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Trends in building technology

"Software will be the driving force in building technology"

Interview with René Jungbluth, Head of Solution and Service Portfolio, Building Technologies Division, Siemens

Mr. Jungbluth, has the market for green buildings become saturated?

The "green qualities" of buildings – resource-friendly and sustainable construction and operation – are and will continue to be an important differentiating factor in the real estate sector. This is true for new construction as well as for existing buildings in need of upgrading. Especially in older buildings, there continues to be enormous potential for improvement, particularly in terms of energy efficiency.

Under what conditions is a building considered energy-efficient?

Energy efficiency is a specific, quantifiable value that we collect using highly accurate energy performance measurements. We compare the readings with benchmarks for similar buildings across the industry. This allows us to determine efficiency objectively. We not only measure specific values but also make recommendations for practical improvements based on the structural situation and type of usage. The energy expenses saved through these improvements can also be quantified, and we can calculate when the investments will pay off. Investments in building technology typically pay off quickly, after six months to three years. Improvements to the building envelope, on the other hand, can take up to 35 years to amortize. In any event, it is very valuable for building operators to know where – and according to which patterns – energy is being used in their buildings. In the past, this kind of information transparency didn't exist – our experience has shown that time and again.

How important is energy efficiency certification?

To classify the energy efficiency of a building, certifications such as LEED are becoming more important. There are now specific certifications for certain types of buildings, such as the Certified Energy Efficiency Data Centre Award or CEEDA. This allows operators or facility managers to accurately compare their buildings with similar buildings in their industry. Especially for data centers that offer hosted and managed services for third parties or for colocators that provide infrastructure for hardware, energy efficiency is an increasingly important feature to set themselves apart from their competitors – not only in terms of costs but also for image reasons.

It's one thing to make new buildings energy-efficient. What can be done when it comes to upgrading existing buildings?

Of course, it is much easier to design a new building to be energy-efficient from the ground up than to upgrade an existing building. Let's look at photovoltaics to illustrate this point. Building-integrated photovoltaics modules, or BIPV, can be incorporated cost-effectively into ready-made building components. These modules then have to be connected to the building's storage and power management solutions and they have to comply with building and fire safety codes. Once these requirements have been met, the investment starts to pay off. Upgrading existing buildings, on the other hand, is often difficult, not least for aesthetic reasons.

How energy self-sufficient can a building really become?

Depending on the building, the type of photovoltaic modules used and the sunlight or shade exposure, the power generation potential can vary greatly. Our energy management systems must therefore take into account the many building features such as walls, storage options, windows, incident light and blinds. And it is not enough to simply attach the modules: The generated electricity must also be transferred and fed into the power grid.

What basic measures have proven to be successful in making building operations as energy-efficient as possible?

The most sustainable energy is always the energy which isn't consumed. The goal has to be to cool as little as possible in the summer and to heat as little as possible in the winter. Therefore, the demand for building systems that talk to each other and are managed centrally will increase, as will the demand for simulation tools which

forecast the future energy budget of a building even before its construction is complete. The objective is to design the best possible energy streams from the start.

So, the point is to monitor and analyze all the energy streams in a building holistically…

Correct. The conventional building automation disciplines have been expanded by energy monitoring and energy management, which run over the entire lifecycle of a building. This trend can already be seen today in commercial real estate. It will spread to the residential sector as well.

What does Building Technologies do in concrete terms to help building operators optimize their buildings?

In the future, not only will our building management systems control conventional HVAC equipment but the systems for fire safety and security will also be consolidated on a comprehensive management platform. The interactions between the disciplines will be taken into account. Our flagship system Desigo CC, which we launched at the end of 2013 in the U.S. and are now rolling out in Europe, is just such a management station.

What does the process look like in real terms?

Relevant readings from the disciplines connected to the management system are collected in real-time at multiple data points in the building. This can include usage data from an AC unit, feedback from a fire detector or simply the status of a door in a restricted area – open or closed. The data is compared to predefined setpoints. If deviations occur, an alarm is triggered automatically. This allows users to define the interconnections and dependencies between different disciplines: In the event of a fire, the doors to the stairwells are opened automatically to allow people to exit the building as quickly as possible. This presumes, of course, that all the disciplines are networked with each other.

With regard to networking, does this mean that digitization in building technology is becoming more and more important?

Absolutely. Hardware has long become a commodity. Software will be the driving force in building technology going forward. Software has to be intelligent, with sophisticated algorithms, to enable building users to map their processes. Management stations have to be ergonomical and intuitive to use in order to ensure

that building systems are easy to manage. Building systems do not have to be managed on-site: This can also be done remotely or by third parties.

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