

Open interfaces for efficient energy distribution:

Bellinzona secures power supply

For nearly 150 years, the public utility AMB has supplied Bellinzona, the capital of Ticino, with its power and communication. It was time to update the technology and to adapt it to current requirements and standards. This complex project was jointly taken on by the experts COSTRONIC SA and the zenon software from COPA-DATA.



Azienda Municipalizzate Bellinzona (AMB), has secured the power supply for Bellinzona and neighboring municipalities since 1869. AMB now supplies approximately 15,000 households with an average of 280 GWh of electricity per year, including quick telecommunication via fiber-optic cable and clean water. The power is distributed over a 50 kV/16 kV network. Around 20% of the required energy is generated from hydro-electric power and photovoltaics.

When it was a matter of switching the aged and locally-distributed operation of the 50 kV/16 kV power supply to

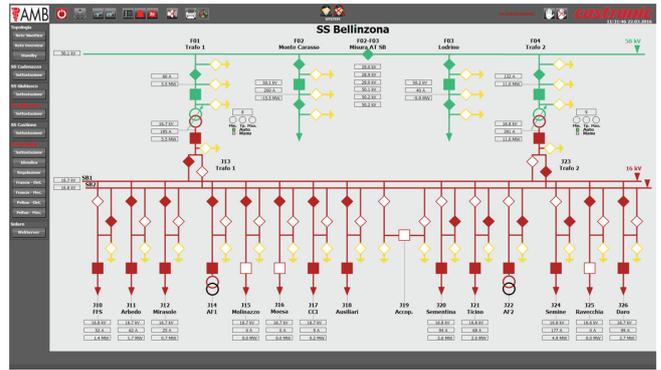
a central control system, AMB commissioned COSTRONIC SA with the implementation. Experience with successful cooperation had already been gained through a power station project.

STEP BY STEP TO A SECURE POWER SUPPLY

AMB did not just want to replace aging technology, it primarily wanted to build a safe system with high availability. A central requirement in doing so was that the legal specification of keeping a complete archive for ten years would be met. In



In the control room, the employees always have an overview of the complete energy grid and can zoom into the details at any time.



When distributing from 50 kV to 16 kV, the status of each line is shown exactly using ALC.

In addition, it had to be ensured that the maintenance staff, on call 24 hours a day in the control center, get their information in real time. A perfect overview of all information and quick access to current and saved data was considered standard anyway.

The system integrator COSTRONIC SA designed the project with multiple layers and deployed it in a targeted manner in several steps. A simple subproject was implemented as a basis. This was then expanded to a multi-project administration which acted as a multi-client. Then there was the step of vertical redundancy as a multi-standby server and lastly the connection to the higher-level load distribution plant. Afterwards, 80 transformers (16 kV) and distribution boxes (400 V) were integrated in line with IEC 61850.

For Claude Nidegger, Sales Manager at COSTRONIC SA, the decision to use zenon as a visualization system was obvious: “zenon is perfectly scalable and could therefore be adapted ideally to the growing requirements. It is primarily the simple reuse of screens and symbols, as well as the support for many energy protocols, that simplified project configuration for us. The subsequent visualization of 80 transformers and distributor boxes was implemented without problems using the indicated screen switch.”

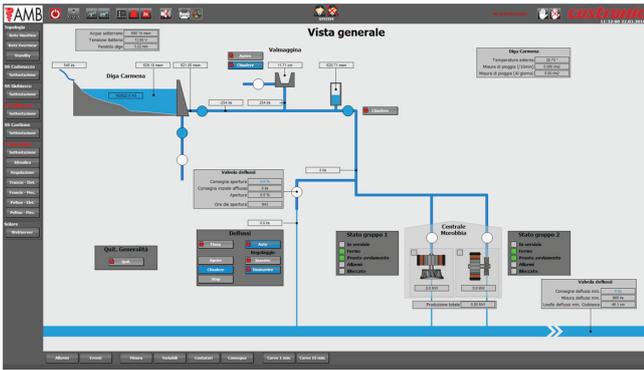
POWER SUPPLY IN BELLINZONA SECURED

In the final expansion, several servers and clients now use zenon to control the seven Schneider Modicon M340 using Open Modbus TCP/IP, as well as the 120 Schneider protection relays using IEC 61850. They are connected using the direct drivers already supplied with zenon. In Runtime, the complete network is shown as a zenon Worldview and colored using Automatic Line Coloring. The operators have an overview of the complete network at all times and can zoom into the details at the same time if necessary.

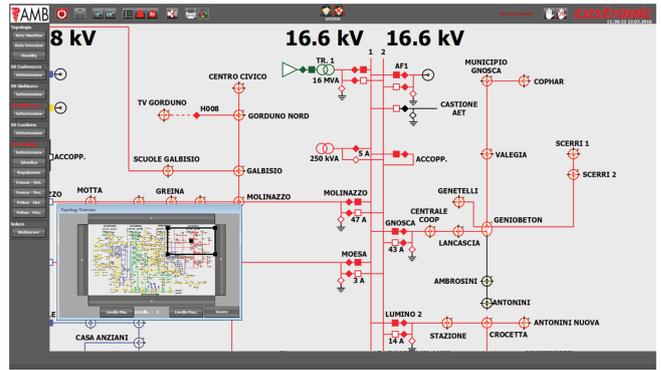
Each of the servers has an SQL connection. Furthermore, because the complete system was designed with vertical and horizontal redundancy, data loss is prevented in the event of an error and the legal obligation to keep records is fully ensured.

AMB was very satisfied with the careful implementation. Pasqualino Pansardi, Power Generation Manager at AMB: “The configuration of the project met our demands and requirements in full. During the course of the project, we learned to value the benefits of open interfaces and simple scaling.”

Bellinzona can continue to rely on its power supply. The control and visualization now comply with all legal regulations and company requirements.



Processes and status of the turbines can be recorded at a glance. If required, employees can have details shown without problems.



All lines and stations are shown in a zenon Worldview. The section can be zoomed and moved as desired.

ABOUT COSTRONIC SA

COSTRONIC SA was founded in 1986 and has established itself as an expert in the energy field. The Swiss integrator's teams have already implemented over 2,500 automation projects: For hydro-electric power plants and transfer and distribution of high, medium and low-voltage power supplies, as well as for road and infrastructure projects. COSTRONIC has been a member of the COPA-DATA Partner Community since June 2012. Further information: www.costronic.ch.

ABOUT SATOMEK AG

SATOMEK AG is a commercial company with dealers for automation systems. The zenon distributor, based in Cham, provides its customers in Switzerland and Liechtenstein with highly-qualified support, consulting, instruction and training. Control systems, visualization, HMI, IPC and network technology are some of the areas of expertise of the Swiss company with 15 employees. SATOMEK AG was founded in 1976 and has been privately owned by the Studhalter family since 2005. Further information: www.satomek.ch.

AMB AND ZENON AT A GLANCE:

- ▶ 7x Schneider Modicon M340 via Modbus
- ▶ 4x 30 Schneider protection relays via IEC 61850
- ▶ Integrated IEC 60870 and IEC 61850 direct drivers, as well as Open Modbus with time stamp
- ▶ Server and multi-standby server under Windows Server 2012 and Windows 8.1
- ▶ Multiple-monitor solution with parallel switching of several screens
- ▶ SQL connection
- ▶ Worldview for overview and detailed display of the complete network
- ▶ Clear coloring of the power lines and their status