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SolarInnovate Energy Solutions

Fire extinguishing in photovoltaic combiner box

Overview

What causes a PV system to fire?

DC Combiner Boxes: Faulty terminations or incorrect equipment selection in DC combiner boxes are among the top causes of PV system fires. These boxes collect and distribute DC power, and any component defect can lead to serious safety risks. DC Isolators: Historically, there have been cases where AC isolators were mistakenly used in DC systems.

Can you safely disconnect a PV system in a fire situation?

Safely disconnecting a PV system in a fire situation should ideally result in DC currents and voltages reduced to levels which are no longer hazardous to firefighters. However, this would require isolation of each individual module with a micro-inverter or by DC switches controlling a limited number of modules in a string.

How to protect your solar PV system from fire?

Regular Cleaning of PV Modules: Accumulation of debris, bird droppings, and pollution can affect the performance and safety of PV systems, so a cleaning regime tailored to the system’s location should be developed. Fire safety in solar PV installations is a critical issue that requires the attention of both system designers and operators.

What causes a combustible material to ignite in a PV system?

These faults and other system failures, including cable insulation breakdowns, rupture of a module, and faulty connections, can result in hot spots that can ignite combustible material in their vicinity. Incorrectly installed or defective system components have been the cause for several PV fires as well.

How should a PV system be integrated with a fire alarm system?

Fire Alarm Integration: PV systems should be interconnected with the building’s fire alarm system, allowing for early detection of faults and prompt

response to potential fire risks. Proper Cable Tying and Protection: All cables, including MC4 connectors, should be tied up securely and protected from potential water ingress.

Is module backsheet failure causing fire in solar PV systems?

There is a widespread belief that module backsheet failure is the leading cause of fire in PV systems. However, data from the BRE Report on fire risks in solar PV systems, commissioned by the UK government in 2018 reveals a different story. According to the report, out of 940,000 PV installations, there were only 80 reported faults.

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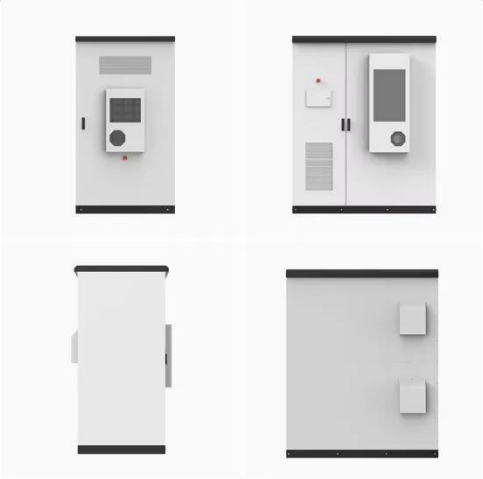

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