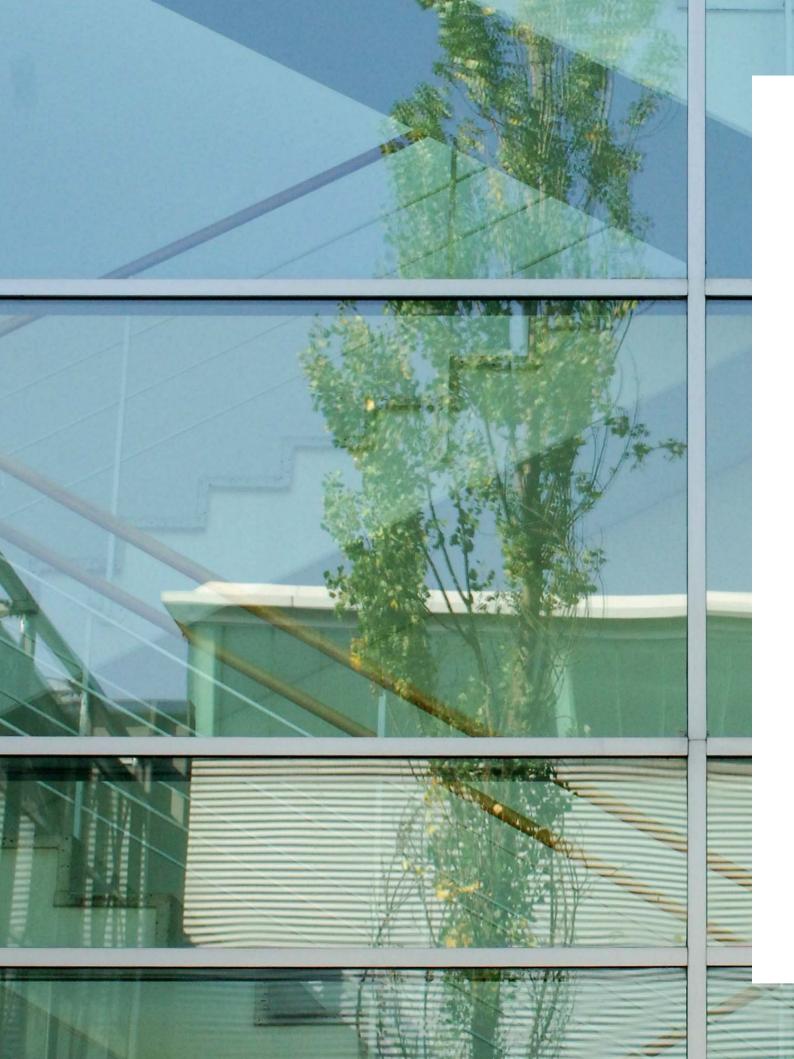


Sustainable Healthcare Infrastructure. More than just Green.

www.siemens.com/greenplushospitals

SIEMENS



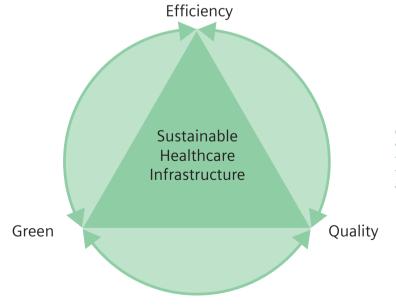
More than just Green

Economy and ecology in harmony.

Sustainable healthcare infrastructure refers to the big challenge to unify ecological and economical demands in healthcare. Siemens supports you in meeting these challenging demands and prepares you for the future – with Green⁺ Hospitals. With a variety of levers that lead to sustainable healthcare infrastructure, a Green⁺ Hospital means more than saving energy and lowering emissions. Our Green⁺ Hospitals solutions help you optimize efficiency and increase quality.

As an experienced decision-maker in healthcare, you know only too well that these major challenges cannot be met by focusing solely on short-term profits. Instead, they require an integrated approach that takes the full range of ecological and economic aspects into account over the long term. It is precisely for this reason that we designed Green⁺ Hospitals as a modular program that hospitals can use to make sustainable improvements to their entire healthcare infrastructure.

If you would like to achieve these objectives with Siemens as your partner, we will first analyze your institution's individual potential for improvement using tools that have been specifically developed for Green⁺ Hospitals. On that basis, we determine the next steps to be taken jointly with you – drawing on the coordinated Green⁺ Hospitals portfolio in the areas of building and energy, information and communication, medical technology and services.



Green plus Efficiency plus Quality: with Green* Hospitals, each step toward one success factor also impacts the other success factors – to achieve a sustainable healthcare infrastructure.

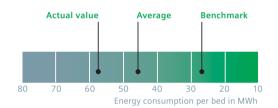
Green

Green products, systems, and solutions – helping you achieve more sustainability from the outset.

As energy costs rise and stricter environmental requirements are imposed, an investment in green technology pays off for hospitals, too – financially, thanks to major savings in the costs of energy, materials, and processes, and intangibly as your reputation improves in the eyes of patients, employees, and the general public.

This is why Green⁺ Hospitals includes a broad range of green technologies – ranging from conventional energy saving concepts to measures to reduce emissions to integrated solutions for the sustainable, responsible use of valuable raw materials and resources. These carefully coordinated technologies contribute to environmental protection while also keeping costs low and quality high.

Consider the area of building infrastructure: here, the interaction of modern information infrastructure and intelligent heating, ventilation, and air conditioning systems, together with building automation, can reduce energy costs by up to 40 percent – and also improve patient comfort.



Green* Hospitals potential. In a maximum care hospital, Green* Hospitals' experts found an actual value of 57.41 MWh of energy consumption per bed – compared with the benchmark, the potential for energy savings can be estimated at 53 percent, or around 450 million kWh per year. (Results may vary. Data on file.)





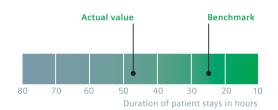
Efficiency

Optimized workflows and processes – helping you achieve greater economic success.

In the interest of the most efficient use of valuable resources, the Green⁺ Hospitals' focus on efficiency looks beyond a building's energy efficiency to consider optimized workflows, time-saving support processes, and cost-efficient imaging systems.

Green⁺ Hospitals addresses energy and CO₂ emissions, as well as all other economically and ecologically relevant areas of a hospital, by optimizing workflows to tap every available potential – thereby increasing efficiency and reducing costs over the entire lifecycle of the building.

Consider the subject of capacity utilization and patient throughput: we offer suggestions for structured clinical pathways that will allow you to optimize your patient flows and therefore reduce the floor-space requirement per patient while at the same time significantly increasing the productivity of your hospital.



Green* Hospitals potential.

One major factor in assessing the efficiency of a hospital is the average duration of patient stays for defined clinical scenarios. In one case, Green' Hospitals' consulting experts found an actual value of 48 hours for a particular clinical path in a large university hospital. Compared with the benchmark, there is a potential reduction of 22 hours, or 46 percent. (Results may vary. Data on file.)





Our products, solutions, and services from the Green+ Hospitals portfolio – on the subject of efficiency:

Buildings and energy

- Smart Buildings for optimized energy consumption
- Lower expenses for monitoring thanks to integrated access control, video surveillance, and intrusion detection systems
- Management of medical gases
- Parking guidance systems

Information and communication

- Seamless integration of HIS
- Workflow-oriented medical IT
- Efficient image-reading software
- Laboratory data management systems
- Computer-aided detection
- Integrated networks and user interfaces
- Accelerated alarm processes including localization
- Professional information management
- Increased personal efficiency thanks to Unified Communications
- Integrated multimedia communication
- Mobile voice and data communication
- Bedside terminals for clinical information
- Short information pathways, thanks to integrated security systems
- Call center, alarm system, and localization
- RFID for patients and inventory localization

Medical technology

- Workflow-oriented imaging systems
- Software solutions for clinical images
- Integrated laboratory solutions
- Laboratory automation
- Integrated OR solutions

Services

- Siemens Shared Services
- Leasing and rental
- OpenScale Lifecycle Services
- Energy Audits
- Advantage Service Program
- Data migration
- Outsourcing or outtasking of processes
- Outsourcing of IT or personnel
- Standardized IT and communication processes
- Advice on optimizing clinical/non-clinical processes
- Siemens Performance Plans
- Siemens Guardian Program™
- Utilization Management
- Managed Services
- Siemens Remote Service infrastructure
- Remote Update Handling

Quality

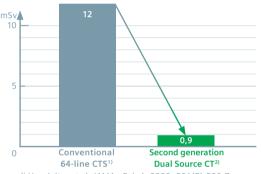
Intelligent technologies – helping you improve quality and comfort.

In addition to economy and ecology, quality of service continues to be a primary factor in the long-term success of a hospital. It ultimately helps determine not only the success of treatment, but also a medical institution's image.

That is why Green⁺ Hospitals emphasizes the parts of a hospital that are relevant to quality – from data management to diagnosis and treatment to building and patient security – creating an environment that enhances health. Green⁺ Hospitals can help you provide the best possible medical treatment, efficient use of valuable resources, and maximum possible comfort and convenience for patients.

Consider the latest generation of computed tomography systems: Siemens has set itself the goal of making CT scans faster and less stressful for patients. The entire thorax can be imaged in just a few seconds using the newest CT scanners by Siemens – and patients do not even have to hold their breath.

Dose reduction in cardiac imaging



- ¹⁾ Hausleiter et al, JAMA, Feb 4, 2009; 301(5):500-7.
- ²⁾ Achenbach et al, Eur. Heart J., Feb 2010; 31(3):340-6.

Green⁺ Hospitals potential.

The newest generation of CT systems, for example, requires doses of less than one millisievert for cardiac imaging. This is a reduction of more than 90 percent compared to conventional equipment, an enormous improvement in patient safety.

(Results may vary. Data on file.)





Our products, solutions, and services from the Green* Hospitals portfolio – on the subject of quality:

Buildings and energy

- The earliest possible fire detection
- Genuine alarm guarantee
- Space-based fire extinguishing
- Convenient control technology for heating, ventilation, air conditioning, lighting, and blinds
- Reliable energy supply
- Healthcare lighting
- Risk management
- Effective access control and time recording systems
- Compliant clean-room monitoring
- Legionella prevention
- Parking guidance systems

Information and communication

- Improved data quality by avoiding media discontinuities in mobile data access
- Multimedia communication with user-friendly, unified communications solutions
- Electronic prescriptions, medication, and documentation
- Efficient e-health infrastructure
- Bedside terminals for multimedia infotainment and individual room control
- Memory and access concepts for health data
- More reliable access to patient data
- Alarm solutions with localization option
- RFID for patients and inventory localization

Medical technology

High-quality imaging at the lowest dose possible

Services

- Advisory services, planning, and financing
- OpenScale Lifecycle Services
- Risk management
- Auditing
- Technical and application training for IT and medical technology
- Maintenance of building technology
- Advantage service program
- Application management
- Implementation of treatment standards
- Siemens Performance Plans
- Siemens Shared Services
- Siemens Virus Protection

Interested?

Do the Green⁺ Check.

As part of our comprehensive Green⁺ Check analysis, we work with you to review your hospital's strengths and weaknesses in the areas of Green, Quality, and Efficiency and then determine your sustainability index.

A Green⁺ Check generally includes the following steps:

- Evaluation of a questionnaire that you have completed
- Kick-off meeting with all participants in the project
- On-site interviews in all major departments of your organization
- Determination of your individual hospital's sustainability index (Green+ Score)
- Recommendation of more in-depth analyses and specific steps for improvement

Green⁺ Check gives you more than just a clear picture of the current condition of your institution, including comparisons with other hospitals. It also gives you an overview of starting points for sustainable improvements.



The Green⁺ Check shows you at a glance the strengths and weaknesses of your institution and where improvement measures will pay off – for the benefit of your patients, in the interest of your economic success, and to protect our environment.





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Green⁺ Hospitals Portfolio at a glance

Green plus Efficiency plus Quality – the Green⁺ Hospitals portfolio is a complete range of products, solutions, and services tailored to the needs of hospitals that prioritize sustainable operations. Because sustainability means much more than saving energy and lowering emissions: it also means a major step toward efficiency, quality, and environmental protection – and a win-win situation for your hospital, your patients, and society.

Buildings and energy

- Building technology
- Fire protection (detection, alarming, evacuation, extinguishing)
- Building automation (heating, ventilation, air conditioning, lights, blinds)
- Energy supply
- Lighting

- Healthcare lighting
- Security systems (video surveillance, intrusion detection, and access control systems)
- Photovoltaics, heat pumps, solar heat
- Building technology for laboratories
- Management of medical gases
- OR clean-room technology and monitoring
- Water treatment and legionella prevention
- Parking guidance systems

Information and communication

- Hospital Information System (HIS)
- Radiology Information System (RIS)
- Picture Archiving and Communication System (PACS)
- Integrated healthcare
- Laboratory information system
- Diagnostic support with computer-aided diagnosis
- Process integration with HIS
- Workflow management
- LAN networks

- WLAN solutions
- Dynamic Data Center
- Enterprise Content Management
- Unified Communications
- Integrated multimedia communication
- eHealth applications
- eHealth infrastructure
- Voice applications with virtualization and multi-tenant functionality
- Office telephones, wireless telephones, VoIP

- Bedside terminals
- Data Security Systems
- Tablet PCs and PDAs
- Alarm solutions with localization option
- Video communication and conferencing technologies
- Call center, alarm system, and localization
- RFID for patient and asset tracking
- Long-term memory and archive

Medical technology

- Molecular diagnostics
- Ultrasound
- Radiography and fluoroscopy
- Mammography
- Angiography/card angiography
- Computed tomography
- Magnetic resonance imaging
- Molecular imaging/nuclear medicine
- Laboratory diagnostics
- Radiation therapy
- Integrated OR solutions
- Urological diagnostics and therapy
- Medical accessories and supplies
- Refurbished Systems

Services

- Consulting, planning, and analysis
- Financing arrangements
- OpenScale Lifecycle Services
- Project management
- Risk management
- Quality assurance and management
- Energy management

- Technical and application training and support
- Service and maintenance
- Advantage Service Program
- Migration concepts
- Business models
- Outsourcing
- Process optimization and controlling
- Customized Service Agreements
- Enhanced Productivity
 Services (proactive services)
- Managed Services
- Siemens Remote Service infrastructure
- Remote update handling
- Laboratory consulting

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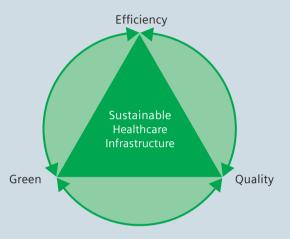
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- Pollution reduction

Efficiency

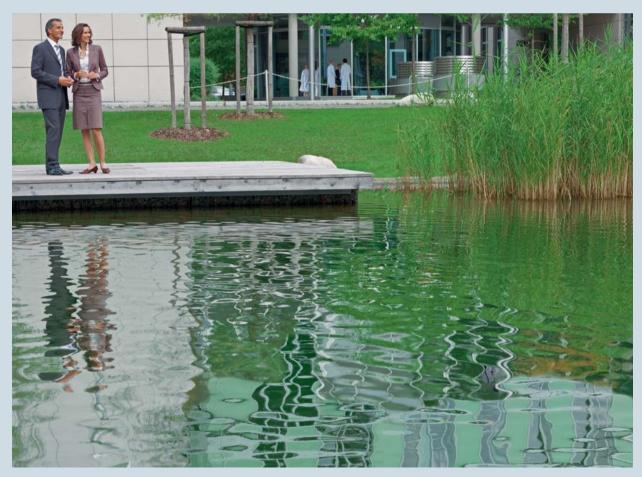
- Optimized clinical, non-clinical, and support workflows
- Efficient assignment of time
- Efficient assignment of costs

Quality

- Optimized medical care
- Convenient and healthy procedures
- Health-supporting environmental conditions



Green plus Efficiency plus Quality: with Green+ Hospitals, each step toward one success factor also impacts the development of the other success factors – to achieve sustainable healthcare infrastructure.





Open since mid-2010, the Ethianum in Heidelberg is a clinic specializing in plastic surgery, aesthetic surgery and preventive medicine. It is one of the first hospitals in Germany to rigorously focus on sustainability criteria. Based on an innovative solution concept from Siemens, the Ethianum combines the latest diagnostic procedures and treatments with the use of natural resources – for example, in the area of power supply.

Key features

- Intelligent building management system using geothermal energy as a source of energy-efficient heating, ventilation and air-conditioning
- Resource-saving, patient-friendly medical systems and lighting technology to make examinations as pleasant and efficient as possible
- Energy-saving, multifunctional communications network that gives
 physicians reliable access to treatment data from patient rooms, provides
 patients with multimedia and telephone access, and allows them to
 control the heating and cooling in their room
- Consistent use of communications technology to support more efficient workflows



The Ethianum rigorously focuses on the principle of sustainability, as reflected in every detail of the building management system, medical equipment, and architectural design.

First "Green⁺ Hospital" in Germany

Consistently sustainable infrastructure at the Ethianum Clinic in Heidelberg



- Intelligent planning ensures a high recycling quota during construction, operation, and in the event the building is ever taken down*
- No carbon emissions from heating, air-conditioning or water heating thanks to geothermal energy*
- Sustainable energy savings of up to 50 percent through the use of efficient medical technology*

Customer and patient value

- Reduced energy and operating costs thanks to consistent energy management*
- Excellent patient care with the aid of the latest medical technology
- Friendly, healing atmosphere and hotel-like comfort, for example through innovative lighting concepts and use of daylight
- Enhanced image thanks to focus on sustainability and environmental protection
- * Data on file.

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Greei

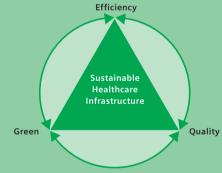
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Quality

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- Convenient and healthy procedures
- Health-supporting environmental conditions



Legal Manufacturer



The Laboratório Dr. Joaquim Chaves is a main pillar of the Joaquim Chaves Group – which also includes Imaging and Oncology Centers – and one of the leading private laboratories operating in Portugal. Due to its size, high levels of specialization, and superior-quality work, the facility is also considered a reference laboratory for the region. In view of increasing cost pressures triggered by market consolidation, the economic crisis, and increasing wastewater and solid-waste disposal costs, in December 2007 the Laboratório invested in a Siemens laboratory automation solution. This investment boosted the company's competitiveness and environmental friendliness.

Key features

- Implementation of customized Siemens Automation Solutions including clinical chemistry, immunoassay, and haematology complemented with haemostasis, urinalysis and blood gas instruments
- Installation of kPCR technology for molecular testing
- Consolidation of departments in one core lab with 40 percent reduction in space required*
- Relocation of 10 percent of lab personnel to manual testing sections in the laboratory*



The lab's spectrum of service comprises nearly 5,000 different tests in the areas of microbiology, immune diagnostics, molecular diagnostics, genetic diagnostics, clinical chemistry, hematology, and urine chemistry.

The green lab

Laboratory automation at Laboratório Dr. Chaves in Miraflores near Lisbon, Portugal



- 30 tons less material waste annually thanks to eliminating the use of nearly a million sample tubes each year*
- 74 percent reduction of liquid waste*
- 40 percent savings in water consumption*

Customer and patient value

- Higher profitability and increased competitiveness, thanks to 30 percent lower lab costs*
- Acceleration of analysis periods by 59 percent without affecting quality*
- Reduction of 50 percent in volume of blood samples*
- * Data on file.

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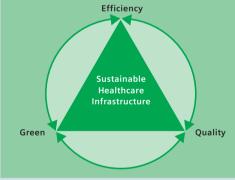
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Efficiency

- Optimized workflows
- Efficient assignment of time
- Efficient assignment of costs

Quality

- Optimized medical care
- Convenient and healthy procedures
- Health-supporting environmental conditions



Legal Manufacturer



St. Joseph Hospital is an advanced care hospital with 475 beds and around 1,100 staff. It has entrusted Gegenbauer Health Care Services (GHC) with operating its building technology facilities. In 2007, when GHC determined the hospital needed renovations totaling approximately €3 million, it started looking around for an innovative financing concept. To take the pressure off the budget, the hospital's supporting organization Katholische Wohltätigkeitsanstalt zur heiligen Elisabeth (St. Elizabeth Catholic charitable foundation) chose Siemens' energy management performance contracting as its modernization and financing strategy. Using this approach, the hospital's facilities will be modernized within the framework of a 15-year contract.

Key features

- Modernize the drinking water heating system and the heat networks; install highly efficient circulating pumps and mini combi-valves with pressure differential regulation
- Set up a decentralized electric steam system
- Upgrade the existing heat recovery system and optimize the ventilation systems by installing a high-efficiency heat recovery register
- Optimize and make flexible the refrigeration supply, chilled water distribution net, and recooling system by adapting temperatures and flow rates as needed
- Set up the new DESIGO building automation system with around 2,500 data points; nearly all cables, sensors, and actuators of the old system will be reused
- Retrofit or replace the conventional ballasts and T8 bulbs with highly efficient T5 technology from Osram



Thanks to the modernization measures, St. Joseph Hospital has been certified with the BUND (League for the Environmen and Nature Conservation, Germany) "energy saving hospital" quality seal and also certified as a "Green Building".

Transforming a hospital from gray to green

Energy management performance contracting enables sustainable modernization of St. Joseph Hospital in Berlin-Tempelhof, Germany



- Active climate protection by reducing CO₂ emissions by approx. 1,300 tons per year*
- Ongoing process optimization through joint continuous consumption monitoring by Siemens and GHC

Customer and patient value

- Contractually fixed energy-saving goal: €325,000 or 23.8 percent below the 2007 energy consumption level*
- Guaranteed energy savings over €4.8 million within contract period related to energy pricing 2008 (heating oil) and 2009 (electricity)*
- * Data on file.

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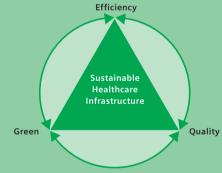
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Legal Manufacturer



Ever since the Centro Médico Imbanaco in Cali, Columbia, was founded in 1976, not only has the capacity utilization of this modern health center grown continuously, but logistical problems in the clinical processes have mounted as well. That's why the hospital management decided in 2009 to join forces with Siemens to develop and build a new, fully integrated building – optimizing workflows, lowering costs, and improving patient care even further.

Key features

- Workflow-optimized construction planning for all departments within the hospital
- Calculation of the needed capacities and resources
- Development of process-oriented space and function concepts in terms of best-practice architecture



The efficient use of human, spatial, and medical resources is largely determined by the efficiency of clinical processes.

As a result, the introduction of workfloworiented concepts at the Centro Médico Imbanaco makes it possible to sustainably increase productivity throughout the entire facility.

Seamless integration of processes and buildings

Optimizing workflows at the Centro Médico Imbanaco, Cali, Columbia

SIEMENS

- Efficient use of systems reduces energy consumption as well as CO₂ emissions
- Lower energy consumption and CO₂ emissions, due to more efficient use of space (particularly with regard to heating, ventilation, and climate control)

Customer and patient value

- Efficient processes optimize the quality of medical care
- Up to 50 percent better utilization of medical systems* (compared to the current situation) reduces energy costs and investment outlays
- Reducing space requirements by an average of 15 percent, compared to the original planning*, lowers energy and building costs, and opens up lucrative alternative possibilities for use

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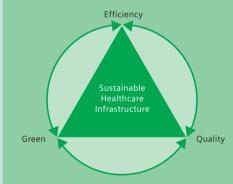
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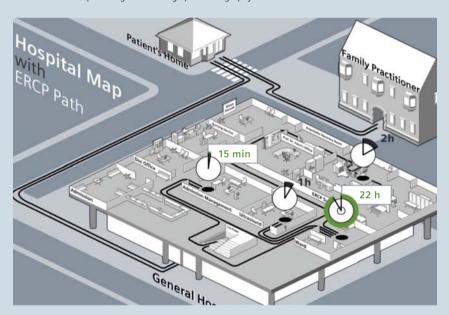
^{*} Data on file.



Implementing optimized clinical pathways at the University Hospital Erlangen increased transparency and efficiency in clinical patient care and also sustainably improved the utilization of staff and equipment. Our Green⁺ Hospitals program not only boosts efficiency but also significantly improves quality and environmental protection.

Key features

- Standardized clinical pathways for five different indicators
- Workflow and use of staff and equipment adapted to the new situation
- Length of stay reduced by as much as 46 percent*
- Billing process accelerated thanks to improved path documentation
- *for a selected path
- **ERCP = Endoscopic retrograde cholangiopancreatography



Within the ERCP** clinical pathway, for example, the introduction of a transsectoral path by involving the general practitioner reduced the length of stay from 48 to 26 hours.

Transparent standardization

Introducing clinical pathways at the University Hospital Erlangen, Germany



- Shorter length of stay sustainably decreases energy use
- Greater process efficiency optimizes the use of systems and resources
- More efficient use of equipment reduces energy consumption and CO₂ emissions

Customer and patient value

- Synchronous and comprehensive overview of costs thanks to path documentation
- Increase in quality of treatment thanks to quality management and optimization
- Ability to respond quickly to payer requirements

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Green⁺ **Hospitals**Sustainable Healthcare Infrastructure. More than just Green.

Sustainable healthcare infrastructure refers to the big challenge to unify ecological and economical demands in healthcare. Siemens supports you in meeting these challenging demands and prepares you for the future – with Green⁺ Hospitals. With a variety of levers that lead to sustainable healthcare infrastructure, a Green⁺ Hospital means more than saving energy and lowering emissions. Our Green⁺ Hospitals solutions help you optimize efficiency and increase quality.

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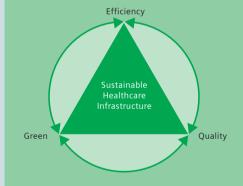
- Reduction of energy consumption
- Sustainable and careful use of resources
- Pollution reduction

Efficiency

- Optimized workflows
- Efficient assignment of time
- Efficient assignment of costs

Quality

- Optimized medical care
- Convenient and healthy procedures
- Health-supporting environmental conditions



Legal Manufacturer



When the 700-bed Bremerhaven/Reinkenheide Clinical Center opened its doors in 1976, it was the most modern hospital of its kind in the state of Bremen. It has continued to maintain and extend its leading position as a therapy and diagnostic center right up to the present day. In contrast, the productivity and efficiency of its building services installations had declined over the years, particularly where energy consumption was concerned. In 2004, primary energy costs amounted to €2 million. In short, it was high time for extensive modernization. Thanks to an Energy Management Performance Contract with Siemens, the Clinical Center now benefits from enormous savings.

Key features

- Optimization of the building infrastructure in over 120 areas from heating and climate control to steam, compressed air, and low-voltage power supply as well as building automation, including the management system
- Intelligent modernization of the HVAC installations for on-demand heating and refrigeration by temporarily lowering the temperature in unused rooms and controlling air conditioning systems depending on the external temperature
- Major progress with regard to installation quality, sustainable cost savings, and energy optimization



On June 26, 2008, the Bremerhaven/Reinkenheide Clinical Center received the "Energy-Efficient Hospital" seal of quality from the "Bund für Umwelt- und Naturschutz Deutschland" (League for the Environment and Nature Conservation, Germany).

Energy efficiency in the hospital

Energy management performance contracting at the Bremerhaven/Reinkenheide Clinical Center, Germany



- Optimization of the steam system, use of high-efficiency recirculation pumps, and intelligent room heating and cooling saves around 50 MWh (25 percent) per year*
- Reduces CO₂ emissions by 4,130 tons per year*
- Sustainably lowers other emissions (including nitrogen oxide and dust)

Customer and patient value

- Necessary investments financed through cost reductions
- Annual savings in energy costs: €520,000*
- Increases building value and patient comfort
- * Data on file.

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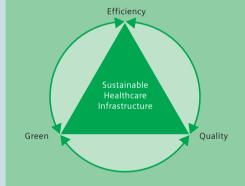
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Legal Manufacturer



Increase efficiency and lower costs – without compromising the quality of patient treatment and care. At Orbis Medisch Centrum (OMC), future-oriented technology ensures that patients receive optimal, cost-efficient medical care. High-tech solutions from Siemens also make work easier for the medical staff, sustainably increasing the productivity of one of Europe's most modern hospitals.

Key features

- Installation of an integrated fire alarm, extinguishing, and danger management system – for reliable alerting as well as fast and efficient response in an emergency
- Implementation of an intelligent access control, intrusion detection, and video surveillance system – for greater building security and patient protection
- Installation of multifunctional bedside terminals for individual control of room temperature, lights, and blinds as well as for paging nurses, for entertainment, and to allow staff to access important clinical and administrative data
- Efficient OR operations, thanks to predefined scenarios and equipment for monitoring room parameters in the OR and in clean rooms
- Greater transparency thanks to evaluations from the energy monitoring and control system



Orbis Medisch Centrum (OMC) in the Dutch town of Sittard is one of the most modern hospitals in Europe. With 425 single-occupancy rooms and 2,000 employees, the 130,000 square meter facility is a hospital of superlatives where the focus is on the patient.

The hospital of the 21st century

Future-oriented optimization at the Orbis Medisch Centrum in Sittard, Netherlands



Key features

- Introduction of electronic patient records that give staff secure access to important patient data from anywhere in the hospital – which saves time and increases staff efficiency
- Integration of an innovative building automation system for energy-efficient control of heating, ventilation, and air conditioning
- Use of Compact Monitoring Technology (CMT) makes it possible to reliably monitor the production of ready-to-use cytostatic solutions
- Establishment of a reliable low-voltage power supply for a more reliable power supply and energy efficiency

Environmental value

- Integrated building technology lowers energy costs and decreases environmental pollution
- Lower CO₂ emissions from the very beginning
- Good ecobalance, thanks to the use of lifecycle-optimized products and systems

Customer and patient value

- Optimized patient care at comparatively much lower cost
- High level of patient comfort patients are treated like guests

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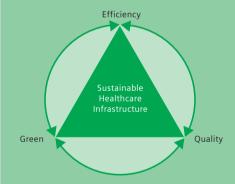
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