THE Beacon
MARCH 2016
News and views from Fire & Security Consultancy Limited

How EN54-compliant wireless alarm systems minimise risks on construction sites

Paul Henson, sales and marketing director at Ramtech Electronics, explains how.

Each year there are hundreds of fires on construction sites, potentially putting the lives of workers and members of the public at risk. Ensuring that workers and assets are protected therefore requires careful consideration of a number of factors.

Size of the project, proximity of nearby buildings, number of storeys and type and amount of flammable materials present, plus other factors, all need to be taken into account. Although the health and safety record of the construction industry has improved significantly over the last few years, the risk from fire remains high and ever present.

In fact, the dangers from fire are multiplied because it can spread rapidly to adjacent buildings putting members of the public at risk. Legislators are well aware of the dangers, and fire safety in the UK's construction industry is covered by a number of laws, guidelines and codes of practice, including:

- The Regulatory Reform (Fire Safety) Order (2005)
- The Construction (Design and Management) Regulations
- HSE Fire Safety Guidelines for Construction Sites (HSG168)
- The Fire Protection Association Joint Code of Practice
- BS5839-1 – Fire detection and fire alarm systems for buildings.
- Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises
- The Structural Timber Association's 16 Steps to Timber Frame Construction

All of these set out fire safety requirements in relation to their particular focus and each specifies that an appropriate fire alarm system must be used. These guidelines form a comprehensive set of best practice indicators for the use and installation of fire safety systems in the construction industry.

Alongside this legislation, the Construction Products Regulation, which came into force in 2013, says that fire alarm products sold in the European Union must be tested and independently certified against Harmonised European standards where these exist.

In the case of fire detection and fire alarm products, that standard is EN 54 Fire detection and fire alarm systems. Effectively, the law and best practice guidelines require that construction sites are protected with a suitable fire alarm system and EN 54 is the standard against which fire alarm systems should be measured.

More recently, the The Joint Code of Practice on the protection from Fire on Construction Sites and Buildings Undergoing Renovation (JCOP) has been updated (October 2015) and is now available in its 9th edition.

This latest version applies to activities carried out prior to and during the procurement, construction and design process. JCOP is an important document for construction professionals as it is commonly referred to in insurance contracts because it is recognised as best practice.

The objective of JCOP is to prevent fires on construction sites and it includes some useful guidance on how to do this. For instance, the most significant update to the 9th edition reinforces the need for construction site fire alarm systems to meet the requirements of EN 54.

Paragraph 13.8 lays this out: Components of automatic fire detection and alarm systems should be marked as complying with EN 54.

In updating JCOP, the FPA and the insurance industry has made it much easier to specify construction site fire alarms that are up to the same high standard as other safety critical construction site products such as ladders and scaffold boards.

JCOP caries considerable influence as it was developed by the Technical Division of the Fire Protection Association (FPA) and experts from the insurance industry who reported to the RISCAuthority Risk Control Steering Group.

Technological solution

The key to minimising damage and injury from fire is bringing all these pieces of legislation together into a comprehensive fire alarm system. There are two basic routes – either a wireless or wired system.

An EN 54 compliant wireless fire alarm system offers significant installation benefits because it requires no hard wiring – making it easy to install and reposition the units.

There is the added advantage that it provides site-wide protection because the wireless signal is capable of passing through all solid materials typically found on a building site.

Construction professionals are realising the benefits of installing a fully EN 54 compliant fire alarm system.

Fire can cause immense damage to assets that are costly to rectify, not to mention smoke and flames being an immediate danger to workers and people in nearby buildings. Fire safety in completed buildings is regarded with the utmost importance – regular fire drills and testing of equipment – and so it is common sense that it should also be treated in the same way for a building under construction.

The need to protect people from harm during this phase should be as much of a priority as it is for those that will ultimately live and work within the completed building.

For more information visit: **www.ramtech.co.uk**

How might the new Building Regulations affect your business?

On the 1st October 2015, the UK government introduced new Building Regulations in England aimed at bolstering the security of homes, businesses and other major refurbishment sites where an existing building has changed its use.

As outlined in Part Q, or ADQ (Approved Document Q) of the current Building Regulations, the new legislation means that for the first time, physical security standards will have to be taken into account prior to the commencement of any on-going refurbishment works — something which could directly impact upon homeowners, private contractors and other construction firms without their knowledge.

In a move so far unseen in planning legislation, the government has set out plans to make a clear distinction between physical security and design policy. After the new regulations were introduced at the beginning of October, guidelines require contractors to perform a series of tests on physical security products located in access points — ensuring that they fall in line with the minimum recognised standards for attack resistance laid out in PAS 24, LPS 1175, LPS 2081 and STS 202.

To better understand the recent legislative changes made to Building Regulations, we spoke with construction safety experts, Manchester Safety, who believe the recent changes will have a largely positive impact. They said: "Positive news from the new Building Regulations regarding the Approved Document Q or ADQ, which is essentially new security measures to entrances and other access points of new homes and refurbishments.

This extra measure for security, which will be applied to all new doors, windows and roof lights, will provide not only a more secure property but have a positive impact on Neighbourhood and Home Watch schemes"

Secured By Design — the national Police crime prevention initiative created to offer physical security advice to architects, developers and builders — agree, stating that the changes present a significant step forward in the on-going development of a more comprehensive approach to the security of our private and corporate infrastructures.

In order to adhere to the new security regulations, it is now imperative that firms obtain the appropriate products for a specific application, and ensure they are tested rigorously in such a way as to demonstrate that they are fit for purpose. If unsatisfactory components are installed, complete removal may be necessitated given the potential security issues which may occur as a result of a faulty or compromised component.

To help developers and contractors safeguard against such issues, Secured By Design lists a complete range of physical security components on its site, all of which have been independently tested by a third party in accordance with the minimum physical security requirements outlined by the Building Regulations.

The organisation has also updated the information, advice and guidelines available on its National Building Approval (NBA) documentation, to help businesses better understand the security requirements necessitated as part of the government's new planning legislation.

Adhere to the NBA's latest framework, and construction firms should have little problem in meeting the requirements of the ADQ legislation. The framework is carefully designed to ensure all aspects of physical security are assessed prior to the construction or installation of any inferior security features — helping developers, contractors and builders streamline their processes and avoid any time-consuming and costly tests, removals and refits.

For information visit
www.planningportal.gov.uk

Yale® door

adds a range of fire doors to its trusted range of composite doors

The FD30 Composite Fire Doors are approved by Secure-by-Design and have been rigorously tested to BS476 Pt 22 standards to provide 30 minutes of smoke & fire protection.

Yale's fire doors also come with a 10 year guarantee and extra security assurances, including multi-point locking and a 3* Yale TS007 Cylinder as standard.

"Fire doors are now required in most flats, apartments and communal dwellings," says Head of Marketing for Yale Door, Isaac Powell. "We have designed our fire doors so that they not only ensure proper protection from smoke and fire, but also provide a high level of home security.

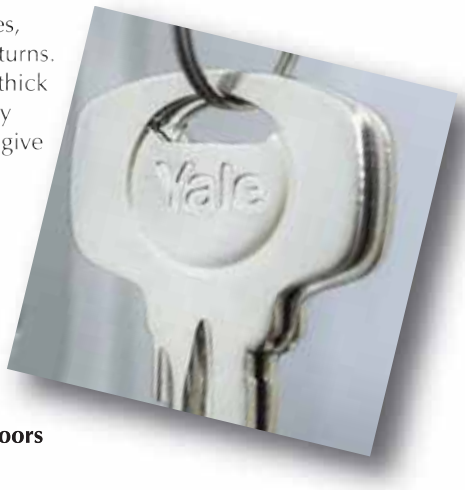
"Homeowners can also customise the appearance of our doors to suit their homes."

There are 8 styles and 5 colours to choose from, with fully glazed top lights, side lights and flag windows also available. In addition, Yale Door offers colour-matched hardware in gold and chrome, as well as fire-rated letter plates, spy-holes, urns and thumb-turns.

These fire doors also use thick pyro-glass, which does away with ugly Georgian wire to give homeowners a door that is both stylish and secure.

Yale's fire doors are available as supply-only itemsor with full expert installation.

To learn more about the fire doors, visit the Yale Door website:
www.yaledoor.co.uk/fire-doors



Good seal Bad seal

All of those within the supply chain with responsibilities to install, maintain or re-instate a building's fire compartmentation should be aware of Regulation 7 of The Building Regulations, which requires that building work is carried out using "adequate and proper materials which are appropriate for the circumstances in which they are used" and "are applied, used or fixed adequately to perform the function for which they are designed …in a workmanlike manner".

When firestopping around electrical and mechanical services and data cables, for example, a number of factors must be considered:

- required level of fire resistance
- what services are contained within the aperture
- how the fabric of the building will react in a fire
- if there will be a requirement for the later addition or removal of services.
- load bearing or impact resistance requirements
- thermal movement or other ambient conditions
- acoustic or other non-fire issues

Products should only be installed as fire tested and systems should not be mixed and matched. Seals damaged by the introduction of additional services should be repaired with the same product.

Poly Urethane foams are rarely tested or suitable for sealing service penetrations. There is a widespread belief that urethane foams intumesce and they are sometimes described as 'fire foam' or 'intumescent foam', which means they would expand as a reaction to heat, but in contact with fire, PU foams actually melt, degrade, give off black toxic smoke and catch fire – the 'highly inflammable' warning label and limitations of use information found on the reverse of cans should be noted.

Suitable firestopping tested systems for service penetrations are often based on heavy density rock wool 'coated batts' and intumescent mastic; the correct type of intumescent mastic must be specified for each application. Acrylic mastics are the most basic in terms of fire performance. Silicone intumescent mastics are waterproof and generally more flexible– they should to be used in cavity voids and other areas where thermal movement of the structure and moisture may occur. Graphite mastics have high expansion capability and the ability to exert pressure. They should be used around cables and small plastic pipes as they will, in a fire situation, displace and dam penetrations as services melt and burn away.

Linear gaps occur where different components of a building interface. Manufacturer's application details should be noted. Typically it must be applied in a 1 to 1 ratio, i.e. if the gap is 20mm wide then a depth of 20mm will be required to guarantee fire performance.

Fire doors are very familiar items. but their complexity is often overlooked by those involved and tasked in the installation, maintenance and inspection process.

They differ in 2 main ways from other fire safety components such as fire alarm systems, fire extinguishers and emergency lighting:

- The others stay aloof from day to day use whereas fire doors are opened, wedged, bashed and otherwise used and abused on a daily basis
- Unlike the other components they are more often than not installed, inspected and maintained by people with no specific training or qualifications to do so

When looking at fire doors, two key considerations, often overlooked, should be borne in mind:

1. Not all fire doors protect the same level of hazard and some are more critical to the overall fire safety of the building than others
2. Not all fire doors are subject to the same level of usage

If criticality and usage, are fully considered then it may have an important influence on the quality and specification of fire door purchased, for example to what extent they need to be impact resistant. It can be seen that fire doors can be put into four categories; those that are:

1. Critical and High Usage
2. Critical and Low Usage
3. Non-Critical and High Usage
4. Non-Critical and Low Usage

When doing so it will be necessary to take into account both the strategic importance of the building (and therefore to what extent property and business continuity is a key consideration) and the evacuation strategy. Especially if the building has a 'stay put' policy, determining which doors are critical must factor in adequate protection for Fire and Rescue in the event of a major fire incident.

Critical and High Usage:

Those looking to make a significant impact on both the fire safety and future maintenance costs of a building should focus on these doors as they could seriously affect life safety. These are doors that must be installed correctly and then effectively managed and maintained, but because they are subject to high traffic usage they are likely to bear the brunt of 'wear and tear'. An unambiguous Planned Preventative Maintenance scheme is appropriate for such doors.

Issues therefore to be considered:

- Can and should they be held open to create easy access and prevent damage?
- Should they be to a higher quality specification than other doors in the building?
- Should they be inspected to a higher standard than other doors, especially at installation / handover?
- Are they Building Regulations Approved Document M (ADM) compliant?
- Should they be inspected more regularly than other doors in the building?
- Should they be independently inspected and certified?
- Is an effective PPM scheme in place?

Fire doors for the other 3 categories can be similarly assessed.

Fire door sets must not be considered in isolation as other fire and smoke separation elements such as fire walls, glazed panels, fire barriers and fire dampers need the same rigour of installation, inspection, maintenance and management, otherwise one or a number of weak spots within a buildings fire compartmentation will result.

Regulatory Reform (Fire Safety) Order 2005 has focussed those responsible to take compliant installations of passive fire protection components seriously; hence the trend to select contractors who are in third party accreditation schemes operated by a UKAS audited certified body.

Mark Williams is the Managing Director of Checkmate Fire Solutions. For more information visit **www.checkmatefire.com**

CHECKMATE FIRE

CASE STUDY

Tall building office space protected with innovative multi-sided fire curtain

WHAT TYPE OF FIRE PROTECTION WAS THE CLIENT LOOKING FOR?

Modus construction built the 18 floor, state-of-the-art 317,000 sq ft Aldgate Tower in the Aldgate commercial area of Central London. Aldgate Tower consists of office space for UK Commercial, UK Legal, Creative and Financial companies and the building's location allows fantastic, 360 degree panoramic views of the London skyline. The building's internal layout consists of office space around the outer edge with a central core of lifts, meeting rooms and service facilities.

Like all modern buildings being constructed, fire engineering is a high priority, especially when combined with the modern, open plan designs being created by architects. In the case of Aldgate Tower, the architect designed a focal point, open staircase leading from the 11th to 12th floor on the west side of the building. As the staircase design was to remain open with no lobby or door at the bottom and top and with no surrounding walls meant the fire engineers required some sort of fire compartmentation between the floors via the staircase.

Photograph: Jim Linwood (Flickr)

HOW DID COOPERS HELP?

The Coopers FireMaster®, closed rectangular Concertina fire curtain is a perfect solution when requiring fire compartmentation around a staircase as it offers a virtual firewall creating a lobby once the curtain has been deployed with more than 2 hours integrity. The innovative Concertina fire curtain installed at Aldgate Tower fully encapsulates the staircase from the 11th to the 12th floor in the event of a fire. The curtain is triggered by either the fire alarm system or a local heat or smoke sensor and is automatically deployed from the ceiling to the floor.

Once activated and fully deployed the Concertina fire curtain replaces the requirement for a lobby or door at both ends of the stairs and protects the occupants from the spread of fire and smoke between the floors. The curtain's headbox is completely exposed, which is unusual for a Concertina, but it sits well with the surrounding service pipes, vents and structural joists and the headbox and supporting unistruts have all been painted in the same grey finish as the surrounding steel work. "The beauty of the FireMaster Concertina fire curtain is it requires no side guides so a perfect solution for the staircase design to work with the open plan office layout"

BENEFITS

The FireMaster® Concertina product offers architects the perfect solution to open plan designs with fire engineering in mind and the strict fire regulations put in place with modern tall building construction.

The Concertina fire curtain deploys from the ceiling without the requirement for any side guides or columns, which would disrupt the fantastic views and the open plan design to the office space. It also removes the requirement to have a lobby or door at the top and bottom of the stairs meaning architects, designers and fire engineers are turning to the FireMaster® Concertina to allow beautiful and profitable office spaces whilst protecting the occupants from the harmful effects of fire and smoke.

For more information call **+44 (0)2392 454 405** or visit **www.coopersfire.com**

coopers
EST. 1983