How can hospitals become more productive and more secure?

With integrated building solutions for the healthcare sector.

Answers for infrastructure.
# Table of contents

Preface

## Trends in hospitals and out-patient departments

- The healthcare sector is changing
- Reducing life cycle costs
- The future is digital

## Integrated solutions

- Building technology and core processes merge
- From a vision to the best building technology solution
- Security and fire safety
- Energy
- Comfort
- Hygiene
- Advantages of the integrated approach

## Examples in practice

- Landeskrankenhaus Feldkirch, Austria: incremental modernization
- St. Olavs, Trondheim, Norway: new building during daily business
- Hospital da Luz, Lisbon, Portugal: optimal processes

Do you have a need for action?

Summary
Those responsible for operation and safety in hospitals, out-patient departments, and care institutions have a big responsibility for patients, staff, and visitors: supply of all forms of energy and climate control, clean room conditions in the surgery rooms as well as security and fire protection all have to be ensured 24 hours a day. For example, a fire or gas leakage has to be prevented or detected as quickly as possible. If an incident happens nevertheless, measures such as evacuating people from the building have to be carried out quickly and effectively. In addition to this, technical malfunctions have to be detected immediately and reported to those responsible.

Development and maintenance of these facilities require both that those responsible for risk management possess comprehensive knowledge and a solid basis of products, integrated systems, and services. Our solution is Total Building Solutions (TBS). TBS denote the holistic integration of all systems within the building technology infrastructure – heating, ventilation, climate, cooling, energy generation, emergency power and energy distribution, access control, video surveillance, fire detection, alarming, evacuation and extinguishing. In addition, further building technology systems such as lifts and escalators, water technology systems, laboratory and medical technology systems as well as monitoring of information and communication systems can be integrated via standardized interfaces.

In short: Total Building Solutions optimize the interaction between building automation, risk management and medical technology as well as information and communication technology.

We are one of the world’s largest healthcare solution providers. The offering comprises diagnostic imaging systems, treatment devices, electro medicine, and audiology. Our offering is rounded off by IT and telecommunications solutions, which optimize the work procedures in out-patient departments and practices and thus increase efficiency. We support hospitals, out-patient departments, and care institutions by providing high-performance building technology solutions and consulting services. These are based on both comprehensive process knowledge and a wide variety of products for building automation, energy-saving contracting, energy generation and distribution as well as security technology.

Our customers profit from a global network and local support with comprehensive experience in the healthcare sector. You too can reap the benefits of this knowledge and take on your big responsibility with pleasure!
Trends in hospitals and out-patient departments
The healthcare sector is changing

The healthcare sector is facing a big dilemma. On the one hand, the medical offering and patient care options are constantly being improved. On the other hand, the associated cost explosion is increasingly burdening both public and private investors and are eventually having a negative impact on health insurance premiums. Alongside independent doctors and pharmacies, hospitals are exposed to significant cost pressure as in-patient and increasingly as out-patient service providers. The situation is amplified by the increasing human life expectancy. In the western world, it is approximately seven years higher than it was 50 years ago. The increase in the percentage of old people adds to this: Due to medical advancements the population grows older, which results in higher frequency of certain illnesses such as dementia. Special solutions will be required for this in the future.

These trends have a huge impact on hospitals, out-patient departments, and care institutions

- The pressure towards partnerships, convergence, and specialization is increasing. Especially smaller hospitals at the profitability threshold are being closed. In Germany alone, one in four hospitals faces the threat of being closed. The reason: financing problems. In order to remain competitive, an increasing number of hospitals are forming management and business networks. The problems resulting from this are obvious. The structures developed in the building complexes are reflected by the “cable and software chaos”, numerous different products, and the “individual handwriting” of the users. The consequence: Planning of hospital and out-patient department care should no longer be carried out on a regional basis, but on a national basis. In addition, care networks and synergies between the institutions are required.
Case-based lump sums are being introduced to manage the costs. This includes "Diagnosis Related Groups" in Germany or "SwissDRG" in Switzerland. The goal of the models is compensation according to the effective effort required.

Patient flows and processes have to be monitored and optimized to remain profitable, but also to be able to offer patients as short a stay as possible as well as complete and optimized care.

Patient demands are increasing – and thus the business risk as well: For example, hospitals are increasingly being sued and put in the position of having to prove their innocence.

Increasing privatization or private financing of hospitals and out-patient departments. In Europe, the average ratio between public and private in-patient facilities is currently at 80 to 20 percent. In the USA, it is exactly the opposite. It is to be expected that Europe will undergo an "Americanization" of its healthcare sector.

The competition for private patients has begun. Many facilities have to be renovated in order to provide the demanded comfort. The hospital will become a hotel at least for customers with good insurance.

For treatment, patients are traveling to other countries, in which they view the price-performance ratio as being better. Therefore, the hospital business is becoming international. The takeover of the Swiss Hirslanden Group by a South African company in 2007 is just one bit of evidence for this.

**Conclusion**

In the near future, managers of hospitals have to increasingly face the challenge of proving their worth in this growing competition – while meeting many different demands. This is due to the fact that they have to ensure the best possible care for the sick (patient satisfaction) within a reasonable organization (staff satisfaction) at justifiable costs (profitability) and with a high standard of security and reliability (quality).

Here, technology can support them. Because the right technology ensures comfort and safety for patients and staff while enabling efficient operation and a high level of energy efficiency.
High-quality technology and optimized system environments have been proven to contribute considerably to reducing the annual costs of energy. In the beginning, this results in a higher level of planning, but pays off in the medium and long term. When it comes to life cycle costs, which refer to the sum of all incurred costs from creation of the system to its operation and disposal, integrated systems are increasingly in demand.

However, a large portion of the costs of a hospital or care facility is incurred in non-core activities such as building and security technology, cleaning service, room management, the hotel business or gastronomy. Modern hospitals organize these important processes as contemporary “Facility Management”. This has the following impact for hospital management: modification to suit the new market situation in the healthcare sector by transferring previous management with proof of costs down to the smallest unit to integrated, process-oriented management with budget specifications. Facility Management meets this requirement by considering the possibilities of insourcing and outsourcing services. The patient is not interested in who performs the supporting activities, but whether they are provided punctually and reliably.

From the individual equipment to the total system

In today’s world, a hospital has to be an all-rounder to meet the demands with regards to security, comfort, reliability, and ecological efficiency. Various different systems are required for this: for ventilation, surveillance, cooling, alarm systems, access controls or emergency power supply.

There are often up to 100 different medical and building technology systems installed in large hospitals and the majority of these systems are monitored, operated, and managed separately. In addition, many systems have their own company- or industry-specific standards and protocols. This results in high costs for installation and during operation.

Therefore, an increasing number of hospitals are placing emphasis on integrated systems that can communicate with one another. This is enabled by Internet Protocol (IP) technology, which is now being used in almost all industries as a high-performance and inexpensive means of transporting all types of digital data. It connects several different systems to a single system that can be operated and managed in a unified manner.
Hospitals are among the most complex buildings. Their operating costs are much higher than of an office building.
Intelligent networking of information and communication technology as well as medical and building technology meets customer requirements for more ease and comfort. In addition, hospital operators can save energy and therefore costs with integration, and the processes in the hospital become faster and safer.

This increasing networking is also taking place in administration. Networking of these processes is taking place via IP as well. Open system structures will be required to extend these systems in the future.

Open systems are also required when renovating old buildings. This is because it is usually not possible to stop all business while renovating. Therefore, building parts and sections frequently have to be renovated one after the other. Open system architectures based on international standards ensure that fitting components will be available even years later.
Examples

- In the integrated patient room, patients can set the light and temperature as well as raise and lower the blinds all from the comfort of their beds. Moreover, they can surf in the Internet, watch television or listen to the radio via a patient terminal. Nursing staff and physicians can access relevant data such as current X-ray images at any time. Because in modern hospitals, this information is stored in digital form and a patient’s medical records are stored centrally on a server. Therefore, the required data is always available at the right time and in the right place.

- Building automation measures the exact energy consumption and can forward the obtained information directly to the accounting department, which can then compare the effective energy consumption with the amount invoiced.

- Another clinic can access X-ray or computer tomography images without having to produce them again themselves. The collected data thus serve to simplify the work of physicians and staff so that they can focus on their core competence of providing patients with optimum medical treatment and care. In addition, the data help reduce costs and increase patient safety.

Protecting data in an effective manner

As a result of increasing digitalization, more data is produced in the computer center, the availability of which has to be ensured at all times. In this context, our solutions for climatization, access control, and fire protection including fire extinguishing contribute to ensure the high requirements pertaining to data availability.
Integrated solutions
Total Building Solutions can be used to raise the energy efficiency of the whole building and technology system, increase system availability, and reduce the risk potential. The operating comfort for users is also improved.

Examples

- Fully integrated patient terminal. Among other things, this solution enables physicians access to the patient’s digital medical history. Patients profit from individual communication and entertainment options, and they can operate the lights or window blinds from the comfort of their beds.

- Operating room with an integrated control unit for all tasks.

The examples make clear the potential for synergies, which improve processes, reduce the energy consumption and thus the costs of the facilities while at the same time increase patient comfort. All building technology systems such as those for energy generation and distribution can communicate with one another and be operated directly by any authorized user. This serves to optimize maintenance work and minimize down times. Modifications to changing needs can be realized more easily and inexpensively than with individual systems. Moreover, various different locations can be networked for a common operation management: this serves to streamline the work of technical staff.

Integration of security systems serves to unify building management and starts important processes such as activation of escape routes, smoke and heat dissipation or evacuation instructions immediately in case of emergency. The integration of communication, medical technology, and other systems can increase patient and staff comfort as well as rational operation management and security.
Total Building Solutions support the modern approach of a unified management and controlling of multiple areas of a hospital – as it connects the building technology with the core processes.
The aim of every building operator is to reduce life cycle costs.

Total Building Solutions require an integral planning approach as well as unified communication standards for all tasks.

**Integral planning**

All task planners involved in a TBS project have to use compatible engineering applications and organize their data in a unified manner. This allows for required task-specific planning while at the same time integration in an overall system is ensured. The advantages of Total Building Solutions are especially visible when the integration of the systems has been carried out for the functions of the individual tasks at system and room level.

**Analyzing life cycle costs**

The integrated TBS approach includes analysis of the life cycle costs. This is carried out in place of antiquated optimization of the pure basic investment costs. 80 percent of the costs for a building are incurred during its life cycle and this percentage is often even higher in hospitals. It is often possible to save costs over the course of the life cycle by increasing the initial investment.
Early involvement of stakeholder lowers operating costs in the long term

<table>
<thead>
<tr>
<th>Total investment and operating costs</th>
<th>Until hand-over of keys</th>
<th>Going concern</th>
<th>Savings potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financing concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realization implementation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life cycle operation &amp; maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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- Impact on costs
- Accumulated costs conventional planning
- Accumulated costs user-defined planning
New organizational forms

Customers are increasingly demanding full building technology solutions because this simplifies processes. The contractor takes over responsibility for interfaces and project management. On the one hand, this usually results in increased effort regarding the realization of a building management and unified structures. On the other hand, it is usually balanced out by a reduction of costs for individual tasks and their integration.

As a consequence of the integrated approach, the organization in the healthcare sector and at the vendors have to be modified as well to fit the new circumstances. An example from the USA on the next page serves to make this clear. Because hospitals there have been competing for several years – and the patient is treated as a customer.

Integration of third-party systems

In addition to the integration of traditional building technology components, hospitals often require the integration of further systems, e.g. elevators that have to remain in a specific position in the case of fire, in an overall management system. There are numerous other systems that can also be integrated in Total Building Solutions. These include:

- Medical technology systems such as gas management or laboratory systems
- Information and communication technology such as telephony
- Facility Management system such as CAD
- Transport systems such as letter chutes
- RFID systems for example for people and asset tracing
Comprehensive management systems

Networking of building technology systems allows for comprehensive building management: The operation and functions of the individual components are made transparent because they can be monitored and operated centrally. This simplifies the work for the responsible technician. Intelligent software helps the technician to immediately recognize what happens if he changes parameters in the system. In addition, he obtains precise instructions for action in the case of an event. The analysis of all recorded data is the basis for ongoing optimization of supply security, comfort, and costs.

Along these same lines, the security components can be also monitored conveniently and centrally. All information and messages relevant to security come together in risk management. In case of emergency, predefined security measures are initiated via fixed line telephones, cell phones, pagers or Internet.

After confirming with one mouse click, the next steps are triggered immediately: The fire detection system communicates with the access control, which in turn electronically opens all doors so that people in the building can escape quickly. The evacuation system helps them find the fastest and safest way out. Due to the connection between security and building management, the building automation system receives messages at the same time. It stops the ventilation at the fire source and controls both supply and exhaust air for fast containment of the fire as well as for the smoke and heat dissipation. The scope of the event is communicated to the operators and those responsible for security – and digital records of the event are available for subsequent examination.

Furthermore, all systems can also be centrally operated via the Internet through remote monitoring and remote access. If a hospital has several locations, the operating personnel can simultaneously check all systems in all locations. In addition, while on-call, the staff can log in from home to see whether a malfunction has to be repaired on site and how urgent it is. This serves to streamline maintenance, increases employee motivation by reducing idle time, and saves costs.
Security in a hospital is a complex requirement. It includes access control systems, access patterns in special rooms, and security in case of fire, during fire extinguishing or defense against theft. In addition, security has to be ensured at all times for legal protection of personnel against third parties.

- Hospital visitors should only have access to patient rooms and to rooms with low security levels.

- Complex access patterns have to allow staff to access the rooms required to carry out their work. The access patterns are multifaceted: For example, a technician requires access to different rooms than a cleaning person does. This can also be dependent on the time of day.

- After an event, data entry of components in databases can provide important information as to the exact cause of a disaster or accident. Decisions and processes should be stored to provide legal protection.

- In exceptional cases such as a fire, it must be possible to change the complex access patterns within seconds to allow for safe evacuation of all persons – without breaching data protection or secure access to medicines. If a poisonous substance leaks out in the building, it should not be distributed throughout the entire hospital by the ventilation, but it should be isolated quickly.

- Alarm systems protect valuable objects such as mobile diagnostics devices against theft or vandalism.

- Video surveillance acts as a deterrent to potential criminals and also puts the operator in the picture 24/7. It can detect events such as acts of aggression or blocked emergency lanes early on. Video surveillance also provides instant remote verification of alarms, triggers relevant reactive measures immediately, and records images for analysis and evidence material.
Intrusion alarm systems can interoperate with video surveillance and access control for the monitoring of sensitive areas or valuable equipment, providing high detection reliability and false alarm security. Security systems also offer redundant operation and high scalability, without disrupting the daily workflow in a hospital.

In order to be able to operate all these individual systems in a sensible manner and trigger actions quickly enough, they are networked with danger management systems and integrated into building management.

Our fire safety concepts meet all requirements in the most efficient way: protecting people, buildings, infrastructure, and assets.

Safe and easy-to-operate danger management solutions provide centralized protection of people and assets.

Intelligent fire safety solutions detect dangers as soon as they arise and react quickly and correctly to trigger the right response. Furthermore, they are easy to integrate.

Comprehensive solutions, from reliable detection, alarming, evacuation to extinguishing, minimize damage to assets and the environment.
An absolutely dependable power supply is indispensable for the economic and safe operation of a hospital. This should be based on energy distribution components that are designed to work together in an optimum manner. Especially due to the intensive use of electricity-consuming medical devices and apparatuses, a well designed integrated energy concept can have a positive impact on a hospital’s energy costs.

We provide highly reliable products and systems for electrical energy distribution. These can be connected to the building automation and energy management systems using communication components. This provides the basis for monitoring and controlling energy consumption in the entire hospital complex. In addition, it serves as a key for reducing operating expenses on the energy side.
With regards to the operating costs, economical and optimally dimensioned energy supply is a decisive economic factor especially for hospitals. The time-tested dimensioning software SIMARIS design is an indispensable tool for electrical planners for the professional dimensioning of electrical networks. This helps simplify the calculation of electrical networks, serves as evidence of selectivity, and recommends compatible devices from our comprehensive product portfolio. This can also be used to plan development reserves for a change of usage or a basic extension of usage of the hospital.

Distributing energy safely and economically – with Totally Integrated Power

Totally Integrated Power stands for integrated solutions for power distribution in commercial, institutional, and industrial buildings, ranging from medium voltage applications to the wall outlet. This technology platform comprises tools and support for planning and configuring power distribution systems, a well-matched, comprehensive product and system portfolio, and the option to link power distribution to higher-level HMI/control and management systems. This way, noticeable saving potentials can be attained throughout the entire project cycle. With Totally Integrated Power, the full optimization potential of an integrated solution can be tapped throughout every stage of a building project – from investment and planning to building installation and operation.

Upon planning electrical systems in hospitals, special measures have to be carried out, for example in the so-called application area 2. This is an area that is used for medical purposes, in which the electrical installation has to meet high standards with regards to potential equalization, contact voltage, down times and emergency lighting. This area is used for applications such as intracardiac procedures or operations as well as vital treatments in which irregularities in the power supply can pose a risk to the patient’s life.
Building operators can use Totally Integrated Power to optimize operating costs while retaining a high level of flexibility for changes of use. This is carried out using the following:

- Transparency of the energy consumption and subsequent optimization of the energy costs. Connection of power consumption devices to bus systems provides the required data, energy management provides transparency of energy costs and subscription agreements can be negotiated optimally.

- A high level of operational safety and connection of the energy distribution to building management. Down times can be reduced using central operation and monitoring, which in turn minimizes costs associated with down times and increases operational safety.

- A low level of effort required for changes of use and requirements modification.

**Optimization of energy efficiency**

Now more than ever, energy has to be used in moderation because it is a significant cost factor. For example, the use of sustainable energy resources, the use of regenerative solar power, and the reduction of water consumption can reduce energy consumption on a sustained basis. Synergy effects achieved by way of automation provide additional opportunities to implement energy more efficiently. For example, before the cooling system is switched on in a hospital, the shading should be moved to the appropriate position. And if there is enough daylight in the room, artificial lighting can be switched off entirely. Even though the individual measures seem small, the total of these measures in a hospital quickly becomes a big cost factor.
Systems such as heat recovery, geothermal heat, and solar plant, which greatly improve the energy balance, need to be integrated in the existing systems. Thus they can show their true worth. In order to comply with energy regulations, data first have to be collected as to where and why too much energy is being consumed. Subsequently, an analysis is carried out to determine how losses can be minimized.

Our building management systems provide numerous tools for the ongoing optimization of energy and water resources. All the relevant data are recorded and reports are created automatically. These can be used to make comparisons to other systems and buildings and they can serve as a guideline for optimization. Subsequently, short-, medium-, and long-term measures can be implemented. Sometimes changing an interval timer, e.g., of a ventilator, is enough to save valuable energy.

Energy-saving contracting – guaranteed savings help finance the modernization

Energy-saving contracting guarantees that from the beginning of the guarantee until the end of the contractual period all required savings measures are financed and additional savings are distributed among the partners. We assume responsibility for savings that are not attained.

After the end of the contractual period, a hospital profits 100 percent from the reduced costs. Modernization and optimization of the building technology save energy and operating costs, increases operational safety, raises the level of building efficiency, and makes a positive contribution to environmental protection. Energy-saving contracting puts into practice the concept of life cycle observation.
Integrated technology serves to increase both patient and staff comfort via optimum regulation of ventilation, heating, air conditioning, light, and communications. These should all be easy to operate as well. Because the increasing complexity of components results in more complexity in operation, which in turn increases the risk of operating errors. The easier a system is to use, the fewer operating errors will occur. This applies to the technicians in a hospital as well as the nursing staff and especially the patients.

**The highest possible level of patient comfort**

Patients have to be able to operate the light in their room as quickly and easily as the air conditioning, the shading or the multimedia entertainment systems, which allow video on demand, watching television or surfing the Internet. In this case, technology helps take strain off of the nursing staff...

**Increased staff productivity**

... and they can focus on their most important task, namely taking care of the patients. Therefore, technology contributes to increase productivity.

**Comfort in the operating room**

The temperature of the supplied air is an important factor in determining the comfort level of the surgical team while working. In order to be able to provide fresh air in a hospital during operation, two outdoor ventilation systems should be installed. This ensures ventilation in the case of malfunction or repetitive maintenance work. We support this integrative approach already during the planning process and enable safe, controlled, and, if necessary, redundant operation by implementing the most modern building automation technology. The most up-to-date directives are supported in the operating room. In addition, modern touch panels allow for safe operation.
New patients, visitors, and personnel enter a hospital every day. All of these people inadvertently bring viruses into the hospital area. Objects made of various materials as well as food and other goods are delivered to the hospital. In short: It is impossible to keep a hospital free of germs. Therefore, it almost seems normal that, according to a study, eight to twelve percent of the hospital treatment procedures are hindered by nosocomial effects or, in other words, infections acquired in the hospital.

Room ventilation systems in a hospital serve to maintain the required thermal room climate, extensive filtering of microorganisms and dust, anesthetic gases and odors in the air as well as the dissipation of heat loads. In this context it is important that, especially in operating rooms, the thermal and pressure effects caused by lift systems are kept under control at all times.
Advantages of the integrated approach

Building operators, owners, and tenants can use Total Building Solutions to create synergy effects and reduce costs. The advantages for the owner are seen in building operation, throughout the entire building life cycle.

The advantages of interaction between different functions and systems in a building are the availability of all required information exactly at the location where it is required. The intelligent interaction between functions reduces the number of manual interventions required, new functions increase comfort and safety, and sustained energy optimization is only possible when taking several functions into account.

Thanks to our extensive experience in this area, we support you in determining the required level of building automation and security. Only the proper selection of subsystems and their optimum constellation can guarantee a smooth process flow. In addition, we help you in the analysis and creation of concepts for the technical infrastructure, its operation, and its integration in existing IT platforms.
Everything from a single source

Professional project management guarantees on-time high-quality construction of integrated overall solutions in increasingly shorter construction times. We accompany building operation with a bundle of specialized services for maintenance, optimization, and modernization – and train employees and operating personnel in safe system usage. We are a reliable long-term partner for system maintenance.

Due to our own research, development, and manufacturing, the products remain compatible across generations and new products support simple migration. Our offering is rounded off by further intelligent concepts and services, which significantly reduce the operating costs and provide even more security and comfort. This includes the operation of service control centers or various different operator models.
Examples in practice
Landeskrankenhaus Feldkirch, Austria: incremental modernization

Often up to 100 building and medical technology systems have to be monitored, operated, and serviced in large hospitals. “Up to now, we have lacked a unified interface for all systems to be able to connect them to a shared management system”, says Herbert Sturn, technical director of the Vorarlberg Hospital Operations Association which was established in 1979 and includes five private hospitals.

“Upon analyzing our business processes, clear rationalization potential became apparent in the area of system monitoring and operation”, says Sturn. This was a lever for sustained improvement of the hospital's profitability. Despite this, modernization is often postponed for lack of knowing where to begin. This is where we were exactly the right partner with our Total Building Solutions. Because market surveys prove: Many customers want to work with only one partner on a long-term basis, a partner that provides project realization, system maintenance, and enhancements from a single source.
In the next step, medical technology will be integrated into the system. Currently, the patient terminal at the hospital bed is being tried. It will enable patients to regulate the room temperature, talk on the phone, watch television, and surf the Internet. In addition to this, the nursing staff and physicians can view and maintain patient data on the patient terminal.
St. Olavs, Trondheim, Norway: new building during daily business

St. Olavs hospital in the Norwegian town of Trondheim is a fully equipped university hospital for a region of just under 650,000 people. The hospital, which was established in 1902, is being modernized step by step: One of the most modern hospitals in the world is being created on an area of more than 220,000 square meters. Almost 90 percent of the existing buildings are being fully replaced – during daily business – while the remaining 10 percent are being fully refurbished.

The new hospital will have 804 single patient rooms and 42 operating rooms. The last building phase is planned to be completed in 2013, and the first buildings were already finished in 2005. St. Olavs is the first university hospital in Norway to integrate patient treatment, research, and training all on one campus. Approximately a fourth of the area is reserved for research and training of 120 medical students per year.

The project has been running since 1998 and was designed from the very beginning to be able to integrate future technical developments. An integrated approach as well as open standardized interfaces were required for this. Therefore, St. Olavs decided to network the systems throughout and choose – as the first hospital in Norway – to use IP technology: telephony, television, radio, and other systems use the IP network.
To support a safe building environment, the highest quality systems for building automation, access control, and security have been integrated – and all come from a single vendor. "We are not just installing technology, we design and integrate it right into the building itself," says Arve-Olav Solumsmo, Information Manager for the project.

Thanks to the most modern technology, patients profit from a higher level of comfort. They can use a patient terminal at the bedside to control the lights. The terminal also offers entertainment services such as television, radio, Internet, and video on demand. This serves to relieve the medical staff so they can concentrate on their main tasks.
Hospital da Luz in Lisbon, the “hospital of light”, celebrated its opening in the spring of 2007. It is not only the concept of a care campus with a hospital, nursing home, and apartments for the elderly, which makes it special. The installed technology makes the difference. The building is equipped with the most modern building, security, information, and communication technology throughout in order to achieve the specified goals of service excellence, productivity, and quality. An advantage of the technical equipment of the Hospital da Luz is that it was a new building. Therefore, all systems could be matched from the beginning and the fitting system components could be installed. After all, unified standards mean better extension options for the future.

Hospital employees and patients are happy about the new level of comfort: The patient terminal provides patients with entertainment such as television, radio or Internet as well as the possibility to operate lights, shading, and room climate. At the same time, the terminal offers the nursing staff and physicians the option to call up all relevant patient data on site: Which medicines is the patient taking? Does the patient have allergies? Which diagnoses have already been made? In addition to this, the physician on call can view cardiograms or X-ray images on the terminal when making rounds.
For the hospital, the integral IT infrastructure means more efficiency. Whereas previously data were distributed throughout several hospitals, here – in the hospital of the future – all patient data can be accessed at any time. This minimizes risks for the patient and increases the process quality in the hospital.

In the background, building automation manages the functions so as to use energy as efficiently as possible. This means: Using residual heat, regulating artificial lighting with sunlight so that as little power as possible is needed, controlling blinds so that sunlight can be used as an additional heat source, but also to keep the sun's heat out of the rooms if it is too hot. The goal is to increase energy efficiency while improving comfort.
In the following graph, indicate your company’s current situation and contact us for a detailed analysis afterwards.

Do you have a need for action?
Example: Need for action for:
• Operating costs
• Energy
• Comfort

For your notes:
Total Building Solutions make hospitals more intelligent and more productive. The more innovations come from a single source, the more functionality there is under one roof. Only if building automation communicates with the security and fire protection systems on an ongoing basis and there is a constant exchange of information between systems, the hospital is intelligent enough to respond quickly and precisely to all eventualities.

More than 1,500 reference systems in the European healthcare sector alone demonstrate how much practical experience we have when it comes to the needs of all involved in building and operating hospitals.

Our tightly woven service network guarantees that global knowledge is implemented quickly at the local level. Take the opportunity to find, construct, operate, and finance the best possible solution for your company.