

Landeskrankenhaus Feldkirch, Vorarlberg, Austria

A pioneer on its way to becoming a green hospital –
with efficient products and systems from Siemens



The Landeskrankenhaus (LKH) Feldkirch, a university teaching hospital and part of the Vorarlberger Krankenhausbetriebsges.m.b.H. (KHBG), employs a staff of 1,600 in 23 different units. It has 606 beds and handles approximately 35,500 stationary cases per year. To enhance patient care and staff training, as well as improve its energy balance and climate protection, the hospital has been continuously expanded and modernized.

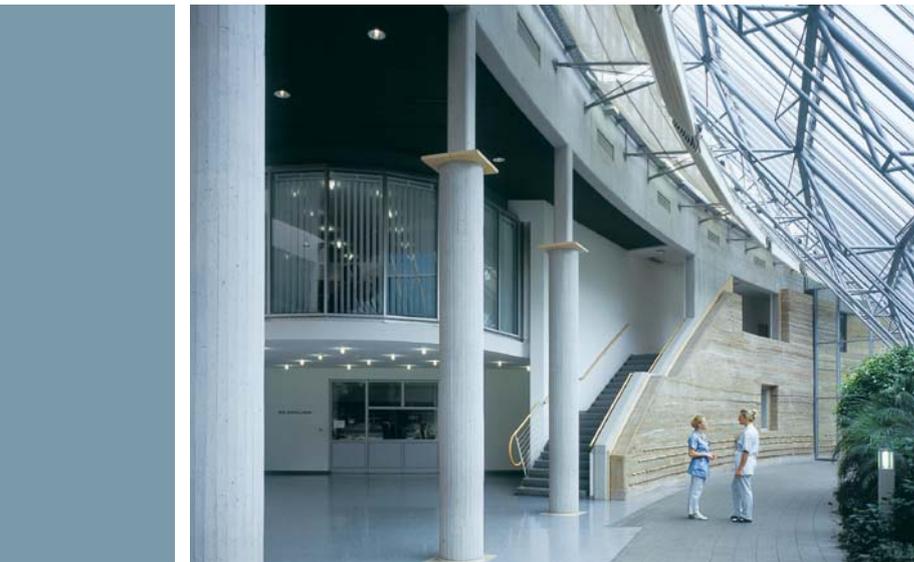
■ Compensating for the increasing energy demand

Founded in 1972, the LKH Feldkirch sets a benchmark in the European hospital landscape. Building expansions and modernizations, new buildings, and the latest medical equipment improve the comfort of patients and staff. At the same time, the hospital management and the KHBG place great emphasis on compensating for the increasing energy demand as effectively as possible. On the one hand, environmental and climate protection are among the guiding principles of the LKH, a fact also reflected in its "Ökoprofit" certificate. On the other hand, as is the case for all clinics, it faces competitive and cost pressure. Ensuring the well-being of patients as well as energy-efficient operation improves the hospital's image while reducing costs – thus increasing success.

■ A true partnership with a future

When it turned to Siemens, the KHBG found the right, competent partner for its building technology. The installed systems include:

- DESIGO™ building automation system
- Applications for energy management and plant control (ADP/CC)
- EMC software (Energy Monitoring & Controlling) with MeterProxy
- SIGMASYS™/Sinteso™ fire detection systems with approx. 3,500 fire detectors
- 3 Sinorix™ 1230 extinguishing solutions
- WinGuard security management system
- SISTORE™ MX video surveillance system
- Intrusion and assault detection system, type CIC200



Making everything green – patient well-being and energy consumption

Hospitals are among the biggest consumers of energy. The LKH Feldkirch pursues an approach that saves energy, while offering patients greater comfort – and it does this so successfully that the hospital is now the benchmark for other Austrian states. Despite significant structural expansions, the energy consumption for the LKH Feldkirch has remained constant.

■ Energy demand in hospitals

Heating, hot water, cooling, ventilation plants, elevators, compressed air, and powerful medical high tech in stand-by operation – hospitals require a lot of energy in order to reliably sustain their operations 24/7, 365 days a year. Moreover, in many cases, the energy supply no longer optimally meets requirements due to numerous building alterations and additions. But how can one detect optimization potentials? Because individual analyses of energy consumption are expensive, the total consumption of a hospital is usually compared with other facilities of the same size and number of beds. This, however, allows for only a very general comparison.

■ Everything under control – with intelligent building automation

At the LKH Feldkirch, the DESIGO building automation system controls and monitors all technical plants and systems for heating, ventilation, and climate control. This ensures not only comfort and hygiene, but also enables economic, energy-efficient operation.

For this, DESIGO combines several generations of building automation systems into one homogeneous overall system. At the automation level, the system comprises, for example, 84 VISONIK™ PRV1, PRV2, and BPS controllers for 6,350 data points as well as 37 DESIGO PXC automation stations for 2,722 data points, 22 DESIGO PX automation stations for 457 individual room controllers, one EIB linkage for 510 EIB/KNX points, and two M-bus linkages for 79 M-bus meters.

DESIGO thus delivers the basis for optimum cost transparency: The system records individual consumption data via meters that are connected per M-bus. Thus, all collected data is available electronically and evaluated by an analysis tool.

■ Go green – with energy monitoring

When and where was electricity, heat, or water used, and how much? What are the costs in each case? The energy monitoring software EMC from Siemens provides detailed answers to these questions.

The data automatically recorded in DESIGO is transferred via the MeterProxy to the ASP server. There, it is evaluated by the internet-based EMC application and then transmitted via an interface to the SAP system. This enables a very precise cost allocation according to cost centers, meaning that energy costs can be charged based on consumption. This optimal cost transparency is extremely important, especially when space or hospital equipment is leased. Moreover, energy losses can be visualized so that countermeasures can be specifically planned and energy costs reduced.

Another benefit: Due to the complete traceability of the recorded temperature, humidity, differential pressure, and air quality values, compliance with regulations for cold rooms, refrigerators for medicine, blood banks, baths, and operating rooms, for example, can be verified. In addition, the recorded data also serves as proof for the reduced CO₂ emissions of the hospital, which supports its external image as a green hospital.



Herbert Sturn,
Technical
Manager of the
LKH Feldkirch

“Of particular note is the stable control system that became an excellent instrument for our maintenance staff, thanks to its nearly 100 percent availability. After all, the highest priority of the installed system is this high level of availability, complemented by energy savings, lower maintenance costs, and satisfied patients who now benefit from a new level of comfort.”



■ It has already begun – the future of energy savings

The implementation of individual room controls in the hospital with DESIGO has already started. This means that room conditions can be optimally adjusted to the individual patient. Moreover, energy saving functions can be realized, such as automatic lowering of the room temperature by 20 percent when a window, transom window or door is opened. And the ability to adjust the room climate, blinds, lights, and entertainment via patient terminals is also under consideration.

The installation of the Green Building Monitor from Siemens is planned for the future. It will display the consumption and energy data of the building for electricity, heating, refrigeration etc. on an hourly basis. This will provide patients, visitors, and employees a visualization of the hospital's green commitment.

■ Increased energy efficiency through sensitized clinic staff

In the hectic everyday routine, the careless use of lighting, water, and room temperature contributes to unnecessarily high consumption values. After all, doctors and nursing staff are primarily concerned with rapid assistance and patient care. Thus, it is important to sensitize the clinic staff regarding energy-efficient operation.

This can be achieved with the consumption and cost analyses, which are based on DESIGO and EMC. They provide a good basis for demonstrating plainly to hospital employees the necessity and saving potential of energy saving functions and raise their awareness of how they can use energy more carefully. The Green Building Monitor will also contribute to this and further motivate the clinic staff to save energy.

■ Benchmark – thanks to complete energy accounting

The detailed traceable energy consumption not only makes the excellent values transparent; the LKH Feldkirch also frequently serves as a reference model for comparison when it comes to evaluating energy costs in other clinics. Thus, the LKH Feldkirch has set a new benchmark in the assessment of clinical energy efficiency – with the help of building automation and energy monitoring from Siemens.

Keeping an eye on energy consumption and the HVAC plant at all times – with EMC and DESIGO





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“The interactivity of the system ensures permanent safeguarding of the energy consumption. Via the central control room, a direct cause study can be performed and possible disturbances can be fixed.”

Safety and security for people and assets

Technology from Siemens also ensures the safety and security of patients, employees, and assets at the LKH Feldkirch – from safety in the case of fire, via voice-supported evacuation to video surveillance and prevention of theft.

■ Safety and security at the hospital – a complex task

Immobile or mobility-impaired patients, expensive medication and mobile diagnostic equipment or difficult-to-control patients – the danger management at the LKH Feldkirch takes into account complex parameters.

A video surveillance system was installed to deter potential offenders and to monitor the clinic grounds and sensitive areas like intensive care or elevators all at the same time, for example in case of a fire. An alarm system protects valuables from theft or vandalism. And the SIGMASYS/Sinteso fire detection system alarms the control room and the corporate fire brigade

as well as the local fire department, in accordance with a prepared phased plan, while the voice alarm system supports evacuation with electronic voice messages. To keep the power supply up and running as long as possible in case of fire, the server and electrical rooms are additionally protected by three Sinorix 1230 extinguishing solutions. The safety systems are integrated into a central danger management system, which reduces personnel costs for surveillance. Moreover, the danger management system is to be integrated into the building management system – because only a complete integration can achieve maximum cost savings and efficiency. This is the future.

Highlights

- Benchmark for energy efficiency of comparable hospitals
- Level of energy consumption remained constant despite considerable clinic expansion
- Simple proof of compliance with HVAC-related regulations
- Consistent operation and increased safety due to integrated building automation and central danger management

The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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