained, emergency lighting will eventually fail to operate as intended. If the “fit and forget” principle is applied sooner or later either a lamp or battery will fail and it will no longer provide the required lighting levels in an emergency. Without regular testing the occupants of the building may never be aware of the problem and assume that they will have emergency light to help them escape if an emergency situation should occur.

The vast majority of owners and occupants of public and commercial buildings are responsible people and accept the need for testing. But how can one be sure that testing is carried out properly, regularly, supported by accurate records and importantly for those owners and occupiers – cost effectively?

Testing requirements

A regime of testing of every emergency luminaire in the installation is required by most countries, including all maintained and non-maintained emergency task and escape lighting, slave luminaires, and exit sign luminaires. This testing may have daily, weekly, monthly and annual requirements with testing varying from short function test to testing for full rated duration.

There are a variety of testing regimes required, but in broad terms they need either a manual or automatic testing approach. To carry out the tests manually often requires several reliable and experienced technicians or trained staff. In larger buildings this becomes a task equivalent to “Painting the Forth Bridge”, it never ends and becomes a cycle of continual checking. This labour intensive method can be expensive, difficult to

manage and very disruptive to the normal functioning of the building. Think about the consequences for instance to a hospital or school of continuous disruption. There is also the element of human error, irrespective of how systematic the process might be.

Automatic testing provides a reliable method of regularly checking that the battery is connected and receiving charge, that the lamp will strike correctly when required and that the battery capacity is sufficient to run the lamp for the rated duration period with minimal disruption during testing.

As well as providing confidence that emergency lighting is adequately tested to comply with EN 50172 and all local regulations, automatic testing of emergency lighting can be shown to be more cost effective than manual testing for larger installations. The investment in the equipment is greater, but this is offset by the reduction of installation of manual testing devices and the labour required to carry out manual testing.

Automatic testing equipment

Although there are automatic testing systems that encompass every eventuality and operational requirement, the simplest system is the stand-alone form of automatic test emergency lighting. Here the results of automatic tests are typically indicated through the LED indicators on the luminaires. However note that this method is only valid for self-contained luminaires and does not work for central battery or generator systems.

When using stand-alone automatic test emergency lighting it is important that adjacent luminaires in an installation do not test at the same time which would leave an area without emergency lighting cover whilst their respective batteries are recharging. Therefore all stand-alone automatic test emergency luminaires must have the provision to delay the testing of alternate luminaires in an installation or similar arrangements to avoid this problem.

The results of tests carried out by stand-alone automatic test emergency lighting still need to be recorded manually and entered into a logbook. However the person recording this information does not need to put luminaires into test mode and wait to see whether the rated discharge duration is achieved, nor do they need to be electrically qualified.

To avoid manual recording of test results there are a range of automatic test emergency lighting systems which connect emergency luminaires to a control panel where the results are collected centrally. The connection may be through wired or wireless communication.

More advanced systems allow the programming of tests from the control panel or more frequently via connection to a PC on which a visual representation of the installation can be displayed including a representation of connected luminaires in test and those exhibiting faults.

Such systems can be invaluable to maintenance engineers who are provided with information about which specific luminaires are faulty and also about the nature of the faults, so that they can respond effectively and efficiently armed with any replacement components required. A graphical layout of the premises can be brought up to identify exactly where faulty luminaires are located.

Beyond PC based emergency lighting test systems, fully featured systems that can be monitored and controlled via an intranet or internet connection are also available and utilise proven technology.

Manufacturers provide a variety of automatic testing systems and a payback period of between 2 and 4 years can be achieved through the installation of even the most advanced systems. Beyond the payback period very substantial savings for facilities managers can be shown compared to manual test or stand-alone automatic test regimes.

The case for automatic testing

The case for using automatic testing has been strengthened by reference in EN 50172. Because of the importance attached to the correct functioning of safety equipment such as emergency lighting, this standard emphasises the need for the system to be correctly tested at a safe time and without putting people in the premises at risk if a mains failure occurs following a test. It also promotes the use of automatic test systems to EN 62034, which specifies the basic performance and safety requirements for individual products and components that are incorporated into automatic test systems for use with emergency lighting systems.

It can be difficult to ensure that the manual testing of emergency lighting will be performed consistently and efficiently and that the correct records are maintained. Therefore consideration should be given to installing an automatic emergency lighting testing system conforming to EN 62034.

If you were in doubt about the value and importance of automatic testing, perhaps this statement will encourage you to re-consider your views.