

→ The PC-based control system from Beckhoff is also increasingly used for intelligent building automation. In a variety of projects, the company Herrmann GmbH is using Industrial PCs, Bus Terminals and the TwinCAT automation software.

Flexible building automation with the Beckhoff automation kit

For a number of years, the company, based in Plüderhausen, Germany, has been carrying out building automation and building management refurbishment work at the Allianz head office in Stuttgart. The refurbishment concept proposed by Herrmann envisaged to integrate the existing building automation system, which was based on older AEG technology, into the new system without interrupting the operation. A demanding task, considering that around 20,000 connected data points had to be processed. Beckhoff products are used in the refurbished areas; in parallel, some of the AEG technology remains in the Allianz building. The Beckhoff Bus Terminals used in the refurbished areas were initially networked via Profibus. Meanwhile, Ethernet is used for the continuously progressing refurbishment.

Case study: refurbishment of the building management system at the Allianz building in Stuttgart using high-tech automation tools

The Allianz project combines different technology worlds: Apart from the AEG world, solutions from Siemens and Beckhoff are interlinked via the building management system. The greatest challenge was the large number of binary data points, which all had to be integrated into the new hercon building management system from Herrmann. More than 20,000 data points were distributed across three buildings. The client specified that the existing building management network should be used. The initial aim of this refurbishment phase was the replacement of the building management system computer, with continued utilization of the existing substations. Technically, the existing network was a telephone wire network. For the refurbishment of the substations and for the data collection from existing equipment, Herrmann suggested to use Beckhoff Bus Terminals with Profibus interface. Via Profibus, data could be transmitted through this network with the lowest transmission rate of 187.5 kbit/s.

Allianz
head office in
Stuttgart



The first application of the Bus Terminals was data collection at a lift installation. Once this application had been commissioned successfully, local intelligence was used for the subsequent application. The intelligent BC3100 Bus Terminal Controller was used, which contains a mini-PLC for small PLC applications. The aim was the realization of a fail-safe solution. Associated with this solution was the "discovery" of the Beckhoff automation kit by the company Herrmann. "In this way we examined the wide variety of the Bus Terminals, the Industrial PCs, the TwinCAT software PLC, and the openness of the system including OPC, and we investigated how we could integrate these options into our solution strategy", said Gerhard Haag, project engineer at Herrmann.

Depending on the signal form, i.e. single or two-channel, the appropriate solution could be implemented with the Beckhoff terminal blocks like in a construction kit. This was one of the most important arguments for the use of Beckhoff products. The modularity and the associated cost advantages enables customers to move from existing, out of date technology to a new, modern technology with little expense. The refurbishment of the building management system is completed, but the Allianz project is still continuing. The older building management system substations are gradually being replaced with Bus Terminals. This work is likely to continue for several years. The original strategy had been to keep the existing equipment and to supplement it with Beckhoff products. The arrival of the intelligent Bus Terminal Controllers provided the opportunity to realize decentralized intelligent individual solutions. "The solution concepts now on offer could not be realized previously. The number of ideas has literally exploded", comments Michael Falkenstein, instrumentation and control specialist at Herrmann. The BC9000 stations are now used with Ethernet interface, and an Ethernet network for building automation has been implemented. Distributed intelligence enables the creation of redundant control solutions, for example for the control of the refrigeration technology that is essential for a data center.

The individual projects realized at Allianz up to now deal with the refrigeration system, heating and ventilation equipment, data collection, intelligent camera control, lighting control and the logging of energy use. From the Beckhoff automation kit, the elements Bus Coupler, Bus Terminal Controller, Bus Terminals and the TwinCAT software PLC are being used.