SWISSCOM ENERGY SOLUTIONS LEVERAGES IOT TECHNOLOGY TO BUILD THE WORLD'S LARGEST SMART STORAGE NETWORK

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CONTEXT

The Swiss electricity grid is characterised by increasing fluctuations between production and consumption values due to the growing amount of electricity sources. Wind and solar power, coupled with changing weather conditions make forecasting of electricity production a very complex process. Often, electricity is available when it is not immediately necessary and vice-versa.

Swisscom Energy Solutions offers a simple and reliable solution that connects small – as well as large-scale commercial and industry – consumers, in an intelligent storage network. Branded Tiko, the solution is designed to link-up residential heating systems to the network and use the storage capacity to balance out fluctuations in the electricity grid by slightly adjusting the heating cycle of anything from heat pumps, electric heating systems to night storage and hot water boilers.

Following a previous successful engagement with Swisscom, iQuest joined Tiko's engineering team to develop a bespoke software solution for one of the network's main devices. This allowed the company to bring the product to market, and in the process, build one of the largest smart grids in the world.

SOLUTION

Tiko is based on a complete control system, equipped with sensors and transducers, and consists of two modules: M-Box, a steering module designed to receive and send information to back- end system and K-Box, a device responsible for measurement and execution.

Working with Tiko, iQuest helped architect an embedded solution for the measurement module, which comprises an integrated meter and a switch, and is able to communicate via the existing electrical lines within the user's home. During peak hours, the software evaluates power consumption through electrical impulses and sends data to the steering module, then helps shift the load to times when customers are using less power by controlling the devices.

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SOLUTION

One of the project's goal was an agile solution with specific time resolution of 1 second, meaning that in order to assure the grid's overall success, data analysis, device state estimations and control actions were all required to happen in a very short timeframe.

Starting with the development phase, the solution was framed innovative due to the way power was easily measured and transmitted through encrypted Power-Line Communication technology, capable of high data security and reliability. Implementing the solution was a joint effort, using a state-of-the-art environment that assured simulation and testing capabilities, in order to provide an efficient and reliable solution.

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RESULTS

Tiko was launched in October 2014, connecting more than 4,500 households to the first active smart grid in Switzerland and one of the largest in the world. Gaining such measurements and control, has enabled Swisscom Energy Solutions to fulfill their vision by enabling grid management in real time while allowing customers to benefit from potential savings, a more secure power supply and transparency with regard to electricity

Smart Metering
Independent device measurement according to individual attributes & consumption behavior.

Extended Security
Safe data reliability with encrypted PLC technology.

Dynamic Performance
Multiple-capabilities in receiving and executing control commands from the server.

Efficient Control
Full control for the customer over device consumption patterns. consumption.

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ABOUT IQUEST

iQuest is an independent, global IT services and solutions provider with more than 18 years of experience in delivering first-class software solutions to leading companies in Life Sciences, Telecom, Transportation, Financial Services, and Energy. iQuest provides a full range of software development services, integration services, and software products, all of which rely on the latest Commerce, Cloud, IoT, Big Data, and Analytics platforms.

Headquartered in Frankfurt, Germany, iQuest benefits from a growing international presence, currently employing around 700 people, distributed across delivery centers in Romania, as well as local and affiliate offices across Europe, the US and Asia.

iquestgroup.com

ABOUT THE CLIENT

Founded in 2012, Swisscom Energy Solutions is a joint venture between Swisscom AG and Repower AG. The start-up develops advanced technologies for the Energy market in the field of Smart Grid and Building energy management. Tiko has developed and now operates the largest demand/response network in the world, connecting households to produce both primary and secondary control while, at the same time offering participants the possibility to increase their energy efficiency.

The company now has 2 years of successful operations in the Swiss National Grid, and now provides a range of other energy solutions ranging from PV production management to energy management systems for ski resort buildings.

tiko.ch

Get in touch

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