



KNX Association

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Sauerland Pyramids for Production, Administration and Training

Energy Efficiency and Comfort with a KNX Network



Picture 1. The Sauerland Pyramids in twilight.

The new construction in Lennestadt-Meggen consists of three different sized pyramids with a total of 1844 m² usable area. They are used differently: Administration, production and storage, training rooms for non-medical practitioners, event and exhibition, as well as therapy applications. The new building was designed for sustainability, comfort, flexibility and easy operation.

A geothermal heat pump system provides heating and cooling. Fresh air is provided by air-handling units with heat recovery. All windows are operable and

are equipped with automatic sun shading. In addition to the systems mentioned above, the following systems were also connected to KNX: automatic doors, alarm and fire alarm system, access control system and public address system in the therapy center. Different beamers and large projectors are used for presentations in one of the pyramids. Phone, IT and network cameras are integrated with a single network. The use of shielded wires for the power distribution reduces electromagnetic interference.

Benefit of KNX for this Project

- Energy optimization thanks to the integration of all trades with KNX
- Increased comfort with optimized temperature and air quality, automatic switching of lights, individual adjustment from the PC at the desk.
- More efficient work environment through automation and communication
- Safety and automation combined: motion sensors switch the lights and detect unauthorized persons

Project-Nr.: Z3-08-D

Country: Germany

Type of Building

■ RESIDENTIAL

- Single Family Home
- Apartment Building
- Senior citizen home
- Assisted living

■ COMMERCIAL

- Office / Public Administration Building
- Business
- Entertainment (Cinema, Theater, Museum, etc.)
- Health Care
- Educational (School, University, etc.)
- Recreational (Sport, Wellness, etc.)
- Industrial
- OTHER

Trade / Systems

- Lighting
- Shading / Daylighting Control
- Heating, Ventilation, Air-Conditioning
- Household appliances
- Alarm Systems
- Monitoring
- Energy Management System
- Smart Metering
- Audio/Video
- Visualization
- Interface to other Systems
- RemoteControl and Administration
- Other Application

Size

- Number of Areas / Lines: 1/4
- Number of KNX Devices: approx. 146



Picture 2. Reception with central touch panel and access to all systems



Picture 3. Every windows features automated sun protection, is operable, includes window contact switches and is fully integrated into the network

Combination of KNX, LAN and Central Intelligence

According to the goals that were set by the owners to provide a sustainable, healthy, logical and customized operation of the building complex with very different and flexible use, all systems were designed as integrated systems. The interconnection was implemented by the building system via KNX and combined with the IP network for multimedia applications and central server which allowed the following functions among others: With a web-based visualization all functions can be administered and monitored from a touch panel and from any PC from inside and outside the building over the Internet. Weather data like wind, precipitation or light level are measured centrally and are provided for the control of the shading system, the windows or the lighting system. Dim modules control the artificial light based on the available daylight and allow light scenes for special events. A dial pad offers switching possibilities (e.g. the barrier system) via KNX, phone or mobile phone.

The entire building is fitted with fire detectors. When triggered they activate certain functions via KNX, e.g. alarming of the fire department, security services, the management and switching on of lights. The alarm system is turned on with transponder and codes off the access control system via KNX. The entire complex has 16 video cameras installed with central image storage. An outdoor camera with the functions of swivel, tilt and zoom is controlled via KNX.

Individual Comfort Combined with Energy Efficiency

Every room features individual room control for heating and cooling, in part with LCD display and local control. All set points can be administered via visualization from any PC in the network. Temperature and run times can be visualized in diagrams and databases. The window switches of the alarm system turn down the heating system to freeze protection. The heat pump is set to cooling mode based on outdoor and indoor temperatures.

Sophisticated features

- Room temperature can be individually controlled from any PC
- No light switches; lights are switched by alarm system motion detectors. This function can be overridden by the PCs at the desks.
- When the alarm system is turned on, all lights are switched to motion detector mode, the heating system is set to standby mode, the ventilation system to its lowest setting 1, the shading system opens and all windows heating system is set to standby mode, the ventilation system to its lowest setting 1, the shades are opened and all windows are closed.

Involved Parties

Owner:

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Architect:

Architecture Office
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HVAC Contractor:

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Electrical Engineer and System Integrator:

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Awards



KNX Award 2008
Category National