

The Rätia Project.

Case study of a complete telecommunications system for Rätia Energy.

Reference.



The Rätia Project.

A Complete Telecommunications System for Rätia Energy.

All of the Rätia Energy plants such as power stations, pump stations, switch and transformer stations are remotely controlled and monitored from the network control center in Robbia. Communications channels are provided over the high-voltage grid using PLC equipment and over copper lines using PCM multiplexers. This includes the transmission of voice and protection signaling. In order to meet the increasing demand for new channels with higher data rates, it was necessary to look for an alternative to cater the long term requirements.

Rätia Energie has been formed from the operational merger of the Kraftwerke Brusio AG in Poschiavo, the AG Bündner Kraftwerke in Klosters, and the Rhätische Werke für Elektrizität AG in Thusis.

The activities, with the main focus on hydropower, include the production, transmission, supply, and the trading of electrical energy. Rätia Energie operates its own plants in the canton of Graubünden (Prättigau, Engadine, and Puschlav). In addition it has shares in various other hydropower stations in Graubünden as well as in nuclear power stations.

On the sales side, the major part of the Rätia Energie power production goes to national and international energy association markets (approx. 3000 GWh), the remaining part (approx. 500 GWh) is for the regional supply.

The principal shareholders of RE are the canton of Graubünden, the Aare-Tessin AG für Elektrizität AG, and the Elektrizitätsgesellschaft Laufenburg AG.

New, high-performance and highly economic communications network from ABB

The Puschlav and the region to the north of the Bernina pass, are now served by the FOX 515 platform with a transmission speed of 155 Mbits/s (STM-1). The services required for telemetry, Remote protection signaling, telephony, and LAN connections for EDP and control systems are combined, patched and linked to fiber optic, all within one piece of equipment. The required redundancy is achieved by connecting all stations in a ring configuration. The available transmission capacity permits renting transmission services to third parties.

The installed network

Between the Italian border near Campocologno and Bever in the Engadine, there are more than 20 nodes, type FOX 515, all of which are connected to a fiber-optic ring. This physical network carries the following networked services:

LAN network power station control

All the power generation plants are inter-connected via redundant 2-Mbits/s data links.

LAN network for EDP administrative tasks

Various office locations are interconnected via redundant 2-Mbits/s data links. Plans are in place to increase this capacity in the future.

Data acquisition network for remote substations

Data is taken from the various substations and fed to the network control center in Robbia using redundant circuits.

Telephone network

Major plants are equipped with their own efficiently networked PABX's, whilst the smaller plants are equipped with remote subscribers.

Protection signaling

This part of the network carries all commands for the protection and secure operation of the 150-kV Bernina power line as well as a 60-kV supply line in the Engadine. In particular, in Cavaglia, a so-called T-branch is also protected. All protection circuits are redundant and carry additional protection addressing. As a result, incorrect operation of circuit switches is unlikely to cause problems.

Services for third parties

An additional network service is making transmission services available for sale to third parties. Several 2-Mbits/s channels have already been set up for this purpose.

Remote help line

Today, all equipment and services can be monitored and supported centrally via the operations engineer's PC. The high-performance service channel and the available LAN-Port in each FOX 515 make this entirely user-friendly. In addition, a dial-up modem provides for direct contact to ABB in the event of an emergency.



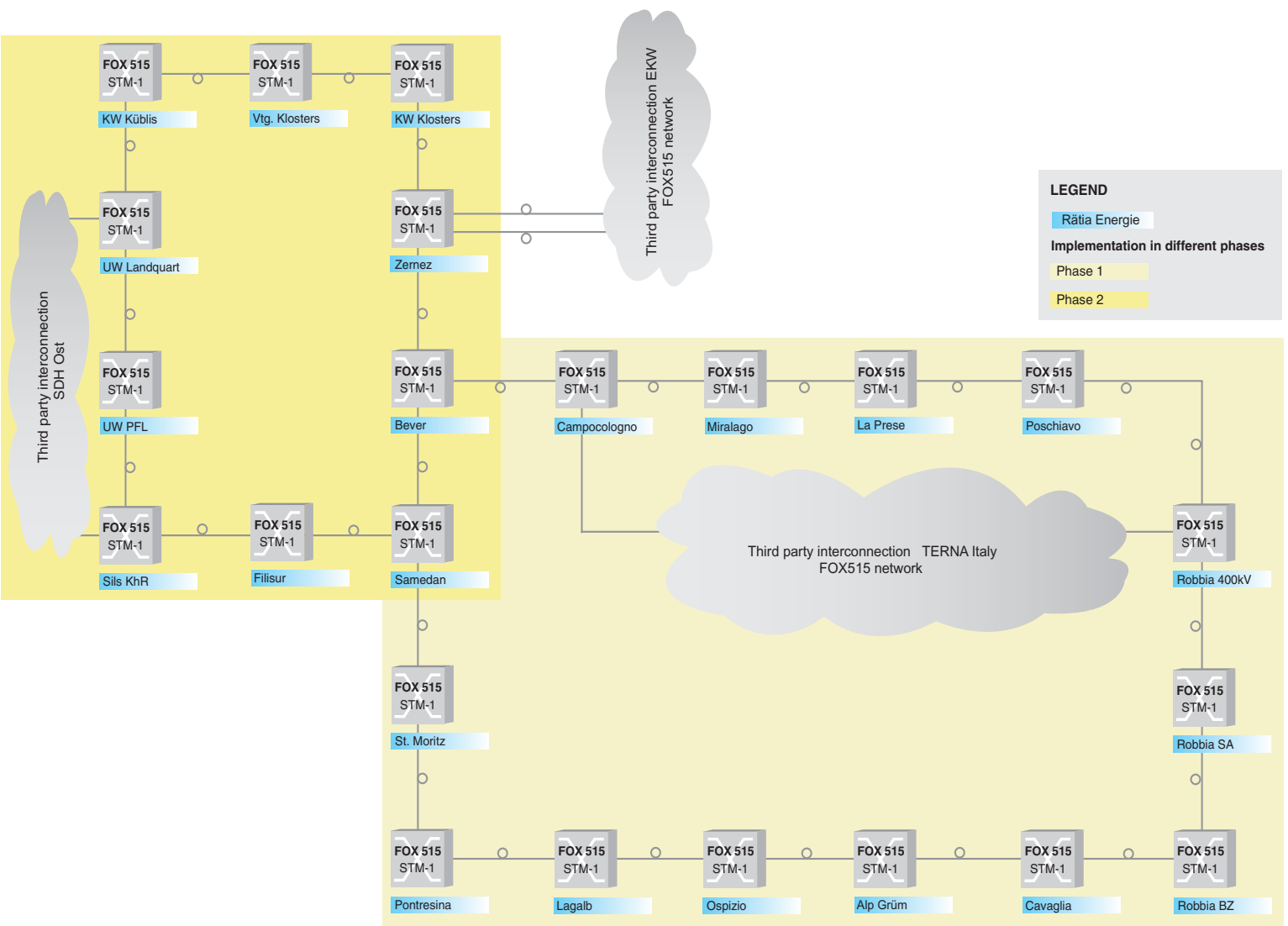




ABB Switzerland Ltd

Utility Automation Systems

Brown Boveri Strasse 6

CH-5400 Baden/Switzerland

Phone +41 - 58 - 589 37 35

or +41 - 844 845 845 (Call Center)

Fax +41 - 58 - 585 16 82

e. Mail utility.communication@ch.abb.com

www.abb.com/utilitycommunications

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