European Insulation Manufacturers Association

EURIMA Briefing for webinar Solar installations & building envelope on 20 March

1. Solar Installations

Solar installations on buildings are expected to increase significantly in the coming years as a result of EU energy and climate policies, including the deployment obligations introduced by the revised Energy Performance of Buildings Directive. While photovoltaic systems play a crucial role in decarbonising the building sector, their integration into building envelopes introduce new fire-safety considerations that need to be properly understood.

To support a better technical understanding of these aspects, Eurima commissioned a study by the Danish Institute for Fire and Security Technology (DBI) on fire safety aspects associated with building-applied photovoltaic (BAPV) systems on flat roofs.

The study highlights that the presence of PV systems affects both the probability of ignition and the potential consequences of a fire. Electrical faults within PV components can create ignition sources, for example through DC arcing or connection failures. At the same time, the installation of PV modules above the roof surface alters fire dynamics, particularly due to the cavity formed between the roof and the modules.

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Experimental research and incident analysis suggest that this cavity can influence flame spread and heat transfer, potentially allowing fire to propagate along the roof or into the underlying building compartments under certain conditions.

For this reason, the interaction between PV installations and the roof construction should be carefully considered when assessing fire safety. **A better understanding of the parameters that influence ignition risks and fire spread – including installation practices, system components, mounting geometry and roof construction – is essential to support the development of appropriate guidance and testing approaches**. The findings of the DBI study aim to contribute to this technical discussion by identifying key risk factors and highlighting the importance of assessing the fire behaviour of roof constructions together with photovoltaic installations, rather than considering these elements in isolation.

2. Building envelope

Fire safety of the building envelope is a key element of overall building safety, particularly as renovation rates increase and new construction technologies (eg , CLT, mass timber buildings, biobased construction products) are deployed across Europe. Improvements in energy performance, new façade systems and the increasing complexity of building envelopes mean that fire behaviour must be assessed with careful consideration of the interaction between materials, systems and the building context. Further, to consider intervention and evacuation strategies as more combustibles and synthetics enters modern high-performing buildings in combination with increased electrification and resident composition that is less capable of self-evacuation due to age, disabilities or other barriers not accounted for in retrospective building codes.

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Under the European regulatory framework, fire safety in buildings is governed by a combination of the Construction Products Regulation (CPR) and national building codes. The CPR establishes a harmonised technical language for assessing product performance, including reaction-to-fire classifications under the Euroclass system, while Member States define the specific fire safety requirements for buildings.

Façades are inherently systemic constructions composed of multiple components such as cladding, insulation materials, fixings, cavity barriers, air gaps and coatings. The fire behaviour of the façade therefore depends not only on the reaction-to-fire performance of individual materials but also on the interaction between components, the overall configuration of the system and the quality of installation and not least maintenance.

External walls may be exposed to fire originating from different scenarios, including flames emerging from windows during a compartment fire or ignition sources outside the building. Once flames reach the façade, fire can potentially propagate vertically along the exterior of the building and re-enter upper storeys through openings such as windows. This mechanism can accelerate fire spread between floors, increase risks for occupants and complicate firefighting operations. Vertical façade fire spread and propagation to multiple floors within minutes, as several recent tragic incidents has demonstrated, is not accounted for in any intervention or evacuation strategies. Let alone the challenges around reaching affected floors and water supply to mention but a few.

Eurima highlights the importance of considering façade fire safety through a holistic approach that combines reliable product information, appropriate system-level assessment and competent fire safety engineering. Façade performance depends on multiple parameters including the combustibility of materials, ventilation conditions within façade cavities, installation details, maintenance and potential variations during construction. These factors mean that façade systems should be assessed with consideration of the real configuration of the building rather than through simplified assumptions alone.

Transparent product information, including **declared reaction-to-fire performance of individual materials (including kit components),** remains an important element for enabling engineers, authorities and designers to evaluate the fire behaviour of façade assemblies and develop appropriate building-specific fire safety strategies. Maintaining clear and reliable product performance information is therefore essential for ensuring both regulatory transparency and effective fire safety engineering.

As building practices evolve and the renovation of existing buildings accelerates across Europe, façade fire safety strategies will need to continue adapting to new materials, technologies and building designs. Ensuring that façade systems limit fire spread, support safe evacuation and allow effective firefighting operations remains a fundamental objective of building fire safety policy.