

ALS-PATIENT CONTROLS SMART HOME WITH WORDS



Voice control and KNX makes life easier for the disabled

Seldom has home automation contributed so much to the quality of life as in the home of Bernhard Müller. The Dutch entrepreneur was diagnosed with the incurable illness amyotrophic lateral sclerosis (ALS) in 2010. Previously he was successful with new business models in the maritime service business at Rotterdam Harbour. He now applies his entrepreneurial skills to understanding the illness and even perhaps overcoming it. He has initiated the largest genetic research project for ALS and has got involved in the development of ALS therapeutics. The fact that Bernhard can work at home as independently as possible, he owes to his KNX home automation in connection with Thinka voice control.

“Siri, put the light on in the kitchen”, “Siri, open the patio door”, with sentences like these Müller can act at home. He uses a wheelchair and only has limited strength in his hands. It is increasingly difficult for him to use push buttons or the smartphone: “For many, it is a luxury to operate functions in the home using your voice. For me, it is a necessity”. This is the basis for the renovation and technical conversion





of his home in Willemstad several years ago. The aim was not to have a high-tech care home but a modern living environment with helpful functions. Together with the architect and KNX system integrator Domoticom, the house was equipped for the disabled.

Tailor-made solutions

These include a separate wheelchair access, electrically driven sliding doors, a spacious glass lift and a multitude of important and practical building functions. Even the drive control for the adjustable bed is linked with a KNX interface. The automation system is used to operate the lights, blinds, heating with room temperature control, a gas fireplace as well as the bed and bed lift. The first operating concepts are local wall switches, the PC of the homeowner and an Iridium visualisation as an app for the iPhone. With increasing weakness in his arms and hands, Müller decided on the Thinka voice control as a further operating option. The bridge between the Siri voice assistant and the KNX home automation translates the voice commands into KNX telegrams for corresponding control processes. To do so, the KNX program simply had to be imported and the applications adapted to the parameters of the device. Müller is happy with the solution: "I am therefore not reliant on people assisting me with every movement." Moreover, the voice control offers further benefits for communication, information and entertainment.

More supportive technology

If Bernhard Müller wishes to go to the top floor with his high-tech wheelchair, he merely has to announce it and the lift starts up. The bedroom door opens on arrival with the help of a presence detector. The required bed position can be set in the room by voice, the lifting aid can be lowered and used, the lighting can be controlled and the television can be operated. For safety reasons, the system integrator has defined a command sequence in individual phases specifically for the bed control. There is however no end to the inventiveness. Müller expects that he will soon need

further technology to support him. He has therefore ordered a robot arm as an operating lever for attaching to the wheelchair. A further operating concept could be based on visual perceptions and interrelated concepts. A new control technology must convert the established patterns into clear commands. Müller builds on appropriate research and is already working together with the developers of Thinka. include lighting control systems, blind controls and closed-loop control of the heating, ventilation and air conditioning system (HVAC).

Automatically free from snow and ice

The practices, patient rooms and offices are fitted with energy-saving, constant light, closed-loop control systems. In the medical rooms, the corridors and staircases, and for the outside systems, the lighting is switched automatically according to a schedule and to presence. In conjunction with KNX/DALI gateways, KNX controls the emergency lighting systems. The blind control system comprises central automation with wind and rain protection, positioning and interaction with the lighting and HVAC. Operation and control are done manually on-site with buttons, panels and by means of web servers, as well as by tablets and smartphones. To protect against snow and ice, KNX also controls the hot water underfloor heating of the entrances and access routes. This is an important function in the sunless winter months. A WAGO PLC controller with a KNX module, in cooperation with a ground temperature sensor, acts as a central control unit. The controller also analyses CO₂ concentration sensors and cooling data and controls the ventilation system valves accordingly.

BENEFITS OF KNX IN THIS PROJECT

- Home automation
- Adaptable to the needs of the occupant
- Flexible for special functions
- Visualisation with Iridium Browser
- Supports assisted living

TECHNICAL HIGHLIGHTS

- Coupling with Siri voice control
- iPad on the wheelchair for operation via visualisation
- Bed control with safe command sequence

TRADES/ APPLICATIONS

- Lighting
- Blinds
- Air conditioning systems
- Door control
- Media control

KNX COMPONENTS

- Number: 50
- KNX units (extract): Basalte: Bus push button
Hager: Actuators and other built-in devices
Thinka: Voice control
Zennio: Logic module

COMPANIES INVOLVED

- Contractor and system integrator:
Domoticom, 6372 DV Landgraaf,
www.domoticom.nl