

WITH THE ENERGY OF THE SUN

Visualization of solar power stations based on atvise

Together with its Israeli partners ELCO Contracting & Services, SOLON is building two turnkey solar power stations in the Kibbuzim Kramim and Idan, Israel. The two projects will have a total capacity of 8.5 MW. The two plants are controlled by the Bachmann M1 automation system, whilst the visualization of the SOLON power station monitoring system is based on atvise scada.





Headquartered in Berlin, Germany, SOLON Energy GmbH belongs to Microsol, the Arabian-Indian solar cell manufacturers. The company is one of the leading manufacturers of solar modules and solar system technology in Europe, and is a specialist in the construction of turnkey photovoltaic power stations. Since 2005, SOLON has implemented solar power stations with a total capacity of 310 megawatts peak.

Modular power station control

SOLON Regor is part of SOLON's modern SCADA system (Supervisory Control And Data Acquisition) for photovoltaic power stations. It is used for the acquisition, processing and distribution of data from communicative devices in the power station such as weather stations and power inverters. At the same time it is used for the control of the photovoltaic power station.

The power station control itself has a modular structure and has a hardware platform consisting of remote Bachmann M1 systems, so-called 'decentral connections', which are fitted with ME or MX processors depending on the requirements.

Web-based plant management

The collected and conditioned data is transferred by SOLON Regor to systems which enable the monitoring and the remote maintenance of power stations via a web-based user interface (e.g. SOLON Vega). The stored data is routed to a central server via a secure Internet connection.

Plant monitoring from a control center

A control center was specified for the power stations in Israel, in which the reading of all key values and parameterizations can be carried out centrally on site. This not only required the real time display of the actual status in different presentations but also the ability to make power settings and switch operations.

Rapid implementation with atvise

SOLON used the atvise web-based solution for the development of user interfaces in the Israeli project. "After training by Bachmann we soon became acquainted with the structure of the program and were able to create the ►►



► Implemented with atvise: visualization of the solar power station.

►► first display pages,” Stefan Berg, head of SCADA development describes their first experiences. In addition to a general overview, a display of the electrical power flow and several physical outlines are created in which the current yield and any possible fault messages are displayed for each specific device. “Although one license was used for 1,500 CCDs, approximately 420,000 values could be displayed in the system. 250,000 of these were ‘mirrors’ of SVI variables from four M1 controllers,” Stefan Berg describes one of the positive results and adds: “Mapping this large number of variables the conventional way would have been virtually impossible. The object-oriented approach of the atvise visualization and the possibility to run virtually all functions by scripts, suit the structure of the SOLON Regor power station monitoring system perfectly.”

» The name transparency of SVI variable paths and the OPC UA tag in atvise is a key benefit. «

*Stefan Berg,
Head of SCADA development
at SOLON*

Mapping to OPC UA objects

SOLON Regor adheres to a strict object orientation with all code blocks, even for PLC program blocks. The data structures of each block are also written in an XML file. After all program blocks of a power station project have been installed, an XML file is created with the description of all the controllers connected in the Intranet and the tasks running on them.

“The JavaScript functions of atvise firstly enabled the basic objects such as power inverter, solar string or energy meter to be mapped to general OPC UA objects very simply using the information from the XML file,” Stefan Berg states. Then different views were created in a single step for each object. These objects could then be instantiated for an actual solar farm using JavaScript.



SOLON produces high-end solar panels and is a vendor of solar system technology for rooftops and ground mounted installations. SOLON also designs, constructs and maintains large scale rooftop and turnkey solar power stations worldwide. With subsidiaries in Germany, Italy and the USA, the SOLON Group has around 600 employees worldwide.

► www.solon.com



▲ During a tour of the plant, guests from the VDMA were impressed by the capabilities of Bachmann.

VDMA VISITS BACHMANN

The power system builders in the Verband Deutscher Maschinen- und Anlagenbau (VDMA – German Engineering Federation) met at this year's board meeting and general assembly at Bachmann electronic in Feldkirch.

"Modifications to the basic objects, as is often necessary during the course of projects, do not present any challenges, since all the changes to the basic objects are automatically transferred to the instances," says Stefan Berg delighted. "It was therefore possible to also carry out changes to objects like the SOLAR strings, for which there were over 1,000 instances."

Rapidly feeling "at home"

"The name transparency of SVI variable paths and the OPC UA tag in atvise is a key benefit in practice," Stefan Berg explains. "Misunderstandings caused by different name designations are virtually excluded. The existing data structure internalized by the development team appears at all levels of the atvise system. This is one reason why we could feel at home with atvise very quickly."

SOLON Regor ensures the problem-free and future-proof integration in higher-level systems of the plant operator or utility company. atvise made it possible to implement the required web interfaces quickly and efficiently.

At this event organized by the Power Systems group in June, several high-ranking representatives from different companies in the energy generation sector were guests at Bachmann. The energy transition was once more the central theme of the event.

Guest lecturers were Rainer Baake, director of Agora Energiewende and former State Secretary, as well as Michael Ritzau, CEO of the company Büro für Energiewirtschaft und Technische Planung GmbH (BET). Their lectures made clear which changes were necessary for the further development of the energy market in order to create a future-oriented and integrated system from fluctuating (e.g. wind power stations) and controllable (e.g. coal-fired power stations) energy resources.

As a supplier for the major power system builders, and the market leader in the automation of wind power plants, the energy transition is also an important issue for Bachmann. The VDMA general meeting was a unique opportunity to discuss current and future developments with the decision makers and network partners in the energy sector.