

rhienergie

BPL Gateway leads the way to an “energy city”

Rhâzüns in the Canton of Grisons is running an extensive Smart Grid based on PPC’s Broadband Powerline System, in a project that lives up to the honour of being awarded “energy city” (*Energiestadt*) status by EnergieSchweiz.

rhienergie had to renew Rhâzüns’ dated ripple control system which switches boilers, street lights and meters. This initiated the future-oriented project that renews about 750 old meters and 360 ripple control receivers.

The newly integrated system solution by Swistec offers the option of remote meter reading and to switch ripple control receivers over a single medium of communication.

From the headquarters to the substations, the network is based on fibre optic links. PPC’s Broadband Powerline System establishes an IP-based connection between the substation and end-consumers. Of course, the communication is encrypted: AES with 128-bit keys provides adequate protection for sensitive information.

The system enables the consumers to control and analyse their own energy consumption via internet on a daily basis - an important basis for optimising industrial as well as private energy use. Additionally, operators of photovoltaic systems can adjust their electricity production even better to their individual consumption.

Possible future services enabled in the Smart Grid are building control technologies (alarms,

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Theo Joos
Managing Director, rhienergie



Source: Adrian Michael

Since 2010, Rhâzüns holds the title of “energy city” as the 11th community of the Canton of Grisons.

blinds, lighting etc.) as well as the provision of secondary control power by utilities or third parties for Swissgrid’s national transmission grid.

“We chose Broadband Powerline Communication because we believe that it is the only system which provides the necessary availability and can reliably transfer future vast amounts of data,” explains rhienergie Managing Director, Theo Joos. “With this solution, we are optimally prepared for the liberalisation of the electricity market.”

Another impressive feature of the project is its scale: 450 households have participated since the launch of the project in August 2015. More than 750 meters are connected via IP and send measurement data every two seconds. In the same way, the ripple control receivers directly communicate with the control unit at the headquarters in Tamins, a municipality of Grisons.

This Smart Grid represents an important step towards another ambitious goal of Rhâzüns - the realisation of the 2,000-Watt Society.

Technical Details: BPL Gateway for EasyMeter

Broadband Powerline (BPL) Communications are used by many utilities as communication medium for remote meter reading. The modular BPL System is PPC's leading solution for data transmission over powerlines for all Smart Metering and Smart Grid applications.

In the Rhäzuns households, the EasyMeter Q3S is used. The BPL Gateway can be installed directly on top. The BPL Gateway is installed in a separate housing, which provides different interfaces for the connection of different meter types by several manufacturers.

For meters with a module slot, an appropriate short-range communication module (RS485, Wireless M-Bus, Current Loop etc.) served as a link between the external BPL Gateway and the meter.

In the project with rhienergie, the BPL Gateway was directly mounted into the meters. While for other applications, EasyMeter meters usually need to be equipped with a Wireless M-Bus module for short range wireless communication, the BPL Gateway fulfils this function. Additional communication modules are not needed.

In addition, closely located meters which are equipped with a Wireless M-Bus module can be connected via the BPL Gateway. Additional interfaces are a RS485 and a LAN

Project Summary	
Customer	rhienergie with Partner Swistec
Goals	Renewal of outdated ripple control system
Solution	Remote meter reading and switching of ripple control receivers over a single medium of communication
Product	BPL Gateway for EasyMeter
Results	An extensive smart grid with options for expansion with extended services for customers and prosumers

port for IP communication to further devices (e.g. switching modules, IP-based ripple control receiver).

Data Transmission

The meter supports 4 tariff levels and sends a data packet in IEC 1107 format via the optical interface every 2 seconds. The data packets are received by the Gateway and pushed to a socket (IP and port of a server) in form of TCP/ IP packets. The communication is encrypted by AES with 128-bit keys.

Compact Modem (BPL Gateway)



EasyMeter BPL Gateway



EasyMeter BPL Gateway



The EasyMeter BPL Gateway plug-in module turns any EasyMeter of the Q3 series into a gateway for PPC's BPL system. Gateways can either be connected via a separate housing, or directly plugged in using the EasyMeter BPL Gateway.