

Projekt Reference Bortelalp RTU renewal and IEC-104 implementation



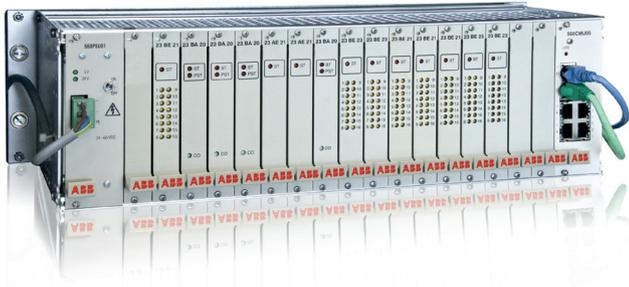
The Bortel power plant with the two units Bortelalp and Ganter Bridge, and the pumping station on Bortelalp was constructed in the 1980s. The “BBC control system” P160 (Indactic15) with RTU P214 was replaced by RTU560 as part of the renewal and implementation of the IEC-104 protocol. Equipment at the Bortelsee and Bortelalp stations thus had to be exchanged and put into operation again. The greatest challenge of the project involved finding a solution that limited the length of conversion and commissioning work to an absolute minimum, as both stations cannot be reached by normal vehicles and material and personnel therefore had to be flown to the sites by helicopter.

Project

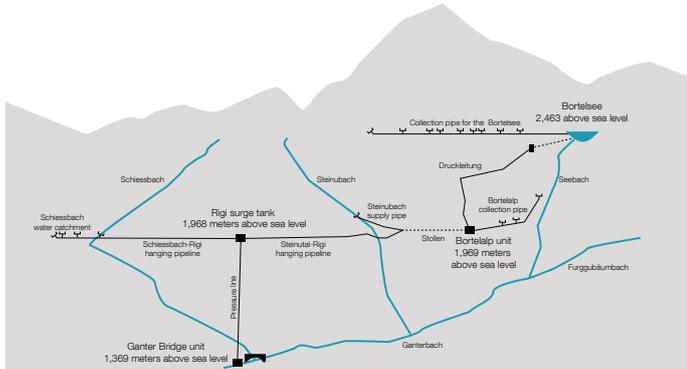
At Bortelsee, which is around 2,400 meters above sea level, the position of the turbine jets for the water flow is controlled. Furthermore, the water catchment tunnel also contains a throttle valve for emergency closing of the pressure pipe. This function can be triggered by the control center, and the water level of the Bortelsee is also transmitted to the control center.

Due to its high location, the Bortelsee station only has one small entrance. All personnel and equipment must use this entrance to reach the station, which is approx. 10 meters further down inside the mountain.

The first stage of power generation is located at the Bortelalp station. At this pumped storage plant, all data from the generator and transformer, as well as all protection signals and measured values are recorded by the RTU560 and transmitted to the MicroSCADA control system in Visp via DSL modem.



RTU 560



River catchment area of the Bortel power station



Access to the Bortelsee station

ABB solution

The original process wiring of the P214-RTU could be taken over directly. The RTU560 was directly connected using a newly developed ABB interface. This meant that complex new process wiring and a point-to-point test were avoided, which reduced the overall costs considerably. It simplified commissioning and the RTU560 was integrated into the system more quickly. The project was successfully completed on November 28, 2011.

Scope of supply

The existing P160 control system (Indactic15) with RTU P214 was replaced by RTU560 as part of the renewal and implementation of the IEC-104 protocol. Six new RTU560s were installed in total.

Bortel power plant of EnBAG Bortel AG

The EnBAG Group is an electricity company in the Brig-Aletsch-Goms supply region and covers 35 % of its customers' power requirements itself. Of its four own power plants, the Bortel

storage/river power plant is the second largest, with an annual production level of 26.9 GWh, of which approx. 44 % is produced in winter. A heaped earth dam holds around 3.66 million m³ of water in the Bortelsee reservoir. The reservoir is tapped underground for turbinning; the equipment for this is located in a 300 m long tunnel under the reservoir.

The upper level uses the water from the river catchment area at the foot of the Bortelhorn mountain. During the summer months, rain water as well as melt water from snow and the Bortel glacier flow into the Bortelsee. There, it is stored in order to power the turbines in the Bortelalp, Ganter Bridge and Silliboden units in winter. The second level uses both the described storage water and water from the Ganterbach, Steinubach and Schiessbach rivers.

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