Beckhoff Building Automation implemented at Green Office Building

Optimum lighting conditions with maximum energy efficiency

The office development in Fairland, Randburg (on the outskirts of Johannesburg) was built to house WesBank and First National Bank (FNB) Home Loans Head-offices (consumer divisions), based on an energy-conscious overall design concept. Comprising two levels of 64,000 square meters the structure houses a 1,600-car super basement, two separate office buildings of three floors, a shared facilities building and related external and site works. Beckhoff Bus Terminals and CX9000 Embedded PCs manage the entire lighting interface.

According to Richard Angus, Chief Operating Officer of FNB Home Loans, one of the divisions that will occupy the building, this is an example of best-of-breed environmentally friendly development. This commitment began with the digging of the foundations for the project. "It took a year to dig the foundations but soil was not moved from the site. Instead it was dispersed around the site and used in some of the landscaping. We also had an onsite concrete batching plant, which meant that trucks were making shorter trips and using less fuel," says Angus.

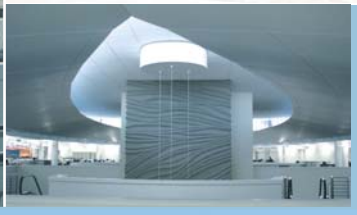
The building automation solution focuses on occupant comfort and energy-efficient operation. The lighting management has been fully automated using Beckhoff Building Automation products. The contractors involved were: Claassen Auret Incorporated, the project consulting engineers; A to Z Electrical, the main electrical contractor; and Systems Automation & Management (SAM), the system integrator responsible for lighting control in the building.

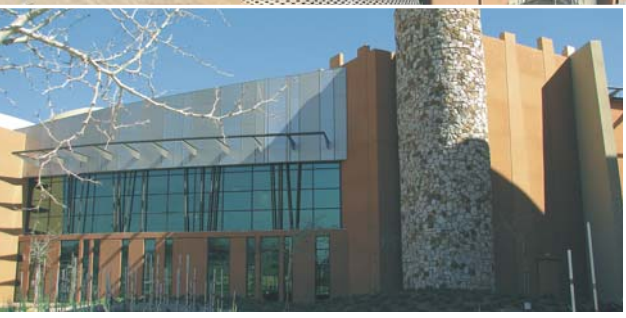
Flexible lighting management with DALI

A total of 24 Beckhoff CX9000 Embedded PCs manage the entire digital addressable lighting interface (DALI) through 150 KL6811 DALI master terminals. The goal was to ensure code re-usability and flexibility that would easily accommodate changes to the building's design, thus maximizing the energy efficiency of the entire system.

Throughout the facility, presentation and meeting rooms are controlled via EnOcean switching technology. Beckhoff KL6023 terminals interpret the wireless switching signals used to generate and control the selected lighting scenario required in each room. The presentation rooms also allow for integration with the audio visual (AV) systems, ensuring the lights adapt automatically to the selected AV mode. In the shared facilities area, large function venues can be split into separately controlled lighting zones or joined together to form one large zone.

Light management in the open office areas has been implemented using time, presence and occupancy information – no external switches have been installed. Motion detectors detect presence and occupancy in all open areas and are connected straight onto the DALI bus, from which they are also powered. Approximately 800 of these sensors have been used throughout the





building. The sensors are read directly by TwinCAT. The information is used to switch lights on or off, as well as to regulate the light output in order to create pleasant and constant ambient lighting conditions at maximum energy efficiency.

→ Beckhoff South Africa **www.beckhoff.co.za**
→ Building Automation **www.beckhoff.com/building**