

The perfect atmosphere for innovation



MB Telecom is the only two-time winner in the 44-year history of Geneva's International Exhibition of Inventions.

At MB Telecom's new headquarters in Bucharest, an APROL building management system provides a comfortable atmosphere so employees can focus on their innovative projects.



When a company with a reputation for award-winning innovations builds a new headquarters, it's no surprise that the facilities will feature the latest in building automation technology. MB Telecom optimized energy costs and minimized environmental impact with a building management system (BMS) based on the B&R APROL distributed control platform. The building's sophisticated climate control allows employees at the Romanian R&D powerhouse to focus on revolutionary projects equipped with B&R control technology.



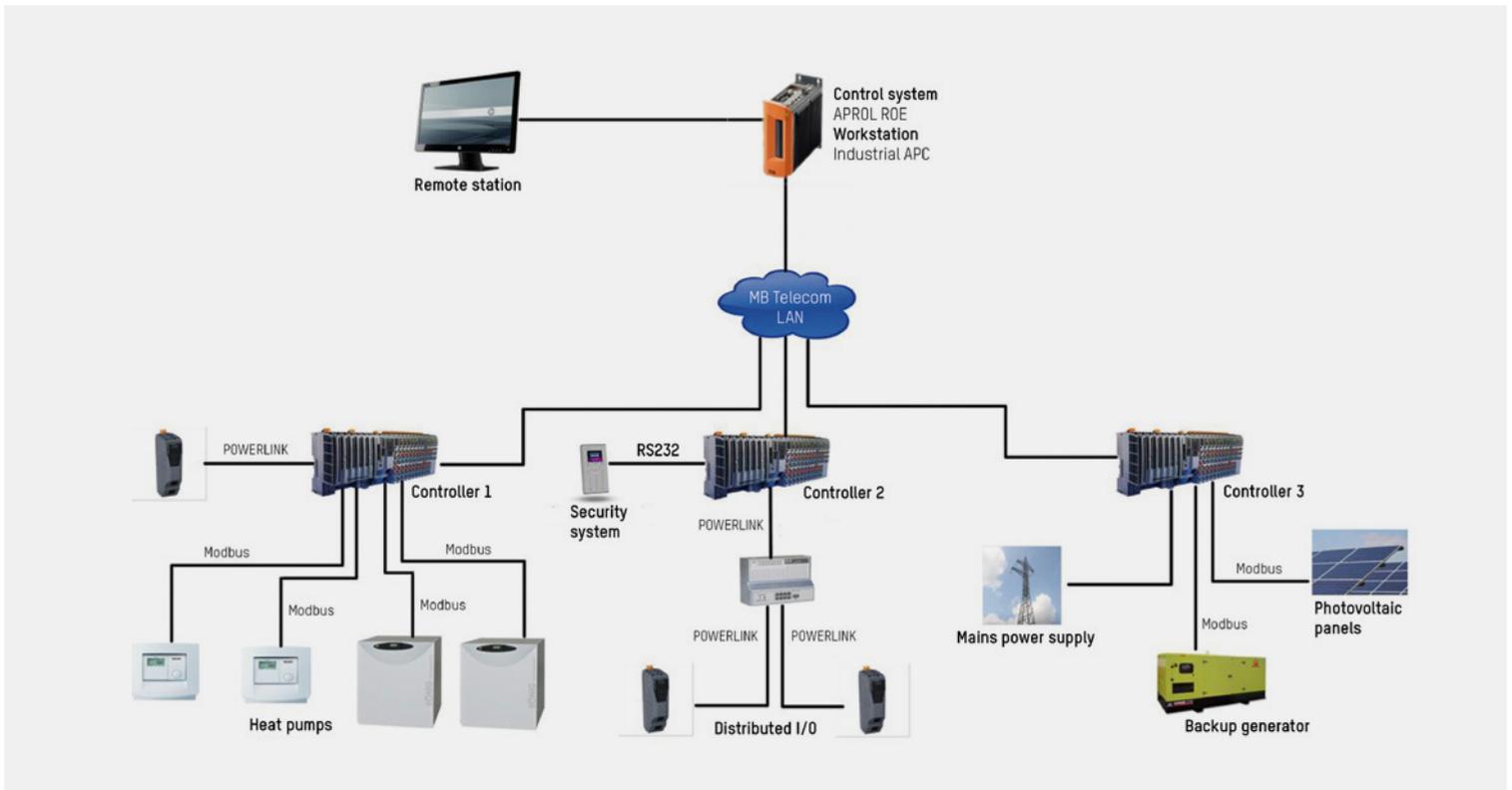
If you've ever traveled by airplane, especially in recent years, you've had your entire body and all your luggage scanned as you pass through airport security. It would seem, in fact, that the only thing in the air that hasn't been scanned is the airplane itself. MB Telecom is changing that – and revolutionizing the field of aviation security – with Roboscan Aeria. This boom-mounted x-ray scanner featuring B&R control technology is able to identify narcotics or explosives, even if hidden in cavities of the fuselage or wings that would otherwise be practically inaccessible to inspectors. Not only that, but a single operator can complete the job in minutes.

As one of Romania's largest system integrators, MB Telecom (MBT) designs, develops and installs high-tech security solutions at borders, airports and seaports, as well as being deeply involved in a range of national and international research projects. Award-winning breakthroughs like Roboscan Aeria and Roboscan 1MC for trucks and containers highlight MBT's intense focus on R&D and innovation, as well as the success of its collaboration with controls partner B&R.

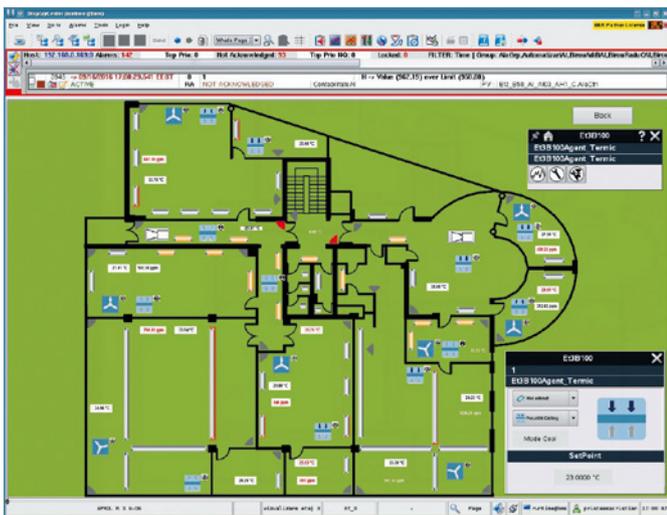
Green building for maximum comfort and minimal costs

In 2009, it was time for the quickly growing company to expand into spacious new headquarters. The project would also include construction of an interdisciplinary research facility – the largest in Eastern Europe – to house MBT's newly established R&D directorate. MBT had ambitious plans for its new headquarters from the start. It wanted a building that would serve as an outward expression of the organization's culture of innovation while providing a comfortable, efficient atmosphere for its employees to focus on their demanding work.

To solve the primary goals for the new facilities – high levels of energy efficiency and personal comfort – MBT planned to use the latest geothermal and photovoltaic technologies. These systems feature a complex assembly of sensors, meters and actuators used to



Three B&R X20 controllers connect the building's subsystems to the APROL BMS system running on a powerful B&R Automation PC.



Temperature, lighting and air quality can be adjusted per office, accounting for factors such as occupant preferences and weather forecast.



With CO₂ sensors in every room, the APROL BMS is able to supply meeting and conference rooms with fresh air on demand.

measure and control ambient conditions such as temperature, pressure, humidity, CO₂ and lighting.

For the various building services to function with optimal efficiency and provide the benefits that MBT was looking for, they would need to exchange data, share functions and monitor one another. In other words, what they needed was an advanced building management system – or BMS – to monitor and manage multiple systems from a central location. A BMS would also allow those systems to interact for more efficient control strategies and open up the possibility for advanced functions like remote service.

Three systems, one solution

Having identified the need for an integrated hardware and software platform, one potential partner immediately sprang to mind. "After the success of the Roboscan and other projects using B&R control solutions, B&R was the first choice among our engineers," says MBT's founder, Mircea Tudor. The decision was sealed when evaluations confirmed that B&R's APROL DCS platform would indeed provide the necessary flexibility the building management project required.

The core of the BMS architecture consists of 3 X20 controllers, each dedicated to one of the building's subsystems for electrical power, climate control and security. The controllers are connected via POWERLINK to the APROL system at the main workstation, which runs on a powerful industrial PC from B&R's Automation PC series.

Minimal utility costs and environmental impact

One controller integrates the electrical power management sys-



With B&R technology controlling its scanner and robotic tug, MBT's Roboscan Aeria is revolutionizing the field of aviation security.

tem, consisting of a mains supply, the 100-kilowatt photovoltaic system and a backup power generator. To monitor energy supply and consumption, the system uses energy measurement modules from B&R's X20 I/O-system. Intelligent utilization and monitoring of power helps reduce the utility costs of the MBT headquarters while at the same time minimizing its environmental impact.

Maximum flexibility and comfort

Another controller is dedicated to the heating, cooling and ventilation (HVAC) system. The HVAC system integrates four heat pumps and one air handling unit that provides fresh air throughout the building. Thanks to APROL's flexibility, integrating the disparate 3rd-party technology involved was no problem at all.

The APROL BMS solution provides intelligent distribution of fresh air, so that spaces that are occupied on temporary basis, such as meeting and conference rooms, receive fresh air on demand when room sensors report an increase in CO₂ concentration. Modules distributed on each floor measure and control the various climate parameters. Temperature, lighting and air quality can be adjusted per office, taking into consideration factors such as the number of occupants, their comfort preferences and the weather forecast.

Integration challenges mastered with ease

The power and climate control systems, as well as the access control, smoke detection and fire protection systems integrated via a third controller, all come together in the APROL BMS solution at the main control station. "Achieving interoperation between equipment from different suppliers using different technologies was a challenge," recalls Tudor, "but the versatility of APROL allows



Mircea Tudor
Founder, MB Telecom

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The APROL system provides a process automation library (PAL) containing standardized modular control functions, including a subset for building management systems. In the course of implementation, it became evident that a cascade control loop would be needed to increase the energy efficiency of the overall system. MBT engineers were able to solve this by implementing a custom software library that runs on the APROL platform along with a complex algorithm to compute optimum parameters for each heat pump controller.

"The APROL building management system makes our facilities a real pleasure to work in," concludes Tudor. "And it's so easy to integrate I/O modules via POWERLINK that we'll have no problem scaling up with even more exciting functionality in the future." ←