



Sustainability and energy efficiency with maximum adaptability

Flexible building automation system enhances leasing opportunities

With 37 floors and a height of 137 meters, the “Sky Tower” has been a major feature of Bucharest’s skyline since 2012 as part of the Floresca City Center complex. The tower and adjacent six-story office complex comprise 54,000 square meters of usable floor space. Seven stories alone are occupied by the headquarters of Raiffeisenbank Romania. To best satisfy its tenants’ wishes regarding comfort, energy efficiency and space flexibility, building developer Raiffeisen Property Holding International focused on an intelligent and flexible building infrastructure from the start. To meet these requirements, the building automation system implemented by Vienna-based systems integrator GTS Automation uses building automation solutions from Beckhoff.

“We develop properties with enhanced value by focusing on sustainability, energy efficiency and modern functionality,” says Bernd Steingruber, Senior Expert at Raiffeisen Property International GmbH (RPHI) in charge of the Floresca City Center (FCC) project. “Our goal with this project was to provide Raiffeisenbank Romania and all other potential tenants of the FCC building with energy-efficient, modern spaces that feature maximum flexibility,” adds Steingruber. “Working with GTS proved to be the ideal choice, because as a specialist for building automation and control systems, they have the experience and creativity needed to implement intelligent controls for primary systems and individual rooms.”

Maximum flexibility – down to the smallest office space

Though an experienced developer of high-quality offices and industrial properties, RPHI routinely encounters situations that cannot be anticipated. The FCC project was no exception. “The bank wanted to add a data center as well as a cafeteria. While the building was originally designed almost exclusively based on the requirements of Raiffeisenbank Romania, the company ultimately was content with the FCC office and seven additional floors in the Sky Tower,” says Bernd Steingruber.

“Our buildings have efficient floor plans and ample natural light. The offices are user-friendly, functional and feature high-quality components,” the project manager continues. The main requirement for the Sky Tower was to have maximum flexibility, down to the smallest office space. “Most leases run for three, five or seven years, and no one knows what will happen afterwards so floor plans are always subject to change. In addition, existing tenants’ needs change constantly. They want to expand, divide an open floor plan into many small offices, or go the other way and take out walls. We are dedicated to accommodating such changes with an infrastructure that is easily adaptable to new conditions without having to tear up floors, run new wiring or make additional significant investments in hardware or software,” says Bernd Steingruber about the reason why he wanted GTS to install a sophisticated room-by-room control system laid out in a grid. This was the best option to make reconfiguring spaces as easy as possible via ‘drag-and-drop’. “The special challenge regarding the HVAC systems in the Floresca City Center was to design them to be as flexible as possible for changing office concepts. The I/O system is based on modular Bus Terminals from Beckhoff, which makes it possible to quickly reconfigure the architecture,” explains Georg Kubasa, CEO of GTS Automation. For example, the company employed the KL6581 EnOcean master terminal on the seventh



With its 37 floors and a height of 137 meters, the Sky Tower stands out in Bucharest's skyline.

floor of the Sky Tower. "The raised floor had the proper wires preinstalled, but because of various modifications by the tenant they were no longer accessible, which is why we switched to a wireless communication solution. However, with the modular Bus Terminal system, integrating EnOcean technology was not difficult," points out Georg Kubasa.

Standard solutions: Redundant control systems for maximum reliability

In the past, automating a manufacturing plant and a building required two completely different approaches. Now, given that various high tech components are increasingly connected with each other for reasons of energy efficiency, and building automation systems are becoming much more advanced, industrial

standards are becoming more common in office buildings. A major keyword in this respect is reliability: "In matters of security and everything that has to do with water, I accept no compromises from our contractors, as these things generate the greatest damages if something goes wrong," says Bernd Steingruber, based on his many years of experience in the field. He also stresses reliability in all matters related to heating, ventilation and air conditioning (HVAC): "The tower runs fully redundantly on two parallel systems." If something fails, a backup system kicks in within a few milliseconds. "The individual floors operate without their own intelligence. We operate each entry and exit via a central server on the ground floor instead. This provides all monitoring activities with cycle times in the millisecond range," adds Georg Kubasa. The evon XAMcontrol system installed by GTS reads and visualizes roughly 8,500 hardware datapoints.

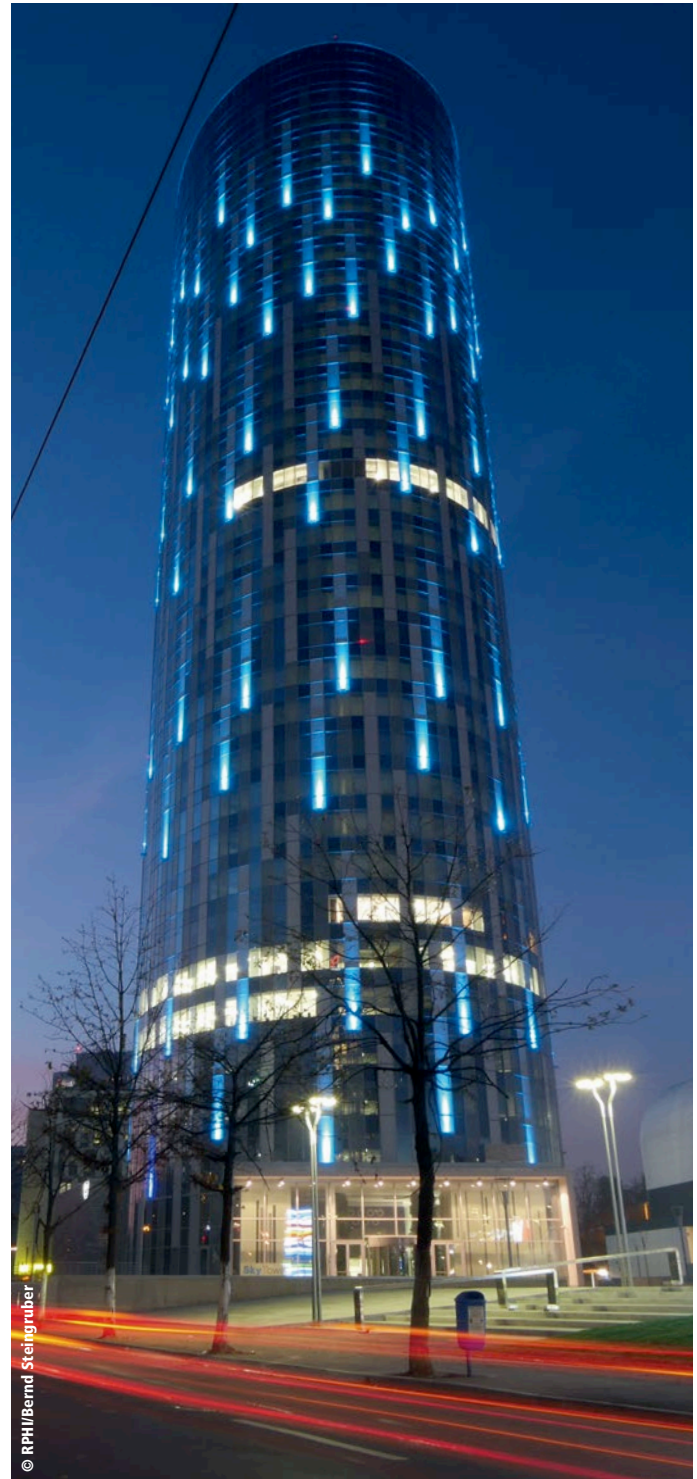
The entire control system architecture is based on Beckhoff components: 156 redundant BK9050 Ethernet TCP/IP Bus Couplers for individual room controls and the central HVAC controls, 413 digital KL1408 input terminals for linking the room control panels, 525 KL2408 digital output terminals, and a few other terminals functioning as data collectors that interface with subsystems.

Systematic space savings

"Wherever space is at a premium, Beckhoff has the right solution," explains Georg Kubasa. "The broad portfolio of I/O terminals covers the entire spectrum of signals in building automation applications." The GTS manager knows only too well how difficult it is to accommodate tight spaces: "The modular Beckhoff components take up much less space than other systems – that's a huge advantage. It even enables me to run ventilation systems with small wall cabinets instead of freestanding distribution boxes." Another hardware feature appreciated by the Vienna-based automation and controls expert is the modular Beckhoff Bus Terminal principle, where units are simply installed in a row on DIN rail. Expanding or modifying such a system is just as easy as adapting it to new conditions by adding or exchanging terminals. For example, the Floresca City Center project required the coordination of a number of devices via Bus Terminals and Couplers, including: the lighting (DALI), various meters (M-Bus, S0 interface), devices such as the forced-air ventilation system and the smoke extraction fans (Modbus), special buttons (KNX) and many radio-controlled actuators and sensors (EnOcean) on the Sky Tower's 7th floor. The entire system is networked via fiber-optic cables and the communication protocol is TCP/IP.

Clean air and amazing views

When the number of Raiffeisenbank Romania's executive meeting rooms on the Sky Tower's 7th floor increased from the originally planned two up to eight, Georg Kubasa was faced with the question of where to get the air for four times as many rooms. "With the appropriate control logic, it was easy," says the systems integrator. "Each meeting room has presence sensors and CO₂ detectors. That way, the system can spread the available air evenly over the rooms that are in use. And if all are occupied, the room with air quality most in need of improvement takes precedence."



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Further information:

www.gts-automation.com

www.skytower.ro

www.rphinternational.com

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