



LTU arena, Düsseldorf: High technology in the VIP box

PC Control in the lime-light: Optimal lighting for any occasion

Over recent years, Beckhoff has made a name for itself in building automation technology, particularly for industrial buildings. In addition, several German football (soccer) stadiums are among the high profile application examples from the company: For example, all lighting at Allianz Arena in Munich, including the famous facade, and the movable football pitch at Veltins Arena in Gelsenkirchen are controlled with Beckhoff technology. The innovative building automation system for the VIP box of GTE Gebäude- und Elektrotechnik GmbH at the LTU arena in Düsseldorf is also based on hardware components from Beckhoff.



The LTU arena in Düsseldorf is a highlight among stadiums in Germany. As a multi-purpose arena with a capacity of 51,500 seats, movable roof and "Media Screen" facade, it offers an ideal venue for sporting events and concerts. GTE Gebäude- und Elektrotechnik GmbH & Co. KG has equipped the arena with state-of-the-art building services and is responsible for day-to-day operation. In order to present their Building Automation over IP (BAoIP) effectively, GTE has been reserving a 65 m² box with a capacity of 24 seats at LTU arena since February 2007. All room functions are controlled via the Internet-based software platform raumtalk®, which offers flexible expansion of building automation standards such as climate and lighting with safety, multimedia, facility management, office automation and other functions.

Multi-functionality in the VIP box

The VIP box is a multi-functional space that meets all requirements for meetings, presentations, workshops and catering. In addition to state-of-the-art presenta-

Elaborate LED illumination of walls and dimmable ceiling lighting offer optimal light conditions for any occasion. Green-bluish light provides an objective atmosphere for workshops or business meetings. Red and yellow tones provide atmospheric warmth and comfort for lunch.

tion equipment that is recessed in the ceiling, the room has a highly sophisticated lighting system. Colored LEDs distributed along the walls and groups of ceiling spotlights create optimal light conditions and moods for any occasion. All room functions such as lighting, media control, blinds and air-conditioning are controlled by Beckhoff components. Eric Giese, Director for BAoIP at GTE, gives the following reasons for the decision to use Beckhoff components as the hardware basis for raumtalk®: "raumtalk® integrates a wide range of building functions through standard IT technology. To this end, we need a hardware platform based on Ethernet that is very flexible with implementation of specific customer requirements. Beckhoff, as a leading supplier of Ethernet and I/O systems is the ideal partner for us when it comes to implementing these requirements."



The distribution of the colored molded seats is deliberate and based on an exact scheme drawn up by the architect: In television broadcasts the stadium appears well occupied, even with a moderate number of visitors.



Control units such as PDAs, mobile phones, PCs, touch panels or IP phones communicate with the CX9001 Embedded PC directly via Ethernet web service technology.

Case modification puts the Beckhoff controller in the limelight: Colored LEDs make the I/O station with CX9001 Embedded PC appear in varying light.

Embedded PC becomes the lighting control VIP

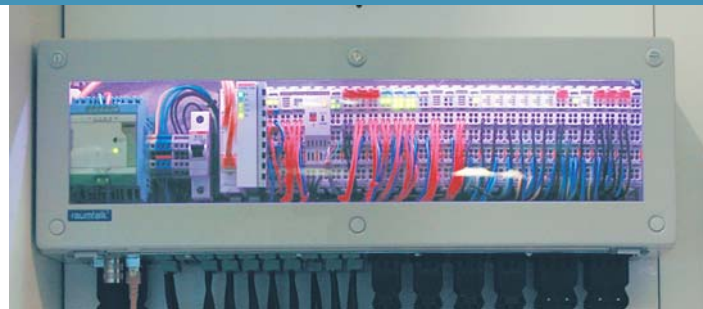
The controller centerpiece is the CX9001 Embedded PC with Windows CE as operating system and TwinCAT PLC as the PLC controller. The small-format Industrial PC is directly mounted on DIN rail and located within the VIP box in a glass terminal box and is illuminated with colored LEDs. On the CX9001 all functions are made available through the raumtalk® software via standard Web service directly in the network. This enables operation via PDA/mobile phone, PC, touch panel or IP phone. The control units communicate with the CX9001 Embedded PC directly via Ethernet web service technology. Communication with the IP phone takes place via web server. "Due to its high transfer rate, Ethernet offers adequate capacity reserves for image and voice data and multimedia functions – in addition to data communication for the building services," Eric Giese said. "In the VIP box we use an integrated data infrastructure for the IT network and building management purposes. The use of standard technologies reduces installation, maintenance and service costs."

Ideal lighting for any situation or mood

All actuators and sensors for the VIP box are connected via the Beckhoff Bus Terminal system. For example, the ceiling spotlights and colored LEDs are directly controlled individually or in groups, depending on the required illumination scenario. In addition to color nuances, the light intensity is crucial for the atmosphere in a room. "This is where the KL2751 dimmer terminals from Beckhoff come in," Eric Giese said. "We are able to select light intensity values via the controller process data according to the required atmosphere."

User-friendly with versatile operation

"A further highlight is the integrated operation of the room functions in the VIP box via raumtalk®," Eric Giese said. "We require only one light switch with EnOcean technology for basic illumination. All other control options are implemented via Internet applications through so-called SoftControls based on PCs,



touch panels, PDAs/mobile phones or IP phones." The light switch with EnOcean technology is connected via the KL6023 wireless adapter from Beckhoff. "The KL6023 enables mixed operation via SoftControls and EnOcean radio switches," Eric Giese said. "In this way, we can create cost-effective and flexible operating systems without significant cabling effort." The controller for the VIP box is integrated into the higher-level building controller via LON Bus Terminals, which means that SoftControls can also be used to control higher-level functions such as air-conditioning.

Flexible and easy to adapt

"Subsequently, modifications or extensions are no problem for us," said Eric Giese. "They are implemented in the building floor plan via the management software and automatically realized in the controller through raumtalk® at the push of a button. Thanks to the flexible and modular Bus Terminal system from Beckhoff, hardware extensions and upgrades are also not a problem."

- > www.ltuarena.de
- > www.raumtalk.net
- > www.gte.wisag.de