

Interview

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“The greenest energy is still the energy we save”

Interview with Christoph Conrad, Head of Marketing Business Unit Building Automation,
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The word “sustainability” is being used to great excess at the moment. How do you define the concept?

You are absolutely right. The term is being used excessively. Ask ten people what sustainability means to them, and you'll get ten different answers. From the perspective of building technology, sustainability in commercial buildings means primarily that energy consumption for heating, ventilation, air conditioning and lighting has been optimized. But improved thermal insulation and advanced building design are part of it as well. In addition to these environmental aspects, the costs over a building's entire lifecycle also play a role as does sustainability for users, for example where their health is concerned.

According to this definition, sustainable buildings consume an average of 30% less energy than conventional structures. They also have lower maintenance costs and usually also require less water.

What energy savings can typically be achieved in building?

As a rule of thumb, I'd say we can save between 15 and 40% of energy in buildings through energy optimization. In Switzerland alone, buildings with outdated installations have an untapped savings potential of hundreds of millions of Swiss Francs. These buildings generate high costs and are also vulnerable where operating safety is concerned. There are four key levers that can be used to trim consumption in buildings and make them sustainable. The first step is to replace components in heating, ventilation, air conditioning and lighting systems with energy-efficient variants. Much can also be accomplished through the use of a building management system. Good thermal insulation of the building envelope is very important and, last but not least, measures to raise awareness can help users improve their consumption behavior. A study in England has shown that façade renovations can have the greatest single effect, although the payback period for this type of work is 30 to 40 years. Building technology and lighting have a similar impact on lowering CO₂ emissions, and the payoff period is much shorter – only four to six years.

The situation is quite different in new buildings, however. Here we need to take steps from the very beginning to minimize energy consumption, especially when the building isn't being used. After all, 80% of the costs over a building's lifecycle are from operations. Energy costs account for 40% of this amount. In other words: Over a building's lifecycle, the savings exceed the additional costs initially incurred for energy efficiency measures – usually in a short period of time.

The lifecycle approach thus reduces environmental pollution and saves the building owner money at the same time. Is cost the only consideration?

In light of rising energy prices, cost is indeed an issue. In addition to the cost reductions themselves, there are other good reasons to adopt the lifecycle approach in planning, constructing and operating buildings. For example, customer loyalty due to proven sustainable behavior is becoming increasingly more important to many companies. Sustainable buildings also have a positive impact on work productivity and employee health – aspects that are crucial from an economic and social point of view. The market increasingly demands new, innovative solutions for planning, construction and financing. A fundamental prerequisite is close cooperation between everyone involved in new building projects.

Certification systems are another clear signal from the market. Over the course of the last ten years, the number of certification systems has risen significantly, and they have expanded geographically. We see them as paving the way for sustainable real estate management as they make sustainability criteria transparent. There are many certifications that offer a suitable framework: the MINERGIE Standard in Switzerland, DGNB in Germany and the LEED certification on a global level. The standards vary slightly from country to country and they certainly could be made more uniform from the legislative side. However, standards and directives, like those the EU issues for zero-emission buildings, are, in principle, a step in the right direction. We have also seen that operators are able to command higher rents or selling prices for energy efficient buildings. In a U.S. study, researchers analyzed 500 buildings with the Energy Star rating or LEED certification and compared them with 10,000 buildings with a similar standard of quality or in a similar location. The result was that sustainable buildings commanded 6% higher rents and 16% higher selling prices.

Still, it is certainly more expensive to build an energy-efficient and sustainable building even if one can demand higher rents later on. How do you respond to this argument?

We demonstrate that energy-efficient and sustainable buildings pay off over their lifecycles. We even offer a savings guarantee for existing buildings – these savings finance the investments. This financing model is called energy performance contracting. In this model, the building owner arranges for a contractually agreed service with a company or contractor. The contractor handles

2 / 4

the investments and energy-efficiency measures in the building. They recover their expenditures through the success of the savings measures, that is, the building's reduced energy costs. The building owner does not need to make an investment, bears no risk and nevertheless participates in the success of the savings measures.

Since 1995, we have implemented energy-efficiency measures in around 6,500 buildings worldwide. These measures have saved our customers around €2 billion in energy costs. Half of these savings were achieved as part of approximately 1,400 energy performance contracting projects involving 4,500 buildings. This approach has eliminated approximately 9.7 million metric tons of CO₂ from the environment. To put this in perspective: In 2008, the CO₂ emissions of the city of Zurich were approximately 1.25 metric tons. Through contracts with our customers, we were able to save nearly eight times that amount – an accomplishment of which we are especially proud.

What does the future hold for energy-efficient buildings?

Many customers would like to know where they stand in terms of their energy consumption, and we help them make continuous adjustments. Often, these energy management and monitoring activities founder in everyday operations, due to other priorities or because companies struggle with margin pressures or staffing shortfalls. One example is the hotel industry where reducing energy consumption can very quickly affect margins. From one of our energy monitoring centers we connect to our customers' building automation systems and monitor their heating, ventilation and air conditioning systems and energy consumption. We also determine areas where control is poor or nonexistent. The reports we provide to our customers contain specific suggestions on ways to maintain energy efficiency during operation. A system that fails to be monitored tends to run less energy-efficiently over the medium to long term, and its energy savings potential slowly declines. Another point that should not be discounted is involving building users in energy savings initiatives.

Building automation and involving building users – how do these things go together?

Control within buildings is only one side of the coin. A building's full energy savings potential cannot be achieved without raising awareness among users or residents. Why not display the consumption data collected during energy monitoring to the users? Our "Green Building Monitor" gives building owners the opportunity to visualize their commitment to and investment in sustainable building operation. The primary energy and CO₂ emissions saved can be presented to employees and the general public in a prominent location with up-to-the-minute figures. In addition, the Green Building Monitor continuously promotes changes in energy usage by displaying clearly organized figures, graphics and examples. This makes it possible to provide information and, at the same time, maintain awareness of energy-efficient behavior at all times. Studies have shown that

people consume less simply by being aware of their energy consumption. After all, the greenest energy is still the energy we save!

Siemens' environmental portfolio

Building Technologies' portfolio for building automation is part of Siemens' environmental portfolio which earned the company approximately €30 billion in sales in the 2011 fiscal year, making Siemens one of the world's largest suppliers of eco-friendly technologies. In the same period, Siemens products and solutions enabled customers to reduce their carbon dioxide (CO₂) emissions by nearly 320 million metric tons, an amount equal to the total annual CO₂ emissions of Berlin, Delhi, Hong Kong, Istanbul, London, New York, Singapore and Tokyo combined.

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