



Homing in on Energy Savings at Home

Green issues, especially where energy savings are concerned, are hot news. The current financial crisis affects everyone, be it large corporate businesses or the individual home owner, and causes everybody to look for ways and means to save money, particularly in connection with costs incurred due to energy consumption. This was something of great interest to home owners in and around Freiburg, Germany, as they began exploring various methods to reduce energy consumption in their own homes with the resulting financial savings. The city of Freiburg is striving to become one of the greenest cities in Europe, and eco-housing plays a key role in that concept.

The Challenges

With rising costs for all the amenities, every little bit of saving counts and home owners are particularly delighted to save money on their monthly energy bills. In principle, there are many opportunities to use energy more efficiently in homes.

However, these opportunities are hard, if not impossible, to implement in existing homes without extensive remodelling. For example, new and old homes alike waste large amounts of energy when hot water is supplied to the whole house. In order for the hot water to be readily available throughout the entire house, a circulation pump distributes the hot water through the pipes either continuously or on a timed basis (e.g. 14 hours a day). This results in a significant, and completely unnecessary, waste of energy. It is possible, however, to save about 30% of the hot water bill. This can be achieved when the circulation pump is only started on demand, i.e. at the moment hot water is needed at a certain faucet.

Retrofitting houses is a costly business at the best of times, and finding a solution that can be applied to most homes, and not just the ones at the top end of the residential property range, has proven to be a major challenge. Often the installation of new technology requires specialist installers with specialist knowledge. What was needed was a system that could be installed by non-specialist installers and without too much disruption or the need for extensive and complex rewiring and remodelling work.

The Solution

The solution was found by installing a cost effective LONWORKS® power line communications system

(ISO/IEC 14908-3) where communication is by means of the existing power lines within the home. This allows retrofitting of existing houses without rewiring and thus, without reconstruction work. In the example above, Secyourit SIENNA sensors were installed at each faucet and a corresponding actuator at the circulation pump. This meant that 'hot water on demand' could easily be supplied in every house. The use of self-installation technology meant that systems could be installed by installers without specialist LONWORKS platform knowledge. The highly integrated Echelon® Smart transceiver was used to reach the necessary extremely small form factor (highly compact design) and cost point. To implement the 'hot water on demand', typically three to six LONWORKS platform nodes were installed per home and no remodelling was necessary.

A Secyourit SM1L+R sensor with one 230V input and actuator status display was installed at every hot water faucet. This allowed the circulation pump to be started on demand. When it is connected to a switch with a control lamp attached, it is also able to indicate the state of the pump. Also installed at the circulating pump was a SAM1LT Sensor-/Actuator with a timer for delayed switching. This keeps the pump running for a predefined period of time, depending on the size of the house.

Of course, for more demanding customers, a browser based visualization allows monitoring and control of all the elements. This way the system can gradually be upgraded from saving hot water energy to a full home automation system.

With this scalability, the ability to retrofit anywhere and the simple method of installation, installers now find more and more opportunities to improve the houses of their customers. One of them is Martin Dachs, who runs his own installation business in Munich, Germany. "With



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this system, I was able to automate the sun blinds of an old mansion in the south of Munich without any rewiring. The blinds now operate depending on time and weather conditions, increasing the comfort level and saving AC and heating cost for my customer. Once implemented, the customer was so impressed, that we next applied individual dimming to all his garden lights. Again, the customer enjoys additional comfort and saves energy at the same time. With the SIENNA system, I can now take the features of a powerful bus system to every home.”

Sales have soared particularly in the Freiburg area, the southwestern part of Germany. Arno Deusch is the technical sales expert for home and building automation at J.W. Zander, a leading wholesaler in Freiburg: “The SIENNA system applies to all our customers from the smallest to the largest installation companies. With the simple self installation, the system can be installed by any installer in every home. With the increasing need to make existing homes more efficient, we are experiencing an increasing demand.”

The Benefits

A major benefit is the addition of self installation mechanisms which makes the new generation of products easy to install and universally applicable. The choice of the Echelon power line technology was made as it is the most reliable on the market.

Just through energy savings alone, the solutions proved typically to be totally cost effective with a payback time of less than 12 months. Many homes in Germany, Greece, Denmark, and Italy are already using the SIENNA automation system.

About Secyourit GmbH

Secyourit GmbH delivers solutions for intelligent homes through technology that greatly simplifies electrical installations. This technology reduces installation costs, enhances living quality and provides an open platform for new applications. Secyourit believes in developing innovative systems which open the door to new possibilities.

Contact:

Ms. Jayani Das
Secyourit GmbH
Tel: +49 89 38466481
jayani.das@secyourit.com
www.secyourit.com



550 Meridian Avenue
San Jose, CA 95126, USA
Tel: +1 408-938-5266
www.lonmark.org