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Interview

Infrastructure & Cities Sector
Building Technologies Division

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“The energy-saving potential of buildings is largely left untapped”

Interview with Stephan Bauer, CEO of the Control Products and Systems Business Unit, Siemens Building Technologies Division, Zug, Switzerland

Mr. Bauer, you are running the international product and system business of the Siemens Building Technologies Division in Zug. What are your thoughts on the current energy and sustainability debate?

Buildings use approximately 40 percent of the energy produced worldwide and contribute 21 percent of all CO_2 emissions. In light of oil prices, which reached record levels just days ago, I find the energy and sustainability debate to be more than justified. And as we all know, energy demand will rise enormously in the years to come, along with the world population. The International Energy Agency estimates that the world population will grow by 30 percent between 2009 and 2030 while the demand for electricity will double over the same period. This means that the demand for primary energy will climb by almost 40 percent. This is an important debate, and it must lead to concrete actions as quickly as possible, not only to force the development of alternative energy sources, but also to conserve energy. The truth is that the energy-saving potential of buildings is largely left untapped.

Which issues will be particularly important for building owners and operators in the near future?

They are faced with a significant challenge: increase the energy efficiency in the building, operate a CO_2-neutral building and at the same time maintain comfort and safety. These are diverse topics, but they have one goal in common. New constructions must be planned and built in such a way that they can be operated energy-efficiently over their entire life span – from planning to dismantling. This view over the lifecycle of a building is critical because 80 percent of a building’s costs are incurred after completion, i.e. during operations. 40 percent of these costs are energy costs.

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In existing buildings, we can achieve tremendous energy savings by modernizing the building technology. An important consideration for building owners and investors is how quickly they can regain the invested capital in the form of energy savings. And if there are legally mandated CO_2 limits in place, those must be adhered to as well.

What are the largest levers to save energy in buildings?

The most effective way to save energy is to install a building automation system that controls heating, ventilation, air conditioning, lighting and shading. Optimization that is tailored to a specific building offers immediate savings of 15 to 30 percent, depending on the type of building and its location. Payback periods of three to six years are definitely realistic. Let's look at an example: In commercial buildings or production facilities it is more energy-efficient to lower and tilt the blinds on a hot sunny day and turn on the lights in the room. Since the room isn't heated as much by the sun, the cooling or air conditioning system doesn't have to work as hard – that's where the energy savings kick in. The interplay between the various building engineering systems can be automated by intelligently connecting sensors and software. Lighting and shading, heating and cooling can then be controlled in a way that achieves optimal energy efficiency and user comfort. A holistic approach to building control and automation is therefore absolutely crucial. Today, building engineering systems can be controlled from centralized management stations. They can also integrate safety and security functions such as fire safety, access control, video surveillance and intrusion detection. After all, comfort, safety and security go hand in hand.

What are the benefits that can be achieved with such an integrated approach?

Energy efficiency investments can be amortized quickly through lower energy costs. Sustainable and energy-efficient buildings also have a higher value and command higher rental and sale prices. In addition, management stations prove beneficial when it comes to maintenance since remote monitoring lowers maintenance costs and error messages alert operators when a subsystem, for an example an air conditioning unit, malfunctions. And last but not least, energy-optimized buildings demonstrate to users and customers that the building owner is serious about handling energy responsibly. This "green image" is becoming more and more important. Building automation systems allow for central monitoring and optimize the control of facilities and activities that are energy hogs. They are ideal for airports, office buildings and building complexes, for example university or corporate campuses. When the different building engineering systems work together seamlessly, it is possible to save a great deal of energy.

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Management stations, networked building controls – what are the typical characteristics of this kind of "smart" building?

A smart building offers optimized energy consumption and its energy use is monitored continuously by a management station. It can generate and store its own energy and it pulls in energy from outside when the rates are most favorable. Thanks to smart consumption, this kind of building becomes an active component of the smart grid.

What is needed from a legislative standpoint in order to advance the energy efficiency and sustainability of buildings?

Just like cars are subject to regular inspections by the authorities, I would like to see energy-efficient buildings monitored and recertified periodically, not just optimized during construction. If you don't continually monitor a building, it might begin to deviate from the preset target values over time. This causes energy consumption to rise over the medium to long term, and the building will once again become inefficient.

Building Technologies automation control products and systems are part of Siemens' Environmental Portfolio. In fiscal year 2011, revenue from the Portfolio totaled about €30 billion, making Siemens one of the world's largest suppliers of ecofriendly technologies. In the same period, our products and solutions enabled customers to reduce their carbon dioxide (CO2) emissions by nearly 320 million tons, an amount equal to the total annual CO2 emissions of Berlin, Delhi, Hong Kong, Istanbul, London, New York, Singapore and Tokyo.

The **Siemens Infrastructure & Cities Sector** (Munich, Germany), with approximately 87,000 employees, offers sustainable technologies for metropolitan areas and their infrastructures. Its offerings include integrated mobility solutions, building and security technology, power distribution, smart grid applications, and low- and medium-voltage products. The Sector comprises the Divisions Rail Systems, Mobility and Logistics, Low and Medium Voltage, Smart Grid, and Building Technologies. For more information, visit www.siemens.com/infrastructure-cities

The **Siemens Building Technologies Division** (Zug, Switzerland) is the world leader in the market for safe and energy-efficient buildings ("green buildings") and infrastructures. As a service provider, system integrator, and product vendor, Building Technologies has offerings for building automation, heating, ventilation and air conditioning (HVAC), fire protection and security. For more information, visit www.siemens.com/buildingtechnologies

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