Smart home on low voltage installation

S3C related keywords:

- Monetary incentives
- Meter installation
- Smart appliances

SMART CONSUMER
SMART CUSTOMER
SMART CITIZEN

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Project Summary

The project "Innovative solutions for smart home in existing low-voltage installations" was conducted by the Slovenian distribution company Elektro Ljubljana. 50 household users have tested their innovative smart home solutions for controlling their own home energy consumption in real-life situations.

The cost savings for the end user have been addressed as an important factor. The connecting power costs usually contribute about 20 % to the consumed electricity costs. In some cases where end users oversized their installations, the (potential) savings exceed 10 % of the total electricity bill.

The project included the installation of energy control (EC) modules or so-called smart fuses as a new element in low-voltage installations, which combines the functionalities of a fuse and an electricity meter, integrated in a standard IT environment. The cloud IT technology was used to control and regulate users' consumption patterns. Using EC modules as a tool for active management of users' consumption (active demand side management) and enabling custom rates and control, users could monitor and adjust the electricity consumption of their household appliances. The EC module was connected to particular distribution wires – supplying particular rooms and appliances. The module contained a simple control algorithm, which measured the total consumption on a minute scale and disconnected particular wires when consumption exceeded the limit defined by the end user.

What sets this project apart from other Smart Grid projects?

Many projects pursue energy consumption time shifts or price optimisation, while the Elektro Ljubljana's approach is slightly different. Its main strength lies in the simple design of the power control system.

What happened?

The distribution company measured and stored the power consumption of each end user on a 15 minute time scale. They have compared the measured data before and after the load control equipment installation.

The actual result was that on average the limit was set on 50% of the connection (installed) power, which indicates that in most households a smaller main fuse could be installed. Households could therefore reduce their electricity fixed costs, i.e. connection power fee.

Further information / Contact

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Žumbar Klopčič et al., Smart grids - from theory to practice, Energetika.Net, 2012