APSENSING.

Photovoltaic (PV) Temperature Monitoring

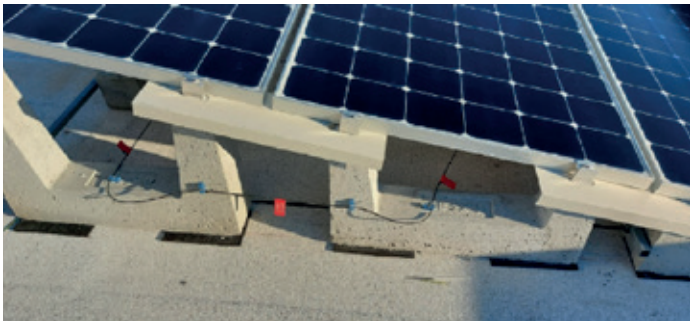
The Challenge

Solar energy is rapidly growing worldwide, as a favorable climate and competitive costs have led to a boom in photovoltaic (PV) installations. As PV systems are constantly under a high electrical load, the heat generated from the electrical current can reach critical temperatures due to aging, insufficient connection points, or environmental influences. Elevated temperatures can force further deterioration of electrical connections and arcing/overheating causes fires and severe damage to the surroundings.

Fires in solar facilities have serious consequences which include bushfires, burned out solar panels, damaged buildings (roof-top solar farms) or equipment, and interrupted power supply to the region and nearby communities. All PV systems require a large outdoor area for sufficient electricity production, which makes it challenging to design an appropriate fire protection solution. Therefore, temperature monitoring and fire detection systems for PV monitoring must cover a large area, as well as being environmentally robust and easy to install and maintain.

The Innovation

AP Sensing's fiber optic Linear Heat Detection (LHD) system is ideally suited to monitor PV system temperatures and detect overheating that could otherwise lead to fires. Utilizing a simple installation with one passive fiber optic cable as a distributed temperature sensor plus one instrument for the entire solar farm, AP Sensing's LHD system continuously and simultaneously measures thousands of temperature points in real time. Our fiber optic LHD measures a complete temperature profile of the entire solar farm (including panels, cables, and equipment such as junction boxes and switches) within seconds with just one sensor cable. Hotspots can be detected quickly and localized to within a meter, enabling fast and targeted measures to contain fires or even prevent fire breakouts. The fiber optic sensor cable is immune to electromagnetic and environmental influences, very light (17 kg/km), small (Ø 4 mm), flexible, easy to install, maintenance free and has a long lifetime.



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Adaptable & Informative

As an addressable linear heat detector, multiple project-specific fire zones are mapped to the control instrument and a variety of alarm parameters (rate-of-rise, maximum, adaptive) can be programmed to each fire zone. This solution delivers fast detection while minimizing false alarms.

Pre- and main alarms can be programmed per fire zone to initiate automatic countermeasures. In the event of a fire, our LHD system provides immediate information regarding fire location, size and spread. All information is available through dry-contacts and high-level communication, e.g. Modbus protocol.

Temperature profiles, alarm status, hotspot locations and temperatures as well as temperature developments over time are displayed and quickly available when using AP Sensing's optional SmartVision software.

Proven & Robust

Our LHD solution is thoroughly tested, with the most complete set of certifications on the market (VdS, UL, FM, ATEX, IECEx, SIL) and a 35 year MTBF. It is robust and has passed highly demanding type tests. The sensor cables are proofed against IEC 60331-25 for high temperatures, ensuring the system can withstand the demands of fire monitoring. The control instrument is also available with a IP66 outdoor housing.

made in Germany

c UL us LISTED

SIL IEC 61508 / IEC 61511

Ex

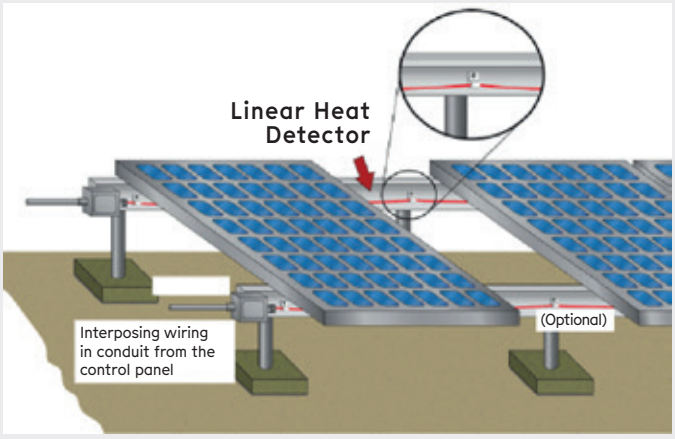
VdS

FM APPROVED

Passion for Plants.
For every unit sold, AP Sensing plants 100 trees.

Why AP Sensing?

- AP Sensing is the leader in fiber optic Linear Heat Detection (LHD) with the fastest long range detection (16 km/channel), precise temperature monitoring and low cost of ownership.
- All product variations are fully certified and in compliance with internationally recognized standards.
- Continuous spatial measurement of temperatures in real time allows the detection of overheating with pinpoint precision.
- The defined configuration of alarm parameters and alarm zones allows for flexible adaptation to ensure fast and reliable detection.
- Proven deployment in all regions in the world – with more than 600 customers in 70 countries.
- World-class service, support, and training from AP Sensing's regional offices.
- Engineered & made in Germany.



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