POWER QUALITY IN
LOW-VOLTAGE AREAS
JUVA

DATAWATT
AN OVARRO TECHNOLOGY

THE CHALLENGE

Effectively managing assets on a smart grid is only achievable through the capture, storage, and interpretation of vast amounts of data from physical assets. However, renewable energy sources like solar rely on low- or medium voltages, and monitoring these can be more challenging than traditional sources.

These were the challenges faced by Juva, a Netherlands-based energy network management company that works together with the grid operator Westland Infra on Distribution Automation. It manages a smart grid covering an area of 25 to 30 square kilometers in Westland, the Netherlands.

They were seeking a better solution for remote monitoring and managing low- and medium-voltages on the grid and needed a flexible solution to detect unique and unpredictable low- or medium-energy sources. Its existing hardware also made it difficult to identify energy flows in the low-voltage area.

THE SOLUTION

©Ovarro. DSG Series

Ovarro first devised a solution with Rogowski coils. Rogowski coils are commonly used to accurately monitor medium- and low-voltages in precision welding systems, arc melting furnaces, short-circuit testing of electric generators, and as sensors in protection systems of electrical plants.

But, aside from the Rogowski coils, remote telemetry units (RTUs) were needed for the capture, storage, and interpretation of vast amounts of data from physical assets in the network.

POWER

MONITORING
& CONTROL

RTU'S

OVARRO
CONNECTING
TECHNOLOGIES

SOLUTION

RTUs are now a critical part of most power generation and distribution operations and are essential for today's and tomorrow's smart grids. For Juva, Ovarro recommended the Datawatt Smart Grid (DSG) series, designed for operation in the water, energy, and industrial markets. The design operates under two main principles — flexibility and maximum security.

Flexible characteristics of the DSG include its ability to implement a variety of protocols in real-time, including IEC104, COAP, and Modbus with other protocols available on request. New protocols can be easily created through the Linux operating platform and C# programming language, while programmable logic controller (PLC) programs can also be made with the latest standard from Codesys based on IEC61131-3 — this standard is the industrial protocol for control programs and is used by many national and international organisations and companies.

SUCCESS

With the Rogowski coils, installation times on the grid are now reduced to less than 30 minutes to measure eight fields of energy-providing sources within the network. Moreover, the purchase price is much cheaper than that of conventional solutions.

Juva has reported that the DSG system greatly benefits the overall security of its network and that the hardware and software of DSG are a definite improvement. Juva uses a lot of firewall functions to protect these many inputs/outputs (I/Os) and the security options, while not limitless, are many. Ovarro needs to offer a solution that would help Juva manage its grid productivity, energy-efficiently, and security with levels of quality of service (QoS). To this end, it paired up with Eneida, which specializes in specially designed smart sensor networks, data analytics, and unique collaborative software to better analyse and control data on grids.

KEY DELIVERABLES

- Improved connectivity
- Rogowski coils installed for more accurate monitoring
- Better monitoring and control of 250 substations
- Installation time is less than 30 minutes
- Connect multiple networks in a station
- Improved security

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