

Photovoltaic Panels Risk Management

There is no evidence to suggest that PV installations present greater fire hazards than any other electrical equipment. Nevertheless, there are risks particular to PV installations, which can be managed relatively easily. Some of these are outlined below:

Competent installation

A PV system is an electrical installation so it should be properly installed by a competent person, preferably an installer certified under the Microgeneration Certification Scheme (MCS) by a certification body such as Certsure LLP trading as NICEIC, Certsure LLP trading as ELECSA or BRE Global.

Choosing a competent contractor to install your solar photovoltaic (PV) system in accordance with the standard MCS 012, should ensure that the installed equipment will resist fire penetration and surface spread from an external source of ignition; possess a defined level of wind uplift resistance and be generally weatherproof.

Good quality pre-installation survey and installation work will also reduce the risks of ignition and electric shock from incorrectly specified equipment, poor quality wiring, inadequate insulation or other design faults.

The additional loading that the PV panel installation will impose on the roof should be assessed by a structural engineer.

Fire hazards during installation work

The use or application of heat by PV system contractors during installation works should be avoided, especially on roofs that include combustible elements in their construction. If the use of heat is absolutely unavoidable, then strict conditions of safety must be implemented and monitored in accordance with a hot work permit to work.

Maintenance

Safe systems of working must be adopted when working on PV equipment, such as individual lock-off procedures, suitable access equipment and the use of appropriate personal protective equipment, which should include consideration of arc flash protection if the electrical hazard warrants it.

As PV systems generate continuous direct current (DC) and it is not usually possible to entirely isolate the system between the PV array and the DC isolation switch, so the system will remain live during the daytime. Further, as a DC system, there is an increased electric shock hazard by comparison with normal alternating current (AC) systems because the DC current acting upon the human body is likely to cause constant contraction of muscles, which makes it more difficult to release contact with live parts.

PV systems should be subject to an annual maintenance inspection by a competent person, who should produce a written report on the condition of the installation, with recommendations for any necessary remedial works.

It may also be advisable to instruct a structural engineer to undertake re-inspections of the roof structure at intervals recommended by the engineer who carried-out the pre-installation inspection to ensure that the loadbearing characteristics of the roof remain adequate to support the PV array.

Fire safety

PV panel arrays must not obstruct any means of escape.

Inform the local fire brigade of the presence of PV panels and their location on your premises, so they can determine their fire-fighting strategy for your building.

Ensure that the DC electrical shut-off point or fire-fighters switch is sited in a place where fire-fighters are likely to be able to access it, for example, on the ground floor – and that a clear sign indicates its location.

Emergency procedures

Ensure there is always someone available who understands your PV panels installation, knows how to isolate it in an emergency and can liaise with the fire brigade if they attend the premises.

Environmental considerations

Some PV systems contain heavy metals. Therefore, if the installation is damaged in a fire or is to be dismantled and disposed of for any other reason, the process must be subject to a suitable and sufficient risk assessment and waste components disposed-of as hazardous waste.