



SOLAR SAFETY • THE FACTS

Solar Panels and Fire: The Real Risk.

Solar fires are rare, mostly stay small, and almost always trace back to electrical workmanship. Here is what the published data says and what keeps a system safe.

01 The short answer

A solar system is very unlikely to cause a fire. In the UK, about 11 in every 100,000 installations had a fire in 2025, and most solar fires stay within the solar equipment itself.

The risk is not zero, and it is not random. Nearly all of it comes from the electrical side: cables, connectors, inverters and batteries. That makes it a workmanship and maintenance question, the same as any other electrical installation in a building.

Solar is not a dangerous technology, but it is a real electrical system that must be installed and looked after properly.

02 How rare: the published figures

Every published figure puts solar fires well below 0.1% of installations. The figures use different bases, so each is shown with its own.

WHERE	FIGURE	BASIS	SOURCE
UK, 2025	212 fires among 1,933,148 installations, about 11 per 100,000	One year	QBE
UK, Italy, Sweden	About 5 to 22 incidents per 100,000 installations	National data, four-country study	Euronews
Slovenia	About 75 incidents per 100,000 installations	Same study	Euronews
Germany, 1993 to 2013	0.006% of installations caused major fire damage	20 years, cumulative	Euronews
Netherlands, 2015 to 2018	27 fires on buildings with solar, under 0.014% of homes	Four years	Euronews
Japan, ten years to 2017	13 fires from modules or cables, among about 2.4 million solar homes	Ten years, cumulative	pv magazine

In Germany, about 350 systems were involved in a fire over those 20 years, out of roughly 1.3 million. The solar system was identified as the cause in only about 120 of them.

03 Why the numbers differ, and why incidents are rising

The figures differ mainly because countries count differently. Some record any fire on a building that has solar, others only fires the solar system caused. The four-country study says its differences likely reflect data collection methods.

Total incidents are rising because there are far more systems. In the UK the rate is rising too: fires grew 133% from 2022 to 2025 while installations grew 52%. That moved the yearly rate from about 7 to about 11 per 100,000 installations.

This is the honest part of the picture. The risk is still very small, but it grows when installation quality does not keep pace with demand.

04 What actually causes a solar fire

Solar fires start in the electrical parts, mostly the DC cabling and connectors. The panel face is glass and does not burn easily. UK fire service data for 2025 named these starting points:

WHERE THE FIRE STARTED	FIRES IN 2025
DC cabling and connectors	49
The solar panel itself	36
Battery bank	23
Inverter	19

The common root causes are the ones an installer controls:

- **Loose or badly made connections.** A loose DC connector can spark, and pv magazine calls tightening connections the number one challenge.
- **Arc faults.** DC arcs do not put themselves out the way AC arcs tend to, so a damaged cable can keep sparking.
- **Mismatched or uncertified parts.** Connectors from different makers pushed together are a known weak point.
- **Ageing and pests.** Insulation degrades in sun and heat, and rodents chew cables under panels.

05 How far a fire spreads when it does happen

Most solar fires stay small: about two thirds never leave the solar equipment.

OUTCOME	SHARE OF SOLAR FIRES
Confined to the solar equipment	68%
Damage to adjacent surfaces such as the roof	24%
Significant fire spread	5%
Building destroyed	3%

Source: [Euronews](#), reporting the European study.

06 What a good installation does

Because the causes are electrical, the protection is good electrical practice. These are the points to expect from an installer:

- **Matched DC connectors.** Same maker and model on both halves, crimped with the correct tool and fully latched.
- **Tidy, protected cabling.** Cables clipped off the roof surface, run in conduit where exposed, with no sharp bends or rubbing edges.
- **Arc-fault protection.** An inverter with arc-fault detection (AFCI) shuts down when it senses DC arcing.
- **Correct protection devices.** DC isolator, breakers and surge protection sized for the system, in a proper enclosure.
- **Sensible inverter and battery placement.** Mounted on a non-flammable surface, clear of stored items, with ventilation around batteries.
- **Protection from pests.** Mesh around the array edge where rodents or birds are likely.
- **Certified components.** Panels, inverters, cable and connectors that carry the relevant standards marks.

07 What owners can do

An owner keeps the risk low with a professional inspection every year or two and attention to a few warning signs.

- Use an accredited installer and do not install or modify the system yourself.
- Have the system inspected regularly. QBE advises yearly; Euronews reports every couple of years.
- Ask for an inspection after severe weather such as storms or hail.
- Keep the area around the inverter and battery clear.
- Watch the monitoring app for repeated faults, especially insulation or arc-fault alarms.

Call your installer and switch the system off at the isolator if you notice any of these

- A burning or hot plastic smell near the inverter, combiner box or roof.
- Discoloured, melted or cracked connectors or cables.
- Buzzing or crackling from electrical equipment.
- An inverter that keeps tripping or restarting.

08 Sources

- [QBE Europe: Solar panel fires increasing at more than double the rate of installations](#). UK fire service data for 2022 to 2025 and causes.
- [Euronews: Everything you need to know about solar panel fires](#). European study, Germany, Netherlands, damage extent and advice.
- [pv magazine USA: There are solar power fires per year](#). Germany, Japan and connection quality.

The installation points in section 06 and the warning signs are general electrical practice, not taken from these three pages.

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