RiskSTOP

Understanding the risks of Solar Panel (PV) Rooftop Systems

Webinar
Tuesday 04th June
11:00 - 12:00

Speakers

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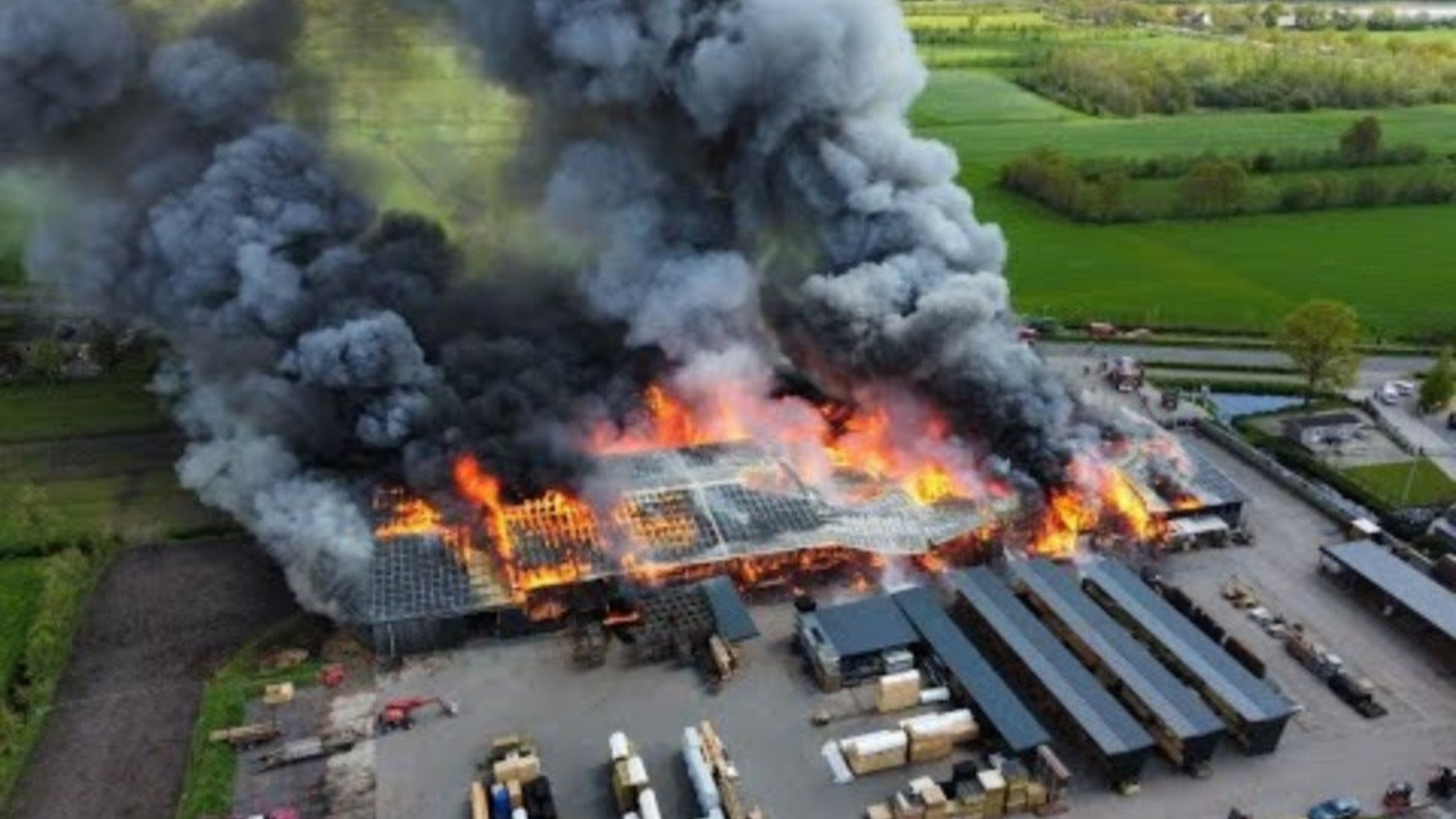
UNDERSTANDING THE RISKS OF SOLAR PANEL (PV) ROOFTOP SYSTEMS

Presented by Paul Farmer

INTRODUCTION / AIMS

How to assess the Property (and Liability) exposures this presents, and how to control*.



Total number of PV systems in the UK*

Domestic	Commercial
1,257,023	197,409

* As of December 2023. Source: National Statistics publication for the Dept for Energy Security & Net Zero (DESNZ)

ASSESSMENT – Roof Construction & Access

Roof Construction

- How old is the roof?
- Identify what the roof is constructed of.
- Are there any roof lights?
    - If yes, is there sufficient distance between panels and roof lights?
- Are there smoke vents?
    - If yes, can they still fully open?

Roof Access

- Is there safe and secure access to the roof?
- Are there safe walkways to enable maintenance to the roof, PV system and guttering?

ASSESSMENT – Mounting Systems

PV Panel Module Roof Fixing

- How are the panel modules fixed to the roof?
- Anchored or ballasted?
- If anchored, have all penetrations been appropriately fire-stopped?
- If anchored, does the roof have composite panels?
- If yes, have all penetrations been appropriately fire-stopped?
- If ballasted, is there sufficient ballast to weigh the panels?

ASSESSMENT – Other Considerations

- How are the cables run?
  - Through the roof? If yes, have all penetrations been appropriately fire-stopped?
  - Along the roof and down the side of the building? In cable trays?
- Is the system earthed?
- Location of inverters.
  - Are they on the roof?
  - Are they at ground level, easily accessible and within a fire compartmented room?
  - Protected against impact damage?
- Is there a DC isolation switch (aka fireman's switch) that is easily accessible?

ASSESSMENT – Other Considerations

- Is there a battery energy storage system (BESS)?
    - If yes, what is the capacity of the batteries and where are they located?

OPERATION & MAINTENANCE

Benefits of robust operation & maintenance

- Increases energy generation
- Reduces maintenance costs
- Improved Safety
- Reduced potential of significant losses
- Warranty compliance
- Reduces breakdown frequency

OPERATION & MAINTENANCE

If the building owner does not have, or cannot “find” the O&M manual during the site visit it is highly likely they: -

- **DO NOT KNOW HOW TO MONITOR THE SYSTEM PERFORMANCE**
- **DO NOT KNOW HOW TO SAFELY OPERATE AND SAFELY SHUTDOWN THE SYSTEM**
- **HAVE NO PREVENTATIVE OR REACTIVE MAINTENANCE REGIME**

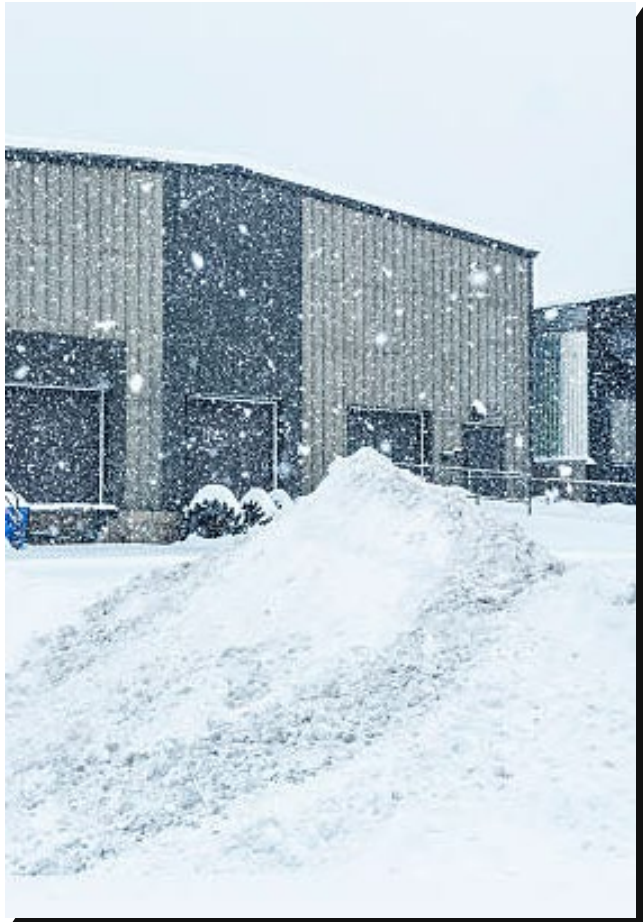
These are all key elements of minimising the potential of a significant loss related to the PV system.

OPERATION & MAINTENANCE

Weather Related

The roof mounted PV installation may become damaged from weather related conditions, such has heat, hail, lightning, snow and wind. Inspection of the roof and installation must be undertaken immediately following such events to identify and assess any damage and required rectification work. Examples could be: -

- **Accumulations of snow, rainwater and ice creating additional roof loading.**
- **Ice formed on the panels or connections and any other ice damage.**
- **Thermal movement of panels/fixings - HEAT.**
- **Loose panels or module mountings/fixings (including ballast) following high gusts of wind.**
- **Cracked/broken panel glazing following hail event.**
- **Damage to system components following lightning strike(s).**
- **Overheating of electrical control system and inverters during high ambient temperature events (heatwaves) can cause component failure.**



REPORTING

What should be included in a COPE report: -

- Verification that the roof has the structural strength for the additional weight (PV system/wind/snow etc.).
- The capacity of the system (if known).
- Is there a Battery Energy Storage System (BESS).
    - If yes, what is the capacity of the batteries, is the location appropriate and whether there is any automatic fixed fire protection.
- Were the designers/installers accredited/certified by a recognised body.
- Has the system impacted on construction rating of the roof*
- If anchored to the roof frame, is there appropriate fire-stopping.

REPORTING

What should be included in a COPE report: -

- Any visible evidence of movement of the PV panel strings.
- Has the installer provided the end user with: -
    - Training on the operation, monitoring and maintenance requirements.
    - AnO&M manual.
- Is there evidence of an appropriate preventative and reactive maintenance regime in place.
- Location of the inverters and required controls in place.
- Is there an easily accessible and lockable DC isolation switch.*
- Appropriate Risk Improvements

PV FIRE EXAMPLE

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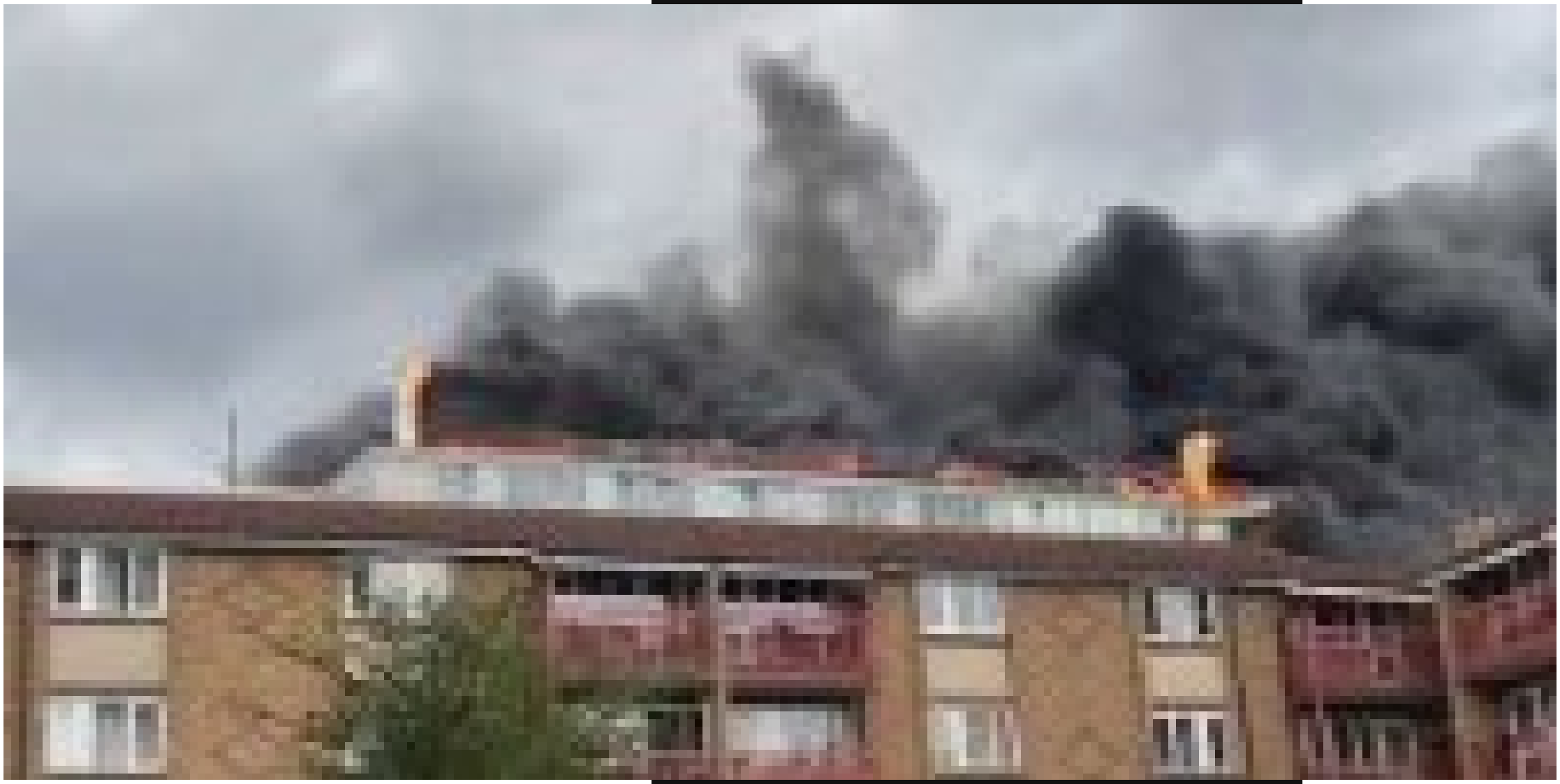

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PV FIRE EXAMPLE

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PV FIRE EXAMPLE


ANY QUESTIONS?

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Thanks

Any Questions from today's webinar please email; bulletins@riskstop.co.uk.