SIEMENS

Background information

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One of Europe’s most sustainable buildings

When is a building environmentally compatible? When its operation consumes as few resources as possible. But also when it’s built of particularly environmentally compatible materials. The new Siemens company headquarters is setting standards in both respects. Already in the planning stage, sustainability was a chief consideration.

This is clear when you take a look at the steel, concrete and glass employed in the building’s construction. Only materials whose production, transport and subsequent disposal consume as little energy as possible have been used. Known as embodied energy, this concept is an important measure of the project’s environmental compatibility. And it’s an important consideration for a building that required 6,000 tons of reinforced steel (the weight of thirteen 200-meter-long Siemens ICE trains), 40,000 cubic meters of concrete (the equivalent of a ten-square-meter block 400 meters in height) and nearly 16,000 square meters of glass (more than the area of two soccer fields) for its façades. What’s more, the materials used had a high proportion of recycled content, and more than 10,000 cubic meters of wood and wood-based materials were obtained from sustainably managed forests. Instead of conventional wood preservation agents, the products utilized were environmentally certified and biologically-based.

The new headquarters’ comprehensive sustainability concept is illustrated by its exterior, which employs building materials from the surrounding region. The over 23,000 natural stone tiles with a total weight of almost 1,000 tons that have been used for some of its front façade and the internal and external flooring on the ground floor come from the Altmühltal nature reserve, which, known for its limestone, is just under 100 kilometers north of Munich. The tiles also decorate the façades facing the side streets.

The construction shell, its insulation and sun screening were planned from the

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outset to use as little energy as possible. A large number of additional measures will further reduce day-to-day energy consumption. For example, there will be 70 kilometers of water pipes running through the building's foundation plate, which covers 8,500 square meters, an area larger than a soccer field. To ensure that the building's climate is comfortable all year round, up to 100,000 liters of water will be pumped through these pipes via a high-efficiency ceiling heating and cooling system. In the so-called bivalent heating system, heat pumps will double as cooling devices, while ambient air and ground water will be integrated as regenerative energy sources.

All the façades facing the building's inner courtyards are slightly tilted and completely covered by well insulated triple glazing. These features will increase the amount of natural light that can penetrate the building's interior spaces and reduce the need for artificial lighting, which will be generated by 7,400 LED luminaires that consume only about half the electricity required by conventional lighting sources. Rainwater will be collected on the roof and used, among other things, to flush toilets or irrigate the building's outdoor installations. About one-third of the new headquarters' electricity will be generated by a photovoltaic system located on its roof. Intelligent building control and automation systems will cut electricity consumption even further.

The new headquarters will consume 90 percent less electricity and 75 percent less water than its predecessor. Its primary energy requirement will be 52 percent below the limit set by Germany's current Energy Savings Ordinance (EnEV). The electricity saved would power 750 four-person households every year. The water saved would meet the annual water needs of 180 four-person households. Improved heating systems will cut heating-oil requirements by 550,000 liters a year – enough to heat four hundred 100-square-meter apartments.

Due to its sustainability, the new headquarters building has received the highest certification possible (platinum) at the national level from the German Sustainable Building Council (DGNB) and at the international level from the U.S. LEED (Leadership in Energy and Environmental Design) system.

The new headquarters will also make a key contribution to Siemens' goal of cutting its CO_2 emissions in half by 2020 and of becoming the world's first industrial

company to achieve CO_2 neutrality by 2030. This will be a significant accomplishment since buildings consume extremely large amounts of energy, accounting for nearly 40 percent of all energy consumption Europe-wide. The new Siemens headquarters will emit nearly 90 percent less CO_2 than the old one, making it one of the most energy-efficient and sustainable office buildings in Europe.

This background information and further press material is available at www.siemens.com/presse/headquarters

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