solaredge

Safety First with SolarEdge Commercial PV Systems

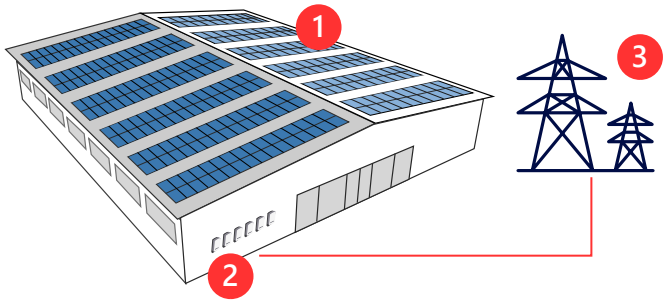
Be Smart. Be Safe.

Local governmental incentives combined with an increased awareness of renewable solar energy as a viable alternative to carbon-based grid power are leading more companies to deploy PV systems. They are considered wise long-term investments offering energy resiliency and rapid ROI that can provide significant electricity cost savings over the system lifetime. The widespread adoption of solar power has only reinforced the need for industry stakeholders to make PV safety their top priority.

How typical PV systems work

PV systems are mainly composed of PV modules and inverters.

1. PV modules generate clean electrical power by converting solar radiation into direct current (DC)
2. Inverters then convert DC into grid-compliant alternating current (AC) used to power homes, buildings and businesses
3. Utility power is provided when needed e.g. at night or during peak demand periods



You can't turn off the sun

Millions of PV systems are installed worldwide, with the fire risk posed by these systems proven to be extremely low. For conventional PV systems, as long as the sun is up, high DC voltages continue to energize the PV modules and wires even during grid outages.

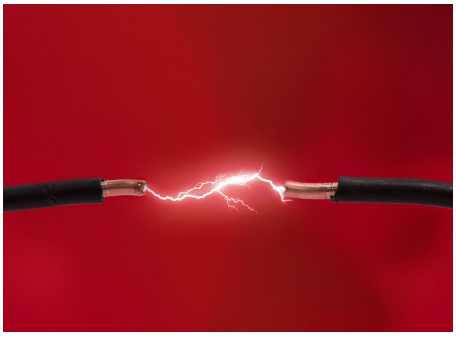
To maximize protection of people and property in the unlikely event of a fire or other emergency, PV systems should therefore be equipped with safety mechanisms that start at the module level.

Understanding fire risks to PV systems

Research has shown that commercial infrastructure fires where PV systems are installed generally do not originate from the PV system itself.

For example, electrical malfunctions due to domestic heating systems, hospital cooking equipment, factory machinery, flammable materials in warehouses or even lightning, all pose much higher fire risks.

In the unlikely event of a PV system related fire, a potential source of such fires are electrical arcs. They can be caused by faulty or improperly connected cables or connectors, corrosion, animals chewing wires, failed DC isolators, or overheating of PV system components.



At the Forefront of PV Safety

SolarEdge is a global solar industry leader providing smart energy products featuring comprehensive safety solutions. We strive to minimize fire and electrification risks for all types of SolarEdge PV installations through our built-in PV safety technology. The SolarEdge safety suite complies with the most stringent international safety standards, going beyond existing industry requirements. SolarEdge is favored by solar insurance companies around the world for added financial security, and also meets leading property insurance company FM Global's DS 1-15 engineering requirements.

Safety begins at the module level

SolarEdge developed DC optimization technology connects power optimizers to each PV module, converting them into smart modules. In addition to maximizing system safety, power optimizers increase system production, provide module-level performance monitoring and enable remote maintenance capabilities.

A truly holistic approach to PV safety*

SolarEdge believes that achieving comprehensive PV safety requires a multi-faceted approach including:

SafeDC™

Ensures the PV system's DC voltage is reduced to touch-safe levels during grid failures or when the inverter is shut down, within up to five minutes.

Rapid Shutdown

- Allows fast discharge of conductors to safe voltage levels, within 30 seconds
- Compliant with NEC 2014, 2017 and 2020, per articles 690.11 and 609.12

Arc Fault Detection and Prevention

- Provides the ability to detect and terminate an electric arc, through automatic inverter shutdown for string lengths up to 400m.
- Enabled in over 1 million SolarEdge inverters worldwide

Built-in Temperature Monitoring

Thermal sensors detect faulty wiring that can potentially cause electric arcs.

Module-Level Monitoring

Sends automatic notifications on system issues, preventing potential safety risks.

Get real-time insight into system safety

Benefits of SolarEdge module-level monitoring

- Acts as an early-warning system, providing module to system-level alerts and ability to understand the root cause of any issue
- Alerts automatically notify installers/operators of performance loss or safety risks, over the system lifetime
- Preventative maintenance can be performed well in advance of any significant event using remote diagnostics

Drawbacks of conventional PV systems

- No method of either detecting or mitigating module faults
- When using external third-party safety devices, such as a dedicated Rapid Shutdown solution that has no monitoring:
  - If the device is installed incorrectly or fails, there is no indication of the failure and the device does not function as needed
  - Maintenance has to be carried out frequently to verify proper operation, incurring additional costs

* Safety functionalities above may vary between different inverter models and firmware versions, and are applicable when inverter is turned on

Make PV Safety Your Top Priority Too

Edison High School, United States

"We care about the long-term success of our clients' projects. We chose SolarEdge for their ability to meet NEC rapid shutdown codes, high quality, and their exceptional safety record in the market. SolarEdge products maximize energy production while protecting our customers from the pitfalls of non-MPPT solutions."

Candice Michalowicz, Co-Founder and Managing Member,
C2 Energy Capital

Hampshire Fire Stations, UK

"I believe the SolarEdge DC optimizer solution is the most advanced and reliable solution for the safe installation of solar PV. Our customers especially value the fire safety features and the remote monitoring capability, all of which help protect their assets and investment in solar energy."

Mike Turner, Managing Director, Solar-Voltaics

Q1 Energie AG, Gas Stations, Germany

"When installing a PV system on a gas station rooftop, it's no surprise that safety is our #1 priority. Which made SolarEdge and its built-in module-level safety features the obvious choice for us and the customer. The ability to interface to the customer's own monitoring systems was an important consideration, and using its API SolarEdge could support this too."

Jens Gockel, General Manager of MBG energy GmbH

Tasmazia Tourist Attraction, Australia

"I arrived at the site at 5:30 in the morning just as the sun was rising, and was pleased to confirm that the SolarEdge power optimizers were doing their job. Despite the system having been damaged by the fire, exposing copper wires, all the cables had automatically de-energized and were touch-safe. When the TechSafe inspector arrived, he was relieved to see it was a SolarEdge installation."

Adrian Luke, Director of Dynamic Maintenance, DMS Energy

About SolarEdge

SolarEdge is a global leader in smart energy technology. By deploying world-class engineering capabilities and a relentless focus on innovation, we create smart energy products and solutions that power our lives and drive future progress.

Watch our safety video!

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