



# Living With LONWORKS® Networks Delivers Home Control

In a former farmhouse built in 1834 in Guetersloh, Germany, the LNO Living with LON Workgroup realized its first project, demonstrating that the LONWORKS technology increases living comfort and reduces living costs. The Group found the half-timber house in 2002. It was predicted that two years would be necessary to renovate and reconstruct the building and to turn it into a comfortable living environment. In the beginning of 2003, the building owner and the LNO Living with LON Workgroup signed an agreement and five German companies dedicated to LONWORKS technology stepped forward to sponsor the project.

## Setting a Goal

The goal was to transfer the findings of the Living with LON Workgroup into a physical project. Every system throughout the home would be Lon Works platform-based including lighting, blinds, and heating, ventilation, and air-conditioning (HVAC). An alarm device and fire detector would also be integrated. Alerts would operate both on site and via telephone. The system would record and process data on energy supply and consumption. A modern access system would also be integrated to remotely operate the building over the telephone.

Interoperability is a vital feature of the LONWORKS platform and it was clear from the beginning that multiple manufacturers with different building systems would participate in this project.

## Basic Automation

Floor heating and secondary radiators heat the building. Geothermal energy, derived from a 165m (approx. 500 foot) well, serves as the heat source extracted by a heat pump. Single room controllers from spega control the heating system. Rooms whose pattern of utilization is similar are controlled as single areas. The heat circuit actuators from systron are located at the heat circuit distributor of the floor heating system or at the electrical socket close to the secondary radiators. All devices are equipped with 36 electronic relays designed to ensure an adequate lifetime since the switching frequency is far higher than with lighting.

Lighting of the entrance, lobby, and hall is controlled via motion sensors – or manually if desired. The alarm system consists of a monitoring station supplied by systron with additional input modules from spega and systron. Motion sensors were additionally integrated. Separate smoke detectors were also installed.



## Multi-Vendor Integration

The LONWORKS network was implemented by spega, using their ALEX 3 Professional integration software, an LNS® 3 based binding tool. The LONWORKS Network Services (LNS) operating system makes it possible for multiple installers to simultaneously configure a control system. LNS defines a “plug-in” standard to streamline commissioning of devices from different manufacturers. This standard allows sensor, actuator, and device manufacturers to provide customized applications for their products.

While it is common to simply duplicate room profiles in commercial buildings with many identical rooms, that was not an option in this project. Every room has a distinct function. The plug-ins of the individual modules allowed for quick installation. All together, 68 modules were implemented in this project.

## User-friendly Metering System

Energy meters by Gossen Metrawatt record energy consumption of the entire building, individual areas within the building, and also energy generated by solar panels. A display actively details the current power consumption.

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The building owner can immediately see the effect of turning individual electrical devices on or off. A chronological visualization of the measurements helps find excessive energy consumers and identifies the connection between the behavior of the users and energy consumption. An overview of energy costs is available at any time. Due to the integration of the solar system, the building owner can also monitor whether or not the modules provide the expected performance and how efficiently they work.

### Access Control Technology

The communication center of the Vario-System by Siedle integrates everything needed at the entrance. A post containing the mailbox houses all the security and access control technology. The occupants of the building do not need keys. They either open the door with their fingerprint or an electronic key.

Visitors request access via calling keys while a remote-controlled camera stays focused on them. All video, audio, and control signals are transmitted to the inside control stations via a Siedle-In-Home-Bus. Color monitors are located in the bedroom, office, and ground floor. One of the monitors features a normal house telephone.



In the bedroom and office, a Siedle ISDN telephone receives visitor requests from the entrance and also incoming telephone calls. Additionally, the door station is connected to the house's telecommunication system via a gateway (Siedle DoorCom). This way all connected phones can receive calls from the entrance, the terrace, the garden, or even from the basement and communicate with the visitor, open the entrance door, or control the lighting. If desired, DoorCom will also forward the call from the entrance to an external or a mobile phone so that a voice link can be established and the door can be opened from outside the building.

### Remote Network Interface Access (RNI)

Maintenance of the LONWORKS network or installation of modified programs for individual nodes or the entire network can be performed via remote PC with the help of the Remote Network Interface (RNI), using the telecommunication system (AGFEO). The system integrator simply dials in to the Gipsy 2000 LE from his PC and is connected to the LONWORKS network. This technology eliminates travel costs and protects the privacy of the building occupants.

Because AGFEO is connected to the Gipsy 2000 LE gateway where various functional profiles are stored, it can carry out a number of tasks. For example, different keys of a "control telephone" can be assigned to various room or building functions. In this project, the lights and the shutters can be operated via the telephones. These functions can also be operated via the remote control feature of AGFEO without possessing any special knowledge of the system.

### Remote Monitoring and Controlling

Remote monitoring and control is accomplished through an internal Ethernet LAN or by dialing in via the phone. Network data can be accessed from any PC via Ethernet LAN or via remote data transmission. When using a telephone connection, it is possible to assign a password to restrict access. It is also possible to use the Gipsy 2000 LE as a remote control monitoring and alerting unit in conjunction with an external service provider to "guard" the building when occupants are away. In addition, SMS can be used to make queries and issue alerts.

### Key Benefits

- High levels of user comfort
- Energy savings
- All systems are future-proof and expandable

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