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Application Report

Green energy – Ritom SA relies on hydropower

Partner Azienda Elettrica Ticinese
Area Power generation

Power generation

Switching

Monitoring

Alarms

Partner

Azienda Elettrica Ticinese (AET) is a public utility established by the Canton of Ticino in 1958 with the mission of generating and supplying electricity. Working together for a sustainable future driven by renewable energy.

ComatReleco Products in Use

- C9 Industrial Relays
- C12 Industrial Relays
- C4 Industrial Relays
- MRx Monitoring Relays

Anyone who has traveled south through Switzerland's Ticino region will have noticed them: the striking penstocks near Piotta. Since 1917, they have carried water from Lake Ritom down to the power plant in the valley, 840 meters below, where electricity for railway operations in the Gotthard Base Tunnel was previously generated.

As part of the renewal of the operating concession, Swiss Federal Railways (SBB), together with the Canton of Ticino and Azienda Elettrica Ticinese (AET) as the operational partner, founded Ritom SA and comprehensively modernized and expanded the Ritom power plant. Over the past eight years, a new powerhouse, a compensation basin, underground waterways, and additional technical installations have been constructed. The result is a state-of-the-art pumped-storage power plant capable of generating both 16.7 Hz railway power and 50 Hz grid power.

Pumps, valves, and gate mechanisms are automated through electrically driven actuators

Control cabinets equipped with ComatReleco relays and monitoring devices ensure reliable control of actuators and provide dependable feedback to the supervisory control level.

Digital first, then reality

Due to the project›s high level of complexity and the numerous interfaces between civil construction, plant engineering, and electrical installation, the power plant was first planned as a digital model.

This model-based engineering approach made it possible to identify and resolve potential conflicts before construction began. As a result, planning risks were minimized, execution quality improved, and unnecessary costs and delays during implementation were avoided.

Relay technology and signal interfacing

Wherever possible, relay sockets with screwless connection systems were used. The relays perform switching and interfacing tasks within the control cabinets, ensuring the reliable execution of control commands for pumps, valves, and other plant components. Corresponding feedback contacts transmit operating states back to the control system for monitoring and control purposes.

Why ComatReleco relays?

The ComatReleco Push-In relay socket family was selected for its compact design, tool-free Push-In connection technology, and flexible wiring options.

The standardized marking strip holders support clear equipment identification and improve maintenance efficiency. Thanks to the space-saving design and ease of handling, installation effort, control cabinet space requirements, and service times could all be reduced.

Control engineering at its best

The operation of the Ritom power plant is entirely demand-driven, and in two different ways. On one side, it supplies the SBB›s 16.7 Hz railway power network serving the Gotthard and Ceneri Base Tunnels. On the other, it feeds electricity into the 50 Hz public grid of the Canton of Ticino, each with its own demand peaks and operating requirements.

Naturally, the monitoring and control of generators, pumps, valves, cooling systems, voltage levels, and all electrical installations are fully automated and digitalized. Plant functions are distributed across several specialized control cabinets, while operational and process data from all plant systems are consolidated in a central control room, from where the entire facility is supervised and controlled.

More than 1,600 ComatReleco relays, monitoring devices, and alarm units from the MR family have been installed throughout the facility. They help ensure reliable interaction between the different plant systems and contribute to the safe monitoring and control of power plant operations at all times.

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