

# Operation and maintenance of PV power plants

Lightning and surge protection solutions



We are your reliable partner for developing plant protection concepts to prevent power plant outages or component damage caused by thunderstorms.



Your contact worldwide: [pv-protect@dehn.de](mailto:pv-protect@dehn.de)

PV systems have established themselves around the world as an efficient source of energy. In Germany, PV systems with a capacity of about 180 GW are installed and will be further expanded. These PV systems assume a substantial role in the energy supply. Therefore, the demand for plant reliability and availability increases. However, malfunctions in multi-megawatt PV power plants cause fluctuations in the grid and valuable balancing energy must be used.

## Causes of damage

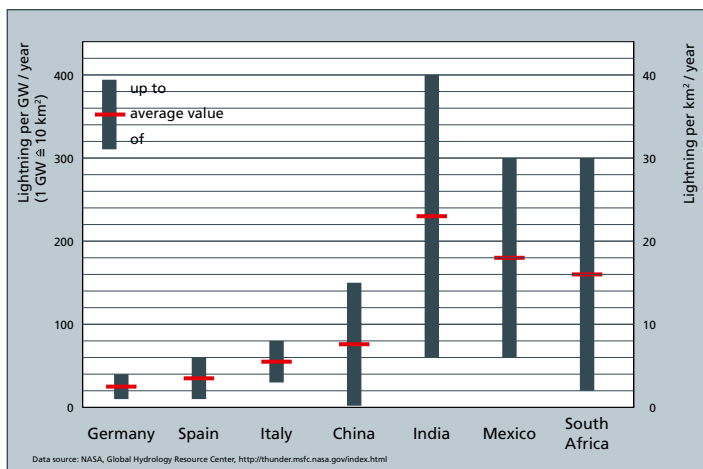
PV systems are frequently damaged by thunderstorms and lightning strikes due to their wide distribution. Therefore, they should be an integral part of financial risk assessments. Experiences with Northern European power plants cannot be transferred to regions with a higher irradiation and air humidity since the probability of a lightning strike is much higher in such regions.

Power plants with an output of several hundred megawatts are widely distributed which makes them vulnerable to lightning strikes. The electronic systems and field cables may thus be damaged if no earthing, lightning protection and surge protection measures are provided.

## Consequences

The aim of maintenance contracts is to ensure that power plants deliver high yields over decades. Malfunctions resulting from plant parts which are destroyed by lightning strikes entail replacement and repair costs. As a consequence, the yield during downtime and thus the performance ratio of the entire solar park is reduced.

Repeated malfunctions involve insurance problems and general maintenance measures (retrofit) may have to be taken.



Ground flash density in selected countries



More Information

[www.dehn-international.com](http://www.dehn-international.com)

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## DEHN globally protects PV systems in the kilowatt to megawatt range against malfunctions and downtime caused by lightning currents and surges.

### More than 20 years of experience in the protection of PV systems

Our experienced experts will be pleased to help you with power plant outages or component damage caused by thunderstorms: Our portfolio ranges from technical consulting to the development of protection concepts. Our global network of subsidiaries and partners ensures short response times.



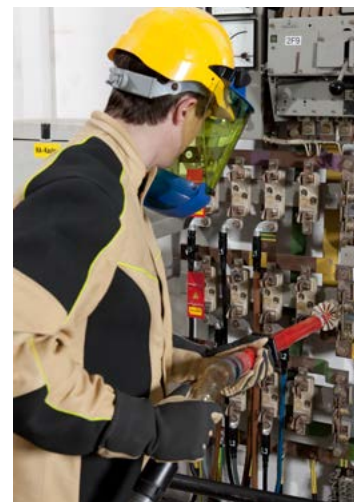
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### Our solutions: Earth-termination system, lightning and surge protection and safety equipment

DEHN **earthing and external lightning protection** components have proven themselves around the world in numerous systems. These protection elements can even be connected to existing equipment of systems which are already in operation. Made-to-measure solutions for PV systems are also available.

Effective **surge protection** requires a consistent concept for the inverters, solar generator, point of interconnection, system monitoring and drives for the solar tracking system, if any. DEHN surge protective devices globally protect PV power plants in the two-digit gigawatt range. The patented SCI technology for the d.c. side made us successful all over the world.

In solar power plants direct and alternating currents occur up to the medium-voltage level. DEHN offers a comprehensive **safety equipment** portfolio which meets international standards and facilitates everyday work in power plants ranging from personal protective equipment through arc fault protection up to a complete portfolio for working according to the five safety rules.



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