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Property insurance in Europe *The European commercial property insurance market is facing rising costs amid inflation, extreme weather events and sustainability challenges. CIR explores the factors driving market changes, as well as the strategies being adopted to navigate their impacts*

Tools of the trade *The built environment faces challenges with regulation, energy efficiency, sustainability and resilience to extreme weather, making asset protection difficult for insurers. Building standards often fall short, but insurance industry-specific standards go much further to mitigate fire and extreme weather risks*

Understanding PV and fire risk on flat roofs

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Property insurance in Europe

The European commercial property insurance market is facing rising costs amid inflation, extreme weather events and sustainability challenges. CIR explores the factors driving market changes, as well as the strategies being adopted to navigate their impacts

Despite the widely publicised backdrop of persistent inflation, extreme weather events and sustainability challenges, commercial property insurers continue to deliver strong growth. According to McKinsey's recently published *Global Insurance Report 2025*, global commercial P/C insurance premiums increased by an average of eight per cent annually during the past five years, while the average combined ratio for the industry trended downward to an estimated 91 per cent in 2023. Western Europe contributed approximately £103.6 billion in gross written premiums for fire and property insurance in 2023, showcasing the region's not insubstantial contribution to the global property and casualty insurance market.

Despite these numbers, profitable growth moving forward will be increasingly hard for insurers to find, according to McKinsey, adding that they will need to be "deliberate" about where and how they compete.

A look at the recent trajectory of claims figures in the segment illustrates the significant financial impact of natural disasters on property-related risks. In the UK alone, year-to-date property claims payouts reached £4.1 billion during the third quarter of 2024, according to the Association of British Insurers. This followed a costly second quarter for carriers, with claims payouts of £1.4 billion – the largest payout in the first nine months of any year on the ABI's records. Claims for weather damage to businesses were high at £90 million – an increase of 4.5 per cent on the previous quarter, and up 28 per cent on the same quarter the previous year. Payouts for property damage in 2024 are expected to reach their highest level in 17 years, according to separate UK insurance sector analysis by Deloitte. Its data suggests claims for Q4 2024 could total £1.4 billion, bringing the year-end total to £5.5 billion – the highest level since 2007. For weather-related claims specifically (including floods, storms, freeze and subsidence), Deloitte estimates the full-year payout for 2024 could reach £1.2 billion – around double the annual levels seen between 2017 and 2020 and representing 22 per cent of the overall £5.5 billion that Deloitte expects UK property insurers to pay out in 2024.

Obtaining cover

Securing coverage under current market conditions is proving a challenge for some commercial property owners, which are spending increasing amounts of time and resource taking steps to improve their chances of securing adequate coverage at the right price.

Commercial property owners with flat roofs and solar photovoltaic installations face additional, and quite unique challenges when seeking coverage. While valuable assets – and increasingly so as companies face sustainability pressures – solar PV systems introduce the potential for fire due to faulty wiring, electrical shorts, or damage during adverse weather conditions. When combining the usual challenges of insuring flat roofs with solar PV systems, the complexity of assessing the risks often leads to higher premiums and/or more restrictive terms.

In this context, European insurers are increasingly cautious about covering property risks involving commercial flat roofs with solar PV installations. High-profile incidents have further highlighted the vulnerabilities, making insurers more cautious toward properties with rooftop solar PV systems without robust risk controls, as solar PV installations without adequate design, testing or maintenance increase the likelihood of fire, weather damage or system failures.

While insurers and brokers are increasingly vocal about their support for sustainability initiatives and renewable energy adoption, they are progressively cautious of regulatory complexities and the ongoing maintenance required to mitigate risks, naturally prioritising properties with strong risk management measures in place – including correct installation by certified professionals, regular inspections, and compliance with fire safety and structural standards. Under evolving market conditions, commercial property owners without these measures may face reduced insurability or higher premiums.

Tools of the trade

The built environment faces challenges with regulation, energy efficiency, sustainability and resilience to extreme weather, making asset protection difficult for insurers. Building standards often fall short, but insurance industry-specific standards go much further to mitigate fire and extreme weather risks

The built environment is a complex sector, balancing regulatory requirements to ensure minimum levels of performance, with pressures to become more energy efficient and meet sustainability targets, whilst having the ability to withstand ever more frequent extreme weather events. From an insurance point of view, this represents a real challenge as the standards required by building regulations rarely go far enough in assessing performance for the purpose of asset protection.

To bridge this gap, the insurance industry has developed its own set of standards over the years to provide a benchmark of the physical property/assembly performance of products and systems of building materials and constructions for assessing risk.

"The standards required by building regulations rarely go far enough in assessing performance for the purpose of asset protection"

Global commercial property insurance company subsidiary, FM Approvals first began testing and certifying fire protection devices for the purposes of loss prevention in 1886, and now provides a comprehensive suite of physical property and assembly tests covering a wide range of building applications.

FM 4470 Testing

One such suite is FM Class 4470 – an insurer approval examination standard that assesses the performance of single-ply, polymer-modified bitumen sheet, built-up roofing and liquid applied roof assemblies for use in Class 1 and non-combustible roof deck construction. It evaluates the entire roof assembly as a single entity, providing a comprehensive assessment of a construction element in practice

Insurers are cautious about covering property risks involving commercial flat roofs with solar PV installations

compared to standalone product certifications.

If testing is completed successfully, a report is prepared, and approval is effective from the date it is created. To maintain approved status, follow-up audits must be completed, and any changes to the products involved require verification.

The FM 4470 standard uses a variety of tests to evaluate the performance of a finished roof assembly in relation to several physical property factors of products/systems and/or assemblies. It includes fire from above and below the structural deck, simulated wind uplift, susceptibility to hailstorm damage, water leakage, foot traffic, corrosion of metal parts, and susceptibility to heat damage.

The fire performance of the construction from above deck is assessed using the methodology given in ASTM E108 (Standard Test Methods for Fire Tests of Roof Coverings), which has three classes of pass performance, ranging from Class A (expected to be effective against severe fire exposure) to Class C (expected to be effective against light fire exposure).

Testing for the heat release rate below the roof deck is conducted in accordance with NFPA 276, which assesses roof assemblies that have combustible above-deck roofing components, when they are exposed to fire below the deck. For this, two fire tests are conducted to determine the heat release rate of the test specimen, each lasting 30 minutes.

Why is FM Approval important?

Besides the widely appreciated rigour of the initial FM Approvals system testing, the ongoing auditing process ensures that the products sold on the market achieve the same standards as those that were tested.

The standard states that "continuance of approval and listing depends on compliance with the approval agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials and services as appropriate, and surveillance audits of the manufacturing facility" and that "products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the approval standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product".

This level of monitoring ensures that the suite of large-scale tests used within FM 4470 provide a clear and accurate assessment of the fire performance of the built-up roof construction – not just at the point of testing, but as sold. Insurers can therefore have confidence that approved products will provide excellent loss prevention protection in the event of fire.

Changes to products over time must also be verified by FM Approvals before any changes can be made or deemed acceptable.

When you see the FM Approved Mark on a product or system you can be assured that it has been thorough, having passed this rigorous process.

Fire risk on flat roofs with PV

In recent years we have seen a considerable increase in the use of photovoltaics on both domestic and commercial rooftops, with annual growth rates of at least 40 per cent in Europe since 2020. This technology plays a crucial role in the ability to address carbon emissions. However, as more PV systems are being installed on commercial rooftops across the world, an increase in the incidence of fires has been reported. Whilst these are often not caused

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by the PV panels themselves, their presence can affect how a fire may develop, and to date there has been little research on how the building materials used underneath a rooftop array may perform. Research was conducted in 2020/21 exploring this issue in more detail, looking at two commonly used Dutch roof build-ups.

Opportunity or threat?

Industrial buildings generally have a very large roof area relative to their internal floor area, so good levels of roof insulation can have a significant impact in reducing heating or cooling demand, whilst the roof itself offers an ideal platform to install photovoltaics, paving the way to significantly cut operational carbon impact – a major factor in tackling climate change.

To better understand how a standard roof construction might perform in the event of a fire involving PV, in 2020/21, two rounds of comparative tests were conducted by independent fire safety consultants, Efectis. These tests examined the relative fire performance of two common flat roof build ups – identical apart from the insulation material involved. The first was insulated

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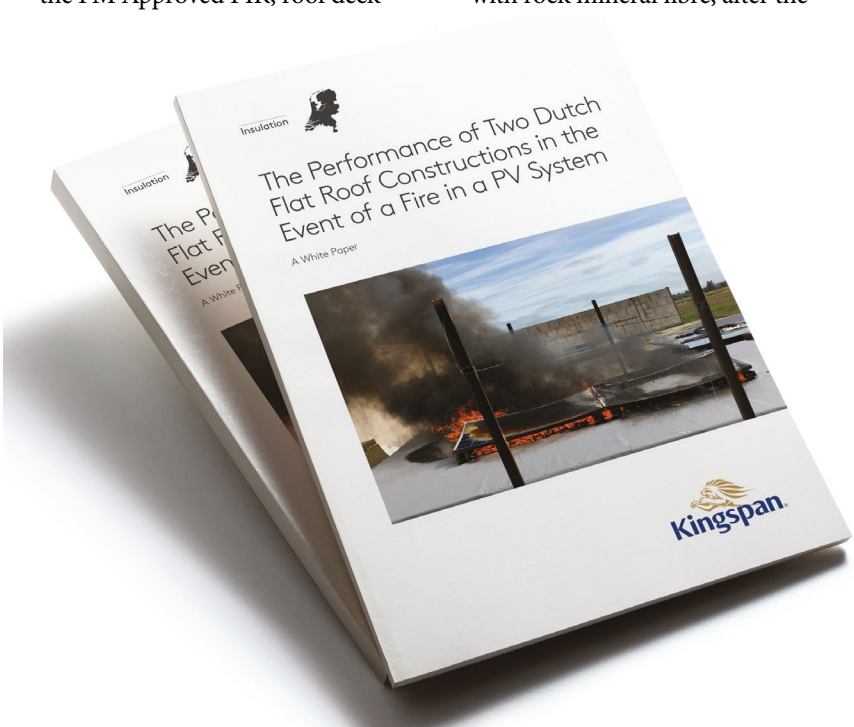
with one non-combustible Euroclass A1-rated dual density synthetic rock mineral fibre insulation product (recommended for use under PV systems), and the second with an FM Approved PIR insulation product. Both insulation products were sourced from the Dutch market.

What were the results?

The configuration tested was of back-to-back roof mounted PV panels to reflect the most commonly used arrangement in Northern and Western Europe, where roof mounted panels are arranged in an alternating East/West-facing layout to make the most of the available sunlight. Whilst the test results are specific to the flat roof and PV products and configurations that were tested and the circumstances of those tests, in both rounds of tests there was no significant difference between the extent of horizontal fire spread, which was very limited beyond the perimeter of the PV array in all cases. With the build-ups insulated with the FM Approved PIR, roof deck temperatures peaked at under 40°C at approximately the same time as the visible roof fire self-extinguished, with no evidence of localised continuing combustion. The damage to the 100 mm thick insulation (charring through to discolouration) did not reach the level of the deck anywhere on the rig.

Back-to-back roof mounted PV panels

With the build-ups insulated with rock mineral fibre, after the visible fire had stopped, ongoing smouldering combustion appeared to have occurred. For instance, in one of the two tests, temperatures on the underside of the insulation reached 200°C in one thermocouple, some time after the visible roof fire self-extinguished, before dropping. In places the damage to the insulation (binder loss) penetrated its full 180mm thickness and reached the level of the metal roof deck.



Conclusion

As the market for PV installations evolves and grows, it is crucial to understand the balance of risks involved, and to allow designers access to the tools and materials they need to make buildings more energy efficient, without unnecessary constraints.

Full details of the testing referred to in this article can be found in the latest Kingspan Insulation whitepaper, which can be downloaded here.

The Performance of Two Dutch Flat Roof Constructions in the Event of a Fire in a PV System

Our new White Paper details fire testing of identical PV systems with two specific Dutch flat roof build-ups. It challenges the notion that flat roof insulation under PV systems should be Euroclass A1.

This research poses questions for countries other than the Netherlands.

- What would be the performance of products and configurations that are typical of other markets?
- Why is there no standardised test method for this fire scenario?
- Who will produce one, CEN or the insurance industry?

Please scan to read the full white paper.

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