

Movicon™ SCADA Software Simplifies Management of Photovoltaic Power Station in Azerbaijan

RESULTS

- Management of entire park operations through a single interface
- Visualization and enhancement of inverter output directly impacting plant's financial performance
- Faster identification and resolution of equipment issues
- Less-experienced operators able to maximize operational performance



APPLICATION

Control and monitoring of photovoltaic (PV) power station.

CUSTOMER

22 MW photovoltaic park located in the Naxçıvan Autonomous Republic in Azerbaijan.

CHALLENGE

Operators of a 22 MW photovoltaic power station, located in the Naxçıvan Autonomous Republic in Azerbaijan, required a SCADA system that provided a single interface for monitoring and controlling the entire park. The system had to provide 24/7 management of 8,000 solar panels, and corresponding inverters, network analyzers, protection and weather data sensors for determining irradiation, temperature and wind speed/direction. There was a need to manage an enormous amount of field data, including the power generated by inverters and the corresponding environmental conditions. The system needed to provide both real-time visualization of inverter performance to help operators quickly identify issues, and access to historical data to benchmark equipment's current health and performance against past and rated performance. Critically, the supervision system needed to be quick and easy for operators to familiarize themselves with, and help less-experienced operators to maximize operational productivity.

SOLUTION

The system integration partner, Tecnoquadri, was tasked with designing, building and installing the data acquisition and monitoring system. Movicon.NExT™ SCADA software from Emerson was selected

"One of the main reasons we chose Movicon SCADA platform was its versatility. I would also like to highlight the importance of Emerson's technical support services, who were always very quick to respond and solve any problems encountered during the development stage."

Antonio Savelli

Owner

Tecnoquadri SNC di Donati F. & C.

and set up in the control room. Remote terminal units (RTUs) were installed at 14 substations located in the field. A fiber optic network was installed to connect the RTUs to the Movicon SCADA. The RTUs collected data, using Modbus communications, from the inverters, network analyzers, switchgear, and temperature, irrigation and wind speed/direction sensors. Approximately 230,000 pieces of information are transmitted daily from the RTU and stored in the Movicon.NExT historian database. Information is reprocessed at regular intervals, and optimized databases are used to manage data analysis and reports, helping operators understand equipment status and operational performance.

Emerson developed a specific driver to enable real-time information from the third-party remote management software to be made available to the operators. Graphs showing real-time electric data of several inverters for comparison enable the operators to identify and address in real-time inverter issues that otherwise would only be detected later during analysis of energy/irradiation data. The system manages alarms, which are displayed in the SCADA software, helping operators to resolve issues efficiently and effectively. In the event of an inverter malfunction, the operator can quickly gain access to all the information about the anomaly and understand the issue before maintenance personnel physically visit the inverter. Temperature derating is needed to protect the sensitive semiconductor components of the inverter from overheating. When monitored components reach the maximum temperature point, the equipment gradually lowers the power point, or in exceptional cases, turns the inverter off. Derating status and cause is visualized in real time to permit prompt intervention by operators without disturbing production efficiency. Running the inverters efficiently results in enhanced billable power generation, thereby resulting in specific financial gains.

RESOURCES

Movicon

www.Emerson.com/Movicon

“OPC UA functionality of the Movicon.NExT platform made it easy to exchange information between field devices and the supervisory application.”

Gianni Poggialini

Software Manager

Technoquadri SNC di Donati F. & C.



Movicon.NExT helps operators resolve inverter issues efficiently and effectively.

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