

FROM THE SUN TO THE GRID



The principle behind photovoltaics is as clear as day: When sunlight falls on the solar cell, a voltage is created between its positively and negatively doped layers. If a load is connected to this cell, then direct current begins to flow. For this power to be used privately or put on the public grid, then the direct current must first be converted to alternating current. A solar inverter performs this DC to AC conversion.

Solar inverters also perform other important tasks: They monitor and control the entire system and store data about the amount of current produced, which can be displayed and analysed. Inverters also monitor the power grid continuously to ensure that important safety criteria are met.

Size matters for photovoltaic systems that are coupled to a power grid: For small- and medium-sized systems, the choice is string inverters. String inverters are linked to multiple solar modules connected in series. For larger systems, generator connection boxes consolidate multiple lines into a single central inverter. Central inverters are used in large photovoltaic power stations that produce anywhere from hundreds of kilowatts to several megawatts at peak production.

As for central inverters, AEG Power Solutions has developed the Protect PV central inverters line. Each individual inverter can provide 250, 560, 690 und 880 kVA of power, and the number of inverters can be scaled up to meet requirements. System owners typically use fallow open spaces for the module trusses and store additional equipment in containers or housings.

For a turn-key solution, AEG Power Solutions also offers the TKS-C series, consisting of two central inverters, a high-performance medium-voltage system and an on-site monitoring and control system.

Photovoltaic power stations with higher power outputs require more modules in order to use the inverters to full capacity. Approximately 4500 to 5000 solar modules are needed to produces one megawatt of power using a TKS-C 1000. These modules occupy a surface area of around 9,850 square metres which is approximately one and a half soccer fields.

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