

AC drives help maximize energy from sunlight



The tracking system typically increases the productivity of solar power plants by 30 %.

Tracking the sun

Solar power plants maximize the energy from the sun by tracking its movement from sunrise to sunset.

There are many tracking systems available. The most common solar tracker is pole-mounted, using a one- or two-axis construction to turn the solar panels towards the sun. The one-axis system turns the panel horizontally while the two-axis system adds a tilting motion to the panel. The tracking system increases the solar power plant yield by 30 % compared to a stationary system.

ABB's product portfolio includes all key components for operating solar tracking systems, such as drives, motors, PLCs and other low voltage products.

Active trackers with AC drives lower costs

Solar trackers are passive or active depending on the control and turning methods.

Passive trackers contain liquids or gases that react to sunlight, creating an imbalance that rotates the panel.

Active trackers use an electric motor or hydraulic system to turn the panel, and a sensor or timer to give a reference for the direction. The sensor detects the position of the sun or the timer gives a reference based on the time of the day.

Motorized solar trackers use electric motors and gear reducers to turn the panel. Adding an AC drive to the solar tracker provides a soft-start function to the motor, resulting in smoother rotation and reduced mechanical wear, thereby lowering maintenance costs.



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Application notes

By eliminating high starting currents and mechanical shocks through the soft-start feature, the drive extends the life of the system compared to direct-on-line motor starting methods.

The AC drive consumes only the power needed to turn the panel, thereby keeping the motor at peak energy efficiency. The all-electric system eliminates the need for fluids, hoses, pressures etc. required by hydraulic systems.

The solar trackers use special functions for protection against extreme weather conditions. During strong wind or snow fall, the tracking system turns the panel to a safety position to protect it from the forces of nature. These functions can be easily integrated into more advanced ABB drives, reducing the need for an external control system.



Two-axis solar tracker provides rotational and tilting movement to solar panels.

Complete product range for solar tracking systems

ABB offers a wide range of AC drives for solar tracking systems. In addition, its product portfolio includes all key components for operating solar tracking systems, such as motors, PLCs and other low voltage products.

The drive options include a variety of fieldbus interfaces for easy remote diagnostics of the system. With drive configuration tools the parameters can be copied into a drive in a matter of seconds resulting in substantial time savings for solar power plants with hundreds or even thousands of trackers.

Benefits

- Reduced maintenance through soft-start feature
- Reduced external control system as tracking and protection functions can be integrated within AC drive
- Easy remote diagnostics with variety of fieldbus options
- Substantial time savings in commissioning multiple drives by utilizing ABB's drive configuration tools
- Complete solution with drives, motors, PLCs, other low voltage products and services



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