Fire safety in timber buildings – State of the art

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New construction methods and new design tools have enabled effective construction of good quality timber buildings for affordable prices. It is generally accepted that timber buildings have a low carbon footprint and offer healthy and natural living environments. Furthermore, it is well recognised that construction sites of timber buildings are quiet and dry and, therefore, offer a healthy work environment for builders.

The combustibility of timber is one of the main reasons that many building regulations strictly limit the use of timber as a building material. As fire safety is an important criterion for the choice of building materials, the main precondition for an increased use of timber as a building material is adequate fire safety.

World-wide, several research projects on the fire behaviour of timber structures have been conducted over the past decades, which aimed at providing a basis for the safe use of timber. Novel fire design concepts and models (fig. 1b) have been developed, based on extensive testing [1]. Adoption of improved knowledge of technical detailing, e.g., implementation of encapsulation of structural members or fire stops (fig. 1a) leads to an increase fire resistance. Furthermore, the implementation of technical measures, such as sprinkler systems, smoke detecting systems, and well equipped fire services [2], allow the safe use of timber in a wide field of application (fig. 1d). As a result, many countries have started to revise their fire regulations (fig.2), leading to an increased use of timber.

References

Figure 1 a-d.

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