The golden thread

Peter Barker flags up some key issues identified in the Hackitt report as central to a more robust, transparent and efficient approach to fire safety and assurance in construction

ONE OF the key findings in the summary of the interim report on the review of building regulations and fire safety[1] is, perhaps unsurprisingly, that the current regulatory system of ensuring fire safety in high rise and complex buildings is not fit for purpose. The report cites a number of reasons as to why this conclusion was reached and the interim report will now shape the direction of travel for the second phase of the review, with the final report to be concluded in spring 2018.

Dame Hackitt's report highlighted central issues applicable to fire resisting construction products and systems installed within buildings, including competence, change control, compliance and quality assurance, and third party certification schemes. Here, we will link these to the principle of 'the golden thread' – a term that Dame Hackitt uses in the interim report to describe having a record of the building's original design intent together with knowledge of any subsequent changes and refurbishment activities.

This is to ensure beyond reasonable doubt that the integrity of the building is being maintained correctly and will continue to protect the occupants of the building in the event of a fire.

Use of certification

To understand how third party certification schemes are used within the construction industry and can assist in improving competence, change control, compliance and quality assurance, it is first necessary to understand what third party certification is and how it differs from first, or second party certification.

On this subject, the international standard giving the requirements for bodies certifying products, processes or services[2], BS EN ISO/IEC 17065: 2012, states: 'The overall aim of certifying products, processes or services is to give confidence to all interested parties that a product, process or service fulfils specified requirements. The value of certification is the degree of confidence and trust that is established by an impartial and competent demonstration of fulfilment of specified requirements by a third party'.

In the context of fire resisting products and systems, the aim of product and process

certification schemes is to provide confidence to interested parties (eg architect, contractor, building owner, building management, approving authority, insurer, building user/occupier) that the fire resisting product has been constructed (ie product certification) and installed (ie process certification) correctly, such that it will provide the required fire resistance performance to the appropriate test standard (eg BS 476-22: 1987 for fire resisting door assemblies).

The value of the certification is that there is independent assurance and therefore increased confidence that the fire resisting product is capable of achieving the stated performance. It would also be reasonable to expect such assurance to reduce the burden on the interested parties (primarily building control bodies, in terms of checking compliance) in relation to verifying the supporting test evidence against the manufactured product as installed on site.

Both product and process certification schemes are mentioned together, as there is little point in having a compliant product incorrectly installed – particularly with a safety system such as a fire resisting product – as fire will always exploit the weak link. For some fire resisting systems such as glazing, the fire resistance of proven products in test conditions can be reduced from 60 minutes to as little as a few minutes as a result of poor installation.

First party certification

This is termed first party conformity assessment activity[3], or sometimes self certification, and is a conformity assessment activity that is performed by the person or organisation who/which provides the product. In other words, it is the manufacturer of the product declaring that it is compliant with the relevant normative standards and manufacturing processes without any independent verification. This increases the level of trust and reliance on the manufacturer to have constructed the product in accordance with the relevant supporting documentation (eg assessment reports or test evidence) and increases the burden on interested parties (particularly building control bodies) to verify the compliance of the product.

Second party certification

Also termed second party conformity assessment activity[3], this is a conformity assessment activity performed by a person or organisation who/which has a user interest in the product. An example of this could be a supplier of components endorsing or verifying that a manufacturer is constructing a compliant product using their components. Due to the vested interest of the component supplier, there is still an increased reliance on trust that the products have been constructed correctly and a requirement on the interested parties to ensure compliance against the supporting documentation.

Third party certification

Alternatively termed third party conformity assessment activity[3], this is a conformity assessment activity performed by a person or body who/which is independent of the person or organisation that provides the product, and of user interests

in that product. As described in ISO 17065, this aims to provide confidence in the compliance of the product, and adds value to the process of certification by having independent assurance that the product has been constructed correctly according to the scheme requirements and against a recognised normative performance standard appropriate to the product.

Other requirements of third party certification schemes such as marking the product, factory production control records and ongoing inspections and audits have other benefits related to fire risk assessment activities, maintenance and repair, and insurance. For example, a fire resisting construction product, such as a fire door, is considerably easier to identify as a performance product if it is labelled with a recognised third party certification label. This will assist with fire risk assessment activities related to protecting escape routes and compartmentation.

In the absence of such information and, depending on the competence of the fire risk assessor and/or age and condition of the door, the findings of the risk assessment may be to replace the door or to seek specialist advice. Additionally, the label will provide provenance to the original manufacturer and/or installer, which is useful for ongoing maintenance activities, particularly when replacing components such as damaged hardware, intumescent strips or glazing.

Certification bodies are accredited by their national accreditation bodies (eg UKAS in the UK). National accreditation bodies are typically appointed by their government to carry out this role. All certification bodies that provide third party certification for products, processes and services will be accredited against ISO 17065, which requires impartiality, competence, probity, confidentiality, openness and professionalism to be considered as part of the structure of the organisation.

Building regulations

Given the key benefits of third party certification, such as reduced levels of risk and improved levels of assurance, why is it still under specified and misunderstood? The answer is closely linked to the various options available for different materials and systems to demonstrate compliance with the requirements of Regulation 7 of the Building Regulations 2010 regarding materials and workmanship.

Regulation 7 requires building work to be carried out using adequate and proper materials in a workmanlike manner, with Approved Documents and other relevant guidance documents and codes of practice stating the properties and performance that the materials or systems should meet.

In Approved Document 7[4], the state approved guidance document for meeting the requirements of Regulation 7, there are two sections that deal with materials and workmanship. The guidance in section 1, which provides different ways of establishing the fitness of materials, is summarised as follows:

◊ If the product is a standardised one that is covered by a European Harmonised Standard (hEN), it will be CE marked by the manufacturer and placed on the market with a declaration of performance. For fire resisting products, this will involve notified certification bodies and notified test laboratories. Whilst CE marking is a market

placement activity under the Construction Product's Regulation, (and not third party certification as described above), there is limited third party involvement with respect to issuing the certificate of constancy of performance (COCOP) and ongoing surveillance (not site or installation related). The declaration of performance (DOP) will also assist the end user in identifying the performance capabilities of the product as appropriate for the required end use.

- In the case of a standardised product that is not covered by a hEN, compliance with the performance requirements of the building regulations can be demonstrated using a relevant non harmonised European standard, British standard or ISO standard. The manufacturer may declare conformance against the standard by first party certification (self certification) or as part of a third party certification scheme.
- For non standardised products (eg not covered by a hEN), there is the option for demonstrating the performance of certain products by way of a European Technical Assessment (ETA) conducted by a Technical Assessment Body (TAB), providing there is a European Assessment Document (EAD) for the product. In essence it is a route for CE marking construction products if a hEN does not exist. As for CE marking under the hEN route, it is not the same as third party certification, but there is input from an independent notified body, in terms of writing the ETA and issuing the COCOP for the manufacturer to prepare a DOP and place a CE mark on the product ready for sale.
- With regard to non standardised products that do not have a relevant EAD, there are other routes for demonstrating compliance, such as test evidence generated using normative standards, calculations, or assessments of performance based on test evidence. The product is manufactured in accordance with the supporting documentation, and the assurance of compliance can be given by the manufacturer as a first party certification activity via a second party certification activity, or as part of a third party certification scheme.

In the case of third party certification schemes, the certification body will make the decision about what supporting documentation is acceptable for the manufacturer to use as a basis for constructing the product as part of the certification scheme. Typically, this will be either engineering assessment documents that extend the field of application of any test evidence (written by organisations with demonstrable competence in the field of assessment writing), or directly relevant test evidence generated to normative standards at UKAS accredited laboratories.

To maintain impartiality regarding certification decisions and to avoid any conflict of interest, ISO 17065 requires that certification bodies must be independent from the test laboratory and engineering assessment organisation.

HM Government

The Building Regulations 2010

Materials and workmanship **7**

APPROVED DOCUMENT

Regulation 7

Section 2 of Approved Document 7, which gives guidance on meeting the requirements of building regulation in terms of workmanship, mentions harmonised product standards, other British or international standards, management systems, past experience, tests and independent certification schemes. The intention is to ensure that the installation/construction is carried out in a workmanlike manner and is appropriate for the end use, and that the product has been appropriately prepared and installed, such that it is capable of providing the function and performance for which it is intended. Third party certification schemes are given as one way of demonstrating compliance and competency in this area, but are not currently mandated.

Barriers to performance

Ultimately, it is about making sure that the products and systems installed in buildings are capable of providing the necessary performance. However, the different approaches listed above create a situation in which the process of testing, marketing and quality assurance is not always clear; something that was picked up in Dame Hackitt's interim report.

A situation is also created whereby it is possible to select products based on meeting the minimum performance requirements, the primary driver being to achieve building sign off for minimum cost as opposed to consideration of value, quality and other performance characteristics, such as durability. In fact, it is not unusual for the specification for construction products to start with requirements for third party certified products and other attributes, but as the project moves from the design phase through to construction, the specification is broken or 'value engineered' and products are substituted for ones that don't necessarily carry the same quality, certification, performance and other assurances of compliance.

Information chain

Within the interim report, Dame Hackitt talks of establishing a golden thread from the design phase of a building, through to construction, handover, occupancy and ongoing maintenance. The golden thread principle describes a flow of information throughout the life cycle of the building, helping to ensure that buildings are constructed correctly in the first place and can continue to be safe for as long as people are living and working in them.

Such a chain of information would not only assist with accountability and responsibility for the construction of the building and installed systems, but also assist with ongoing fire risk assessment activities and facilities management. Indeed, there is already a building regulation that requires a package of fire safety information to be handed over to the responsible person (as defined in article 3 of the Regulatory Reform [Fire Safety] Order 2005) once the building has been completed – Regulation 38. However, at the moment it is widely ignored and/or misunderstood, and non compliance is rarely, if ever, enforced.

Third party certification alone will not be enough to achieve the golden thread principle, but it is not hard to see how it can assist when looking at the requirements of third party certification schemes. Not only is there independent assurance that products are being manufactured and installed correctly, but also all schemes operate a labelling and marking system which assists with asset management and records – essential for fire risk assessment activities.

It is up to the building owner, operator and building control bodies to verify compliance of a particular product or system, with the responsibility of demonstrating compliance resting with the person doing the work (whether this is manufacturing or the installation). Third party certification assists all parties by reducing the burden on the approving authority and others, whilst independently supporting the claims being made by the installer or manufacturer.

Added benefits

Everyone in the construction industry needs to recognise the added benefits of third party certification, which go beyond the minimum

required by the building regulations. Given the various routes available for a product to demonstrate compliance with the performance requirements of the building regulations, third party certification is still viewed by many as an optional extra and for some, a grudge purchase.

However, for as long as the current system is in place, there will always be room for those that wish to cut corners or break specification to do so, creating an uneven playing field for those installers and manufacturers who want to do things correctly. Third party certification should level the playing field and create a more transparent and less confusing market and approvals process for all.

For those wishing to specify third party certification for installation work and/or products, it is still necessary to understand the products and performance requirements necessary to deliver a safe project. It is also worth understanding the benefits and limitations of a particular certification scheme. For instance, ISO 17065 gives requirements for the certification body, but does not detail how the scheme should operate, which is for the individual certification bodies to set out and to deliver to their clients and end users.

Furthermore, it is wholly reasonable to interrogate and review a company's scope of certification to make sure it is able to provide the installation or products required for the project within the scope of its certification. It is also worth verifying that its certification is valid and for additional assurance, when it was last audited by its certification provider.

Change ahead

It is clear that the regulatory system for constructing buildings is likely to change, and given some of the shortcomings that have been found as a result of the interim review of the building regulations and fire safety, this is felt by most in the fire safety industry as long overdue.

There is definitely no quick fix or simple solution in a complex world. The issues highlighted to date indicate systemic failure with no single element of the building regulations that needs to change. There are a large number of issues that need to be addressed, and as highlighted in Dame Hackitt's report, a requirement for a cultural shift in the approach to constructing buildings, in order for any changes to make a lasting legacy of safer buildings. Certification and assurance is a small incremental cost and can actually save money on projects, as well as share responsibilities for performance more fairly and transparently across the supply chain.

Third party certification can offer real benefits to assuring the quality and compliance of construction products and their installation. Furthermore, third party certification schemes can provide a robust system of asset management and product knowledge to assist with ongoing building maintenance, refurbishment and risk assessment, something which underpins the principle of the golden thread. However, it requires everyone in the construction industry to understand the benefits and advantages of such schemes and for the providers of such schemes to ensure they continue to develop the schemes and resources to service the construction industry going forward. Third party certification by UKAS accredited organisations is another layer of assurance in the overall construction supply chain that, while only recommendatory at present, should surely become an essential part in the jigsaw of delivering life safety and property/asset protection.

Fire safety should not be about achieving the minimum required under building regulations, but more about ensuring that the products and services being provided are the best that they can be. After all, these are life safety products and everyone should be secure in the knowledge that the building they live or work in is as safe as it can be in the event of a fire ■

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References

1. *Building a Safer Future, Independent Review of Building Regulations and Fire Safety: Interim Report, Presented to Parliament by the Secretary of State for Communities and Local Government by Command of Her Majesty*, December 2017.
2. BS EN ISO/IEC 17065: 2012: *Conformity Assessment – requirements for bodies certifying products, processes and services.*
3. BS EN ISO/IEC 17000: 2004: *Conformity Assessment – vocabulary and general principles requirements.*
4. *Approved Document 7, Materials and Workmanship, Regulation 7, The Building Regulations 2010*, HM Government (2013 edition).