Getting Excited about Science

Each year, pioneering ideas from the fields of mathematics, natural sciences and technology are honored in Siemens school competitions in the U.S. and Germany. The slogan for this year’s German competition was “Climate Change.”

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Unusual approaches are actively encouraged, explains Christa Mühlbauer. After all, in the advertisement for the competition, students were asked to give free rein to their fantasy. The task of the contest’s independent jury of experts is to select the cream of the climate protection ideas. Ten renowned scientists from Siemens partner universities, the Technical Universities (TU) of Munich and Berlin, and Aachen University, have been involved in deciding which projects are worthy of a prize. The winners were selected in April 2008. They were Rosa Meyer and Christine Maurer-Haggen from Hohenheim High School in North Rhine-Westphalia, who examined how the use of solar energy could cut CO₂ emissions in their local area. Their award-winning study earned them €30,000 in prize money.

“We will be awarding a total of €11,000 in prize money, some of which will also go to the departments of the supervising teachers,” reports Mühlbauer. The winning students can finance their studies with their prizes and also use the substantial savings in new office high-rises, swimming pools, and schools.

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High energy consumption in buildings is not only wasteful, but relatively easy to overcome. A growing focus on automation is helping to achieve substantial savings in new office high-rises, swimming pools, and schools.

It just about everyone’s heard of bosses who turn down the heat and turn off lights. These days, however, energy conservation is more than just a question of pinching pennies; in view of climate change, it’s become an urgent necessity. What’s more, it also pays significant financial dividends. For the past 30 years or so, most big buildings have been equipped with automation systems for monitoring and regulating a variety of complex equipment, ranging from heating to fire alarms and elevators. The potential for savings here is enormous, as buildings account for around 40 percent of total energy consumption and 21 percent of greenhouse gas emissions worldwide (see Pictures of the Future, Spring 2007, p. 83). So it’s not surprising that the European Union has issued a directive governing overall energy efficiency in buildings (see box, p. 30). The energy conservation wave has also hit the U.S., where Siemens Building Technologies (BT) is a member of the Clinton Climate Initiative (CCI). The initiative’s Energy Efficiency Building Retrofit Program is designed to make private and public building owners more aware of the need to modernize their building systems. “With its global presence, broad range of environmental-friendly building systems technology, and extensive expertise, Siemens is ideally suited to support the CCI,” says Bob Dixon, vice president of BT in the U.S., who is responsible for BT’s worldwide energy and environment activities.

Minor Improvements, Major Savings. In recent years BT has modernized automation systems in approximately 1,500 buildings in the U.S. For example, in Cleveland, Ohio, Siemens has renovated more than 200 apartments and buildings belonging to the Cuyahoga Metropolitan Housing Authority (CMHA). Replacing windows, repairing fitters and lighting systems, and making use of building automation systems will save the CMHA around $50 million over the next 12 years. Associated energy savings will add up to almost 8,400 tons of CO₂, and more than 250,000 barrels of crude oil.

Although regulatory requirements often set the stage for energy conservation, rising energy prices are the most fundamental trigger. Building managers today are truly amazed by how little it takes to reduce energy and operating costs by as much as 20 percent. “Operators of big buildings generally don’t realize how much energy they’re wasting,” says Thomas Baume, head of Energy Optimization Services at BT. “In order to understand, they need comparative data.” Siemens develops this information with the help of a site visit and the public data on similar buildings. A Web-based energy management program is used to process the data on similar buildings. A Web-based energy management program is used to process the data on similar buildings.