

Improving supply security with zenon

Salzburg AG standardizes control technology of its hydropower plants

Among its broad-based holdings, the utility company Salzburg AG operates 30 hydroelectric power plants in the Austrian state of Salzburg. To ensure the long-term efficiency and resilience of the power supply, the company is implementing the zenon software platform to standardize its process control technology. The first rollout went hand-in-hand with the construction of the Mur power plant in Rotgülden.



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We owe our prosperity not least to a functioning public utilities sector. In addition to the water supply, wastewater treatment, and waste disposal, this also includes reliably providing clean, easily usable energy and mobility, as well as information and communication networks.

SUSTAINABLE POWER SUPPLY FOR SALZBURG

With its products and services, Salzburg AG is making life easier for the public in the Austrian state of Salzburg. It also makes work easier for businesses. The company, which was created in 2000 out of the merger of Salzburger Stadtwerke and the state energy supplier SAFE, generates an annual revenue of 1.72 billion euros and has approx. 2,400 employees (2021 fiscal

year). It offers digitalized solutions in all areas of life. These range from public transport, telecommunications, Internet and cable TV to district heating, water, gas, and electricity supply.

Salzburg AG generates around 30 percent of its electrical energy from its 30 hydroelectric power plants. These have been built and upgraded over a period of more than 100 years. As a result, equipping them with control and management technology varies by location. Previously, two completely different central process control systems were in use.

STANDARDIZATION ON ZENON

With the goal of standardizing this heterogeneous system landscape, Salzburg AG developed a general process control technology strategy. The strategy process resulted in the



The Rotgülden hydroelectric power plant in the south of Salzburg was the first power plant that Salzburg AG equipped with a process control system based on zenon Energy Edition.

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creation of a specification for the control systems of the company's own hydroelectric power plants. In the subsequent multi-stage tender, the zenon software platform from COPA-DATA was selected. Developed in Salzburg, it has been used successfully worldwide for decades.

HARDWARE-INDEPENDENT COMPATIBILITY

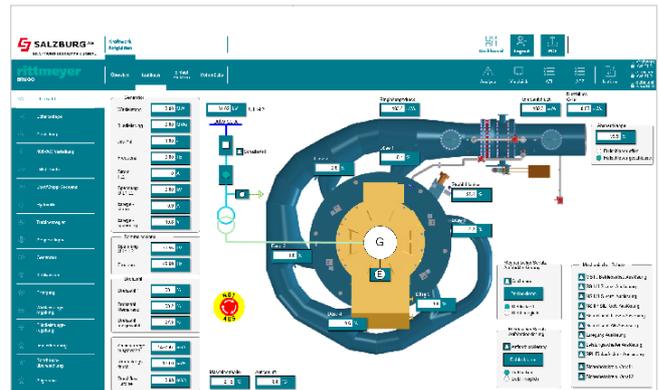
The superior communication capabilities of zenon played a major role in the decision. The software platform can connect all components and subsystems used regularly in energy systems via more than 300 drivers, regardless of their manufacturer. To do this, it uses standardized transmission protocols that are conventional in the energy industry.

„All providers promise to comply with the IEC 60870-1-104 standard,“ says Simon Scherthanner, department head at Salzburg Netz GmbH. „But zenon actually provides a very clean implementation that makes use of all the ‘goodies’ in the standard.“

RESILIENCE PROVIDES SECURITY

Alongside its extensive communication properties, zenon's high level of resilience also worked in its favor. It was particularly important for Salzburg AG to have very strong protection against cybersecurity risks, as well as the capacity for autarkic operations of normally unmanned power plants, in the event of server failure. These are generally equipped with the option for local operation and observation.

„While some of the other software products under consideration are based on a client-server architecture, zenon is a distributed system and can handle seamless ring redundancy,“ states Simon Scherthanner. „This makes it easier for us to set



The zenon-based process control system with customer-specific templates is used in all Salzburg AG hydroelectric power plants and was implemented by the industry experts at Rittmeyer Austria with the support of COPA-DATA.

© Image: Salzburg AG

up highly fail-safe systems with geographically distributed and redundant servers.“

RELIABLE AND FUTURE-PROOF

In addition to the software's compatibility and security features, the COPA-DATA company itself was also a decisive factor in the decision. „zenon is developed directly by COPA-DATA and this includes important drivers. Decisively, the software manufacturer always keeps it up to date,“ says Simon Scherthanner. „This ensures the software platform offers a high level of future security.“

The trained electrical engineer also considers the geographic proximity a benefit, because it means that professional support, without language or cultural barriers, is quickly available.

INITIAL INSTALLATION IN HYDROELECTRIC POWER PLANT

The first Salzburg AG power plant with a process control system based on the zenon Energy Edition is the Rotgülden hydroelectric power plant at the headwaters of the Mur River. The power plant in the high alpine region of Lungau, in the Tamsweg district in the south of the Austrian state of Salzburg, was rebuilt some two kilometers downstream from the original location.

The additional height of fall resulted in a 66 percent increase in output. Equipped with a six-jet Pelton turbine and a generator with a rated output of 6.3 MW, the power plant supplies 10 GWh of clean electrical energy in a standard year. The increase, compared to the replaced power plant, corresponds to the average usage of 1,300 households.

The plant, which was designed by the experts at Salzburg AG, is suited for stand-alone operation and supports black starts. In the event of a power failure – for example, after

“*Developed by COPA-DATA, zenon provides a very clean implementation of the IEC 60870-1-104 standard and, as a distributed system, is capable of seamless ring redundancy. This makes it easier for us to set up fail-safe systems that are highly future-proof.*”

SIMON SCHERNTHANNER,
TECHNICAL MANAGER AT SALZBURG NETZ GMBH

storm damage to the 30 kV branch line – it can maintain the power supply independently for the nearby town of Muhr.

STANDARDIZATION FOR STEPPED ROLLOUT

The zenon installation was implemented by the experienced industry specialist Rittmeyer Austria. It also supplied the rectifier and inverter systems as well as the power distribution and control cabinets. Before the hardware and software were installed and commissioned in the power plant in the summer of 2022, tests were carried out on the entire system with the support of COPA-DATA staff. During this time, customer-specific templates for the visualizations were also created.

„Rotgülden power plant is proof that zenon provides an ideal platform for us to base our entire system for securely and efficiently monitoring and managing our hydroelectric power plants,“ says Simon Schernthanner. „It also serves as a blueprint for all future installations.“

The previously very heterogeneous process control system landscape is being cleaned up as part of cyclical upgrades of power-plant process control systems. The zenon implementation for Rotgülden was designed deliberately for maximum scope and with all the extras so that it can be ported to other power plants with little effort.

„The rollout of the modular control technology based on zenon is currently limited to our hydroelectric power plants,“ says Simon Schernthanner. „We are now assessing the system for the forward-looking operation of our photovoltaic systems.“

From COPA-DATA’s point of view, the gradual expansion of Salzburg AG’s process control technology to zenon closes one

further circle: for years, the company, which is headquartered in the city of Salzburg, has been buying its green electricity from Salzburg AG. Now, the software will continue to be developed, benefiting from the reliable power supply in the neighborhood, and this same technology will be used to generate the supply’s hydroelectric power.

HIGHLIGHTS:

zenon provides process control system for the hydroelectric power plants of Salzburg AG

- ▶ Standardized system architecture and user interface
- ▶ Hardware independence with over 300 drivers and interfaces
- ▶ Clean implementation of the IEC 60870-1-104 standard
- ▶ Accelerated engineering through energy-specific application sets
- ▶ High resilience with geo-redundant servers
- ▶ Easy portability thanks to the solution’s modularity
- ▶ Increased future security through ongoing software updates and enhancements from the developer