

Quality Awareness and the Promise of Digitalization in Fire Safety

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THE QUALITY OF FIRE SAFETY IN BUILDINGS IS UNDER SCRUTINY IN EUROPE in the aftermath of the tragic Grenfell Tower fire in London in June 2017. Several initiatives are already underway in Europe with the aim to improve fire safety, and these initiatives involve and affect our profession. At the same time, we see another clear trend in the industry and in policy making with a large potential impact: digitalization. Focus on quality and on digitalization will impact our industry in the coming years — in Europe and internationally. To some degree, quality and digitalization go hand in hand by better describing the design process and by ensuring better quality fire protection in a building over its total life span.

The regulatory system in England has been reviewed by Dame Judith Hackitt^[1] and the conclusions are devastating. The current system of building fire safety is not fit for purpose. The report points out that system failure is attributed to (among other things) competence problems, unclear regulations and guidance, lack of

audit trails, unclear roles and responsibilities, ignorance, and indifference, as well as inadequate regulatory oversight and enforcement tools. While the review concerns England, it is not hard to see similarities with other performance-based regulatory systems and jurisdictions around Europe and the rest of the world.

Several of the identified issues lie close to what's been suggested in SFPE's strategies. For example, in 2014, a SFPE Europe^[2] white paper outlined several important steps to improve fire safety engineering and, not least, qualification of practitioners. The report pointed out the need for clearer roles for fire safety engineers as well as certification and competence of practitioners. The paper also highlighted the need for improved data collection and better guidelines. The SFPE Strategic Plan for 2018–2020 also recognizes several of these issues, not least the need to ensure professional competency and clarifying the role for engineers in fire protection.^[3]

The importance of fire safety engineering is also highlighted by the European Union's Fire Information Exchange Platform initiative. Within the platform, fire safety engineering and improved data collection are two of five topics that should be developed. The platform was initiated in direct response to the Grenfell Tower fire. Many countries in Europe ask themselves whether a similar accident could happen in their country.

The Nordic countries (Denmark, Finland, Iceland, Norway, Sweden) were, like



Grenfell Tower fire, June 2017

the UK, early adopters of performance-based design. Sweden has had several examples of a systematic failure in buildings regarding structural safety and leaky buildings. Governmental initiatives have been taken to increase oversight and review of failures and the risk for systematic failures. In 2018, the Nordic standardization bodies will publish a new technical procedure that aims to improve quality in the fire safety design process, both for prescriptive and performance-based design. Calls for a European equivalent have been made to address the need in other countries.

Fire safety is challenged by new technology and solutions. Sustainable and innovative construction concepts and solutions include increased use of wood in façades in tall buildings, certain combustible insulation materials, green façades and roofs, solar panels, and new types of passive housing. These may all challenge traditional fire protection solutions, which may lack alignment with today's

and future solutions. There is increased need for advanced fire safety engineering methods and higher levels of quality assurance and processes for control regarding fire protection in these buildings. However, better quality assurance may lead to higher costs unless efficiency can be improved elsewhere.

One topic that may increase efficiency and that grows in importance is digitalization, which is also pointed out in the Hackitt report. It is recommended that building information modelling (BIM) for fire protection be phased in to improve transparency and change control. The intent is to enable duty holders to improve accuracy and quality from design to construction and into the operation of the building. Clearly, SFPE and the fire safety engineering community have roles to play here. The SFPE Research Road Map bears the digitalization signature with subjects such as BIM, the Internet of Things, virtual reality, and augmented reality. The potential for better control in the process to

fire safety buildings is huge.

Some initiatives within the Nordic countries strive to include fire safety engineering into a digitalized workflow. The Norwegian Building Authority has a clear BIM strategy that includes fire safety and, during spring, a report⁽⁴⁾ published by Briab described how to include fire safety engineering into a BIM environment. Critical success factors for future development needs are identified. These items, such as the need for more knowledge in the fire safety engineering industry about BIM and a need for standardized terminology and processes to work more efficiently, are similar to SFPE's strategies.

In our industry, the aftermath of tragic events usually has the most significant impact on our regulatory systems. The concern over quality and the push for digitalization will certainly include and affect us as engineers. System failures will pave the way for new regulations and a change in culture within the industry. Innovative technology and digitalization will transform the landscape and affect our profession. The potential within digitalization may open new ways to improve fire safety quality and compliance during a building's life. It's important for the engineering community to embrace this opportunity. By embracing digitalization and raising the bar for quality, we may very well increase our impact and stay truer to our cause: engineering a fire-safe world. ▲



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