

Residential home in Cape Town

KNX enhances comfort and promotes green living in a stunning location on Table Mountain

This new home, perched on the slopes of Table Mountain overlooking Cape Town in South Africa, not only enjoys superb views across “Table Bay” and the city centre, but is also a visual treat in its own right. The architecture is contemporary, distinctive and transparent. The house is made up of two building sections with a total of four floors, topped with an asymmetrical roof providing protection against the blazing sun. Built using sustainable construction methods and intelligent insulation, insulated windows, solar heating, photovoltaics, underfloor heating, a heat pump system, radiant cooling, use of rain/well water and subsequent recycling, it can justly be called a “green building”. The building services in this highly sophisticated home are controlled by KNX. The project, designed and executed by a partnership between the system integrator Jesús Arias from Ávila, Spain, and AMC German Technology from Cape Town, South Africa, was the recipient of this year’s “International – Africa, America and Australia” KNX award. The house’s lighting, blinds and HVAC, alarm, technical monitoring and audiovisual systems are controlled by a total of 185 KNX devices. The lighting system was designed with a firm focus on convenience and efficiency: in the living area, scenes can be called up at the push of a button to create lighting moods tailored to a given situation. The lighting control system includes DALI lights connected via a KNX gateway, LED technology, low voltage lights, and even ornamental fibre optic luminaires integrated into the main deck of the house. The window surfaces, most of which extend all



The stylish residential home on the slopes of Table Mountain overlooking Cape Town. Its KNX installation was the recipient of this year’s Africa, America and Australia award.

the way from the floor to the ceiling, are protected by a total of 96 shutters that users can control individually, in groups or for a whole facade. For optimal glare protection, the curtains can also be precisely positioned manually. And the shutters are also opened and closed automatically by a solar tracking system controlled by a weather station. The building’s heating and air conditioning systems are likewise in line with the latest environmental standards. KNX activates the valves and circulation pump in such a way as to meet occupants’ heating and air conditioning needs as energy-efficiently as possible. In addition to room temperature control, the system also changes the operating mode according to a weekly timer programme. The timer can be manually overridden at any time.

Energy management

KNX smart meters constantly measure and document the house’s mains electricity use, solar power production, battery charge level, and water consumption, including the level of the well water. That way, the occupants always know how much power and water they are using. The house employs an energy management system to keep

it reliably supplied with energy and water. In case of a power failure, the house draws energy from its solar backup batteries. If the charge level of these batteries falls below 50 %, the users are notified of this fact via the system visualisation. The demand side management system can then be used to switch off any power consumers that are not strictly necessary. A special function of KNX in this property is the protection it provides against mould. It does this with the help of humidity sensors integrated in the building’s automatic ventilation system. The sensors constantly measure the dew point and are able to shut down the radiant cooling system to prevent condensation or moisture formation. To give users peace of mind that the recycled water they are using is always of a high quality, a KNX pH/ORP sensor measures the water quality and displays it on the visualisation.

Remote access

The central operating unit of the KNX installation is a Gira Control touch screen that blends stylishly into its surroundings. The visualisation itself is based on the Gira HomeServer. Occupants can also check and control functions – including the Revox

Winner
KNX Award 2014
Category
International Africa,
America, Australia



Benefits of KNX for this project

- KNX integrates all building services
- Flexible: can be adapted to accommodate alternative uses
- Energy management
- Controls HVAC system, promotes efficiency & convenience
- Lighting management
- Automated solar shading system
- Central visualisation
- Household appliances also part of the KNX installation

Technical highlights

- KNX monitors the mains power and the house’s own solar power supply; option of reducing the load on the network during battery operation
- KNX measures energy consumption and production, battery charge level, and level of water in well
- Installation can be monitored and controlled on the move from an iPad, and remotely via VPN

Companies involved

Architects:

JBA, Cape Town
www.jba-architects.com

Planner:

DDC, Mike Dumaresq
www.ddcconstruction.co.za

KNX system integrator:

KNXin, Jesus Arias Garcia,
www.knxin.com – in collaboration with AMC German Technology, www.amcgerman.co.za

Project type:

Detached house

Building services/system components:

- Lighting
- Solar shading
- HVAC
- Technical monitoring
- Energy management
- Demand side management
- Photovoltaic system
- Water supply
- Audiovisual equipment
- Interfaces

Size of installation:

Number of KNX devices: 185

Multiroom System and the IP camera installed on the roof – from an iPad. Thanks to a VPN server and Gira QuadClient, the KNX installation can additionally be accessed remotely.