

Maximizing Jordan's natural solar resources with zenon

A bright future in Jordan

The Jordanian National Electric Power Company is keen to exploit the country's natural solar resources to avoid thousands of tons of annual CO2 emissions and deliver a reliable supply to thousands of homes. In four of the new solar power plants, zenon is used to deliver high availability and reliability and minimize the cost of generation.



The Jordanian government's renewable energy program aims to increase the renewable contribution to the country's power generation mix to 10% by 2020. As a result, in 2015 the Amman-based National Electric Power Company (NEPCO) began planning four new projects in the form of power purchase agreements (PPA) that would help Jordan deliver on this goal.

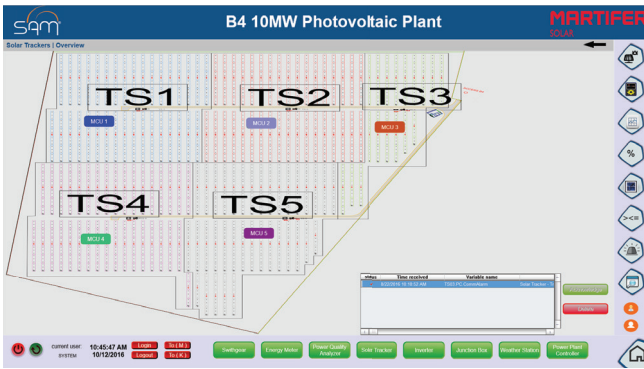
Local system integrator SAM ENGINEERING was selected by the energy project contractor MARTIFER-voltaia; the EPC assigned on four of the projects. SAM ENGINEERING has more than 20 years of experience in DCS and SCADA systems for low-voltage and medium-voltage projects in Jordan, the Middle East and North Africa.

Under this initiative, SAM ENGINEERING would supply the control and monitoring solutions for the new Jordan Solar One, Al-Zanbaq, Zahrat Al-Salam, and Al-Ward Al-Joury solar power plants. Jordan Solar One is a 20MW solar photovoltaic (PV) plant; the other three sites are 11MW solar PV plants. Given the capacity of each of the sites, between them they are responsible for exporting 57MW to the Jordanian grid.

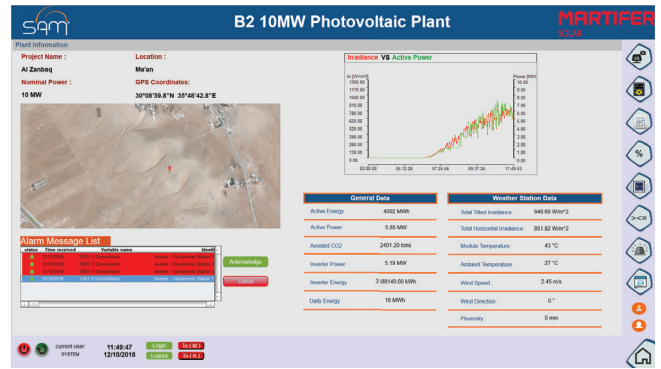
A RELIABLE SCADA FOR THE ENERGY INDUSTRY

To control and monitor the plants, SAM ENGINEERING required a SCADA solution that could deliver on eight key objectives:

- ▶ Accurate plant data collection



zenon displays an overview of every solar unit at each plant. Shown here: an overview of 10MW PV Plant B4.



Essential plant metrics and active alarms can be seen at a glance.

- ▶ Performance calculations based on data about generation and irradiance and from soiling sensors
- ▶ Alarm management
- ▶ Reporting, including a time filter for production and performance ratio reports
- ▶ Web Client (to allow users with the right credentials to access the project over the Internet)
- ▶ SQL databases
- ▶ Variable comparison
- ▶ Trends and charts

Its investigations to find a suitable system led SAM ENGINEERING to COPA-DATA and their energy automation software zenon.

A PROVEN TRACK RECORD

Samir Ayasrah, Executive Director at SAM ENGINEERING, explains why his team chose to use zenon for the four projects: “The software is independent and easy to integrate. It delivers maximum security and optimal connectivity with machine environments, and has no ongoing fees over years.”

Each plant would use varied equipment, including: Phoenix Contact PLCs, monitoring SCBs, trackers, Campbell weather stations, energy meters, RTUs, centralized inverters, medium-voltage equipment, and pyranometers. This made zenon’s flexible connectivity an essential advantage over other possible solutions.

Samir Ayasrah comments: “We had a demanding set of requirements on this project, but we have found zenon to be an easy-to-use, fully-integrated solution that met all our project specifications.”

CUSTOMIZED FOR ENERGY AUTOMATION

zenon from COPA-DATA is a standard automation software equipped with specific features that make it ideal for deployment to control and monitor equipment for energy distribution and for the generation of electricity, particularly from renewable energy sources. These features include support for IEC 61850, IEC 60870, DNP3, IEC 60870, Modbus, and DLMS.

“A key advantage for us,” says Samir Ayasrah, “is zenon’s integrated PLC system zenon Logic. This has enabled us to develop the precise calculations required in the solution and also provided the logic behind the alarm triggering mechanisms.”

ACCURATE REPORTING AND VITAL ALARMS

In addition to the vital performance calculations, zenon has enabled the SAM ENGINEERING engineers to easily configure accurate reporting and alarms for the project investors, Adenium Energy Capital.

Reports are generated on a daily, monthly and annual basis in two important areas:

- ▶ Production reporting, including in terms of irradiation, and
- ▶ Performance ratio reports.
- ▶ These enable Adenium Energy Capital to view important details about the plant production, as well as using the data for billing purposes.

SAM ENGINEERING used zenon’s Web Client to enable users with the right credentials to access the project over the Internet, a vital element of functionality that allows the project investor to monitor the system remotely.

“ We have been delighted with how zenon has performed in both engineering and operation and expect to be deploying it in all future energy automation projects. ”

**SAMIR AYASRAH, EXECUTIVE DIRECTOR
SAM ENGINEERING**

A POWERFUL TOOL

For the SAM ENGINEERING team, zenon’s major advantage has been the speed and ease of engineering. zenon is designed to around the concept of “setting parameters instead of programming”. This enables engineers to implement complex requirements very quickly. For example, safe redundancy modes can be configured in just a few mouse clicks.

Samir Ayasrah says: “Although this was the first time our engineering team had worked with zenon, we found it extremely easy to use and intuitive. Whenever we did encounter any issues, the support team at COPA-DATA were on hand to help and they provided impressive and timely assistance whenever required.”

zenon is now being used to monitor and control all four major solar installations that SAM ENGINEERING has delivered for the investor.

Samir Ayasrah concludes: “The plants are working and generating power. Each has been designed and constructed to achieve high availability and maximize the use of the solar resource and the power output that is exported to the public electricity grid – producing an estimated 54GWh per year. We have been delighted with how zenon has performed in both engineering and operation and expect to be deploying it in all future energy automation projects.”

HIGHLIGHTS:

- ▶ zenon’s integrated soft PLC, zenon Logic, enables the precise calculations required
- ▶ The zenon Web Client provides access for the project investors to monitor performance remotely
- ▶ Native support for Energy protocols such as IEC 61850, IEC 60870, DNP3, IEC 61850, Modbus, and DLMS
- ▶ Critical alarm logic