Raise the output with Photovoltaic Plant Control – a SICAM Application

Siemens SICAM AK3 RTU is installed in the central controller panel. Eight SICAM A8000 (CP 8050) act as data concentrators in the inverter panel.

Recognizing clean energy potential

Siemens is delivering hardware and software to its customer, the Trung Nam Group, in the southern province of Ninh Tuan, Vietnam to put the country's currently largest solar farm into operation. The plant, with a total capacity of 204MW, covers 300 hectares in Bac Phong and Loi Hai communes. After nine months of construction the project now supplies electricity for the national grid in Ninh Thuan Province. This is enough to supply approximately 200,000 households with electricity and saves around 250,000 tons of CO2.

The plant has been delivered with Siemens primary equipment and the new SINACON-PV inverters. To maximize the capacity of the plant, solar panels are installed on a platform which automatically rotates through 120 degrees. To optimize the capacity of the plant, solar panels are installed on a platform and can automatically rotate through 120 degrees. The rotations help to maximize solar generation increasing their capacity by an additional 15-20% compared to fixed panels.

Siemens Sinacon Photovoltaic Central Inverters

The Photovoltaic Power Plant Controller

The Photovoltaic Plant Control is responsible for the power feed-in management at point of common coupling (PCC) in order to meet grid code, utility and/or power purchase agreement related requirements, it sends commands/ new set points to the inverters or sub control systems of the power plant. It is based on the latest Siemens SICAM A8000 platform.

The photovoltaic power plant is controlled from sunrise to sunset. From an overall start-up or shut down, the sequences will take into consideration the sunrise/ sunset and solar radiation during that time of day. Key control features are active and reactive power regulation, which also include frequency-dependent power reduction/ increase and ramp rate control (MPPT control mode).

The Photovoltaic Power Plant Monitoring SCADA

Siemens is providing the latest photovoltaic utility scale SCADA based on existing field-proven equipment to Trung Nam site. Event lists and the graphical energy model show specific attributes of all components in control and monitoring mode – for maximum operational safety.

In full-graphic process images, you can switch the inverters either directly or "select before operate." Single-line images tell you at a glance where in the system something is happening: topological coloring provides orientation in the power plant, while set point and spontaneous flashing and other graphical features draw your attention immediately to important process, inverters, combiners boxes and communication status.

Combined Offering

The Photovoltaic Power Plant Controller is working autonomously to the Photovoltaic Power plant SCADA. Even in the event of the plant SCADA being switched off, the full functionality of the plant controller would be still available. Siemens is focusing highly on digitalization in total and SCADA enabled high transparency of monitoring, energy harvest, predictive analysis and alarm systems combined with state-of-the-art, multi-device control functions and power plant controller with real time abilities.

Benefits at a glance

Maximum efficiency by maximum yield and transparency using optimized control schemes
Excellent grid quality by reliably meeting the stringent regulatory requirements
Cost effective operation based on state of the art SICAM platform
Comprehensive integration of renewable energy meets the climate protection targets that promote CO_2 reduction
Resource-efficient use protects the environment and maximizes output

Finding Success in Teamwork

The most valuable reason for success was the excellent team-play within Siemens. Our experts provide the knowledge and expertise necessary to combine individual components and create a reliable power supply system. Because "Ingenuity for life" means expert know-how and best customer relations.

siemens.com/photovoltaicplantcontrol