European Solar Thermal Sales Soar

BRUSSELS, BELGIUM—In 2006, installations of glazed solar thermal collectors in the European Union were 47% higher than in 2005, according to a report issued by the European Solar Thermal Industry Federation (ESTIF). The report noted that solar thermal equipment sales in Europe "exceeded expectations." ESTIF president Gerhard Rabensteiner commented, "France is continuing its breathtaking growth that started in 2000; in Germany, new installations increased by 58% last year; even markets such as the UK and Ireland have finally woken up."

Netherlands Develops Plans to Weatherize Existing Buildings

THE HAGUE, NETHERLANDS—Dutch industry representatives have been engaged in meetings with government officials to develop a long-term plan for the weatherization of existing buildings in the Netherlands. According to a report in ENDS Environment Daily, an online environmental news service, a federation of Dutch energy companies (EnergieNed), a coalition of housing associations (Aedes), and the Platform for Energy Transition in the Built Environment (PeGO) have proposed a plan calling for energy retrofit work in 40% to 60% of all existing buildings in the Netherlands by 2020. The Dutch government is committed to begin pilot weatherization projects this fall, and to launch a full-scale weatherization program in 2008.

Quote Without Comment

"It's bad enough that the federal government has yet to take the threat of global warming seriously, but it borders on malfeasance for it to block the efforts of states such as California and Connecticut that are trying to protect the public's health and welfare. ... Whether it is Northeastern states uniting to reduce greenhouse gases from electric generators or Western states looking to reduce emissions throughout the economy, momentum is building everywhere but in Washington. The federal government should not stand in the way of dealing with the most serious environmental challenge facing the world." ["Lead or Step Aside, EPA" by Arnold Schwarzenegger and Jodi Rell, *Washington Post*, May 21, 2007].

Correction

The June 2007 issue of ***EDU*** included a misleading description of the windows installed in the Rural Development Incorporated (RDI) house in Colrain, Massachusetts. The windows were described in Table 1 as having "double glazing." In fact, the Paradigm windows installed in the RDI house have Heat Mirror glazing consisting of a plastic film suspended between two layers of glass, creating two air spaces—effectively, triple glazing. The window U-factor listed in the table (U-0.20) was accurately reported. ***EDU*** regrets the error, and extends thanks to John Hogan of Seattle, Washington, whose alert eyes spotted the inconsistency between the reported U-factor and the glazing description.

RESEARCH AND IDEAS

Electricity Monitors Lead To Energy Savings

Wouldn't it be great if someone invented a simple, easy-to-install $135 device that reduced residential electricity consumption by 6.5%? According to a recent Canadian pilot study, such a device already exists: it's a humble whole-house electricity monitor with an indoor display. As it turns out, when homeowners can see how many kilowatts a house is using at any given time, they're more likely to check whether someone left the basement lights on.

The type of monitor used in the Canadian study was the PowerCost monitor manufactured by Blue Line Innovations Inc. The study was conducted by Dean Mountain, a professor of economics at the McMaster Institute for Energy Studies in Hamilton, Ontario. Funded by Hydro One, an electric utility, Mountain's study culminated in a March 2006 paper, "The Impact of Real-Time Feedback on Residential Electricity Consumption."

The PowerCost Monitor

Blue Line's PowerCost monitor resembles the Energy Detective, a competing whole-house electricity monitor reviewed in the September 2006 issue of ***EDU***.

The PowerCost monitor consists of two separate units: a sensor / transmitter unit that attaches to the outside of an ordinary cylindrical utility electricity meter by means of a ring clamp, and a

portable display unit that receives a wireless signal from the transmitter (see Figure 6). The PowerCost monitor works with both electromechanical and digital utility meters. It does not require an electrician for installation.

The monitor displays electricity use information in either kilowatt-hours (kWh) or dollars; it can be programmed to accommodate two-tier rate structures. Various display options are possible, including real-time consumption in dollars per hour or kilowatts, as well as total dollars or kWh consumed since the "clear" button was last pushed.

Unlike the Energy Detective monitor, the PowerCost monitor requires batteries for both the transmitting unit and the display unit, each of which requires two AA batteries. (The Energy Detective's transmitting unit and display unit are powered by 120 volts AC, although the Energy Detective's display unit does include a 3.3-volt battery to maintain the time and date functions during power outages.)

Twelve Months of Monitoring

The Canadian study involved 500 households; of these, 52 households were designated as control households, with the other households receiving whole-house electricity monitors. The participants lived in five Ontario towns, representing "a wide variation in geography and weather."

Figure 6. The PowerCost monitor's transmitter unit (left) is designed to be clamped around a utility meter's glass cylinder. Both the transmitter unit and the display unit (right) are powered by AA batteries.

Useful data were gathered from "over 400" participants, beginning in the summer of 2004. The key data consisted of kWh usage data for 12 consecutive months at each of the participating households. Mountain wrote, "In addition, three customer questionnaires were administered, one at the beginning of the pilot, one at the midpoint, and one at the end, to capture information on qualitative factors such as ease of use, changes to dwelling characteristics (such as square footage, age of dwelling) or appliances."

Monitored kWh usage after installation of the whole-house electricity monitor was compared to kWh usage during a comparable period before the monitor was installed. In analyzing the data, Mountain controlled for such factors as weather, appliance stock, and demographic factors that could influence electricity consumption.

On average, the households that received a whole-house electricity monitor reduced their electricity usage by 6.5%; the figure was reported "at a high level of statistical accuracy." Mountain noted, "An important observation from the study is that the behavioral response remained persistent and did not decrease over time during the study period." Moreover, "income and demographic factors had no impact on the responsiveness to the monitor."

Houses With Electric Heating

Reductions in energy usage varied depending on whether or not the house used electric space heating. Houses with electric heat had electricity-use reductions averaging only 1.2%, while households with other types of space heating had electricity use reductions averaging 8.2%. According to Mountain, "A lesson learned is that separating out the feedback from the electric heating load and the rest of the load would be required to encourage conservation in this sector."

Most study participants liked the PowerCost monitor. "Our findings show a very high level of satisfaction with the real-time monitor," wrote Mountain. "According to questionnaire statistics, 60.5% of the participants felt the monitor made a difference in their homes. The majority of the participants, 65.1%, reported that they planned to continue using the monitor after the pilot was complete."

No Incentives Provided

The homeowners participating in the study were not provided any incentives other than the chance to lower their utility bill. Mountain wrote, "No other price or conservation incentives were given to

participants in the study. Therefore, the conservation results observed in the pilot are interpreted as the minimum to be garnered in the absence of other possible conservation incentives. Thus, if a real-time feedback monitor is used in conjunction with the provision of additional literature and tips on conservation or price measures, ... [further reductions in electricity use could be] feasible."

The study's findings stand in marked contrast to those of similar studies on programmable thermostats; in most cases, the installation of a programmable thermostat does not result in energy savings (see ***EDU***, December 2006).

According to David Curtis, director of business transformation at Hydro One, the utility has followed up the pilot study described here with a larger full-scale study involving 30,000 households in northern Ontario, all of which received PowerCost monitors. Results of the full-scale study should be available by the end of the year.

For more information, contact:

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NEW PRODUCTS

Flexible Sill Pan System

Protecto Wrap has come out with a new flexible pan flashing for use on rough window sills. Called the Protecto Sill Drainage System, the product comes in a roll and can be cut to fit any window opening width (see Figure 7). The flashing system meets ASTM E2112 requirements for sill pan flashing.

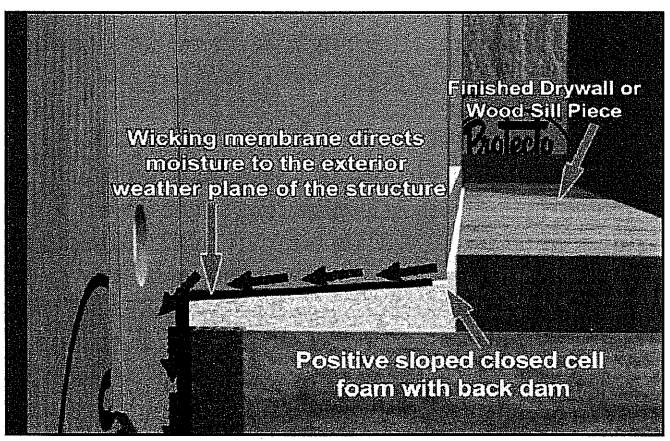

Figure 7. Protecto Wrap's Sill Drainage System is a multilayer flexible flashing for rough sills. The product includes a wedge-shaped layer of closed-cell foam capped with a layer of peel-and-stick membrane to shed water. Above the peel-and-stick membrane is a wicking layer of synthetic fabric to encourage any incidental moisture to dry to the exterior.

The Sill Drainage System is a flexible flashing with three layers. The bottom layer is a wedge of closed-cell foam designed to sit on the rough sill; this layer provides a slope to help shed water to the exterior. The wedge includes an integral back dam.

The middle layer consists of waterproof peel-and-stick membrane. This layer is wider than the bottom layer, with the extra width extending toward the exterior of the window, where it laps over the water-resistive barrier below the window.

The top layer is a synthetic fabric designed to wick moisture. If the flexible flashing ever gets wet, the top layer helps the flashing to dry to the exterior.

The Protecto Sill Drainage System appears to be a well-designed, easy-to-install product. Protecto Sill Drainage System is sold in 100-foot rolls in two different widths: 4 inches wide for 2x4 construction, and 6 inches wide for 2x6 construction. The 4-inch-wide product costs about $200 per roll.

For more information, contact Protecto Wrap, 2255 South Delaware Street, Denver, CO 80226. Tel: (800) 759-9727 or (303) 777-3001; Fax: (303) 777-9273; Web page: *www.protectowrap.com.*