What makes a company more economical and ecological?

Intelligent, integrated infrastructure solutions provide comfort, energy efficiency and security inside buildings.

Answers for infrastructure.
What will happen to the world as more and more people choose to live in cities and life expectancy rises?
Facts & figures

- By the year 2015, there will be **24 megacities** throughout the world each with more than 10 million inhabitants.
- Cities such as Paris, Bangkok, Mexico City, Buenos Aires, Seoul and Tokyo will be generating **up to 50%** of the gross domestic product of their respective nations.
- By the year 2025, there will be some **8 billion** people living on planet Earth. That is almost **20% more** than today.
- By the year 2030, **over 84%** of the population of industrialized nations will be living in cities.
- Since 1955, average life expectancy has increased **by 20 years** worldwide.
- Lower birth rates and higher life expectancy are leading to ageing populations.
Siemens is tackling the challenges of the future but staying firmly within the megatrend.

From traditional to urban lifestyles. Megatrends are immensely relevant to Siemens. People are moving into cities in the hope of finding better opportunities to realize their personal and professional dreams. Big cities, however, place significant demands on energy and water supplies as well as protection and security for people and their environment. In addition, low birth rates and higher life expectancy are leading to the problem of an increasingly ageing population. Older people are less mobile, more susceptible to changes in climate and tend to feel more secure when they are inside buildings.

From static to dynamic infrastructures. Businesses are also influenced by megatrends. Buildings develop into dynamic organisms, constantly adapting to new business strategies and reacting intelligently to the environment. Ever more complex automation processes as well as constantly increasing demands on the quality of the workplace are now part and parcel of any professional environment. High operational reliability in terms of infrastructure and the comprehensive protection of business processes remain the necessary requirements for productivity, profitability and competitiveness.
Megatrends affect the way we think and do business. By the year 2025, there will be some eight billion people living on our planet, or almost 20% more than today. Most of these people will be living in cities. In addition, life expectancy in industrialized countries is constantly rising. Tomorrow’s world will thus be shaped by urbanization and demographic change: two megatrends that pose specific challenges to energy and water supplies, the protection and security of people, properties and business processes, mobility and healthcare.

From fossil fuels to renewable sources of energy.
Energy supply and resource planning have been a key issue that has kept both building occupants and operators equally busy for a number of years now. Lack of resources heightens the competition for energy sources and leads to economic centers being moved to different regions. Rising energy and water costs along with increasing environmental awareness and stricter regulations (CO2 emissions and trading) are seeing a shift from fossil fuels to renewable energy sources and to an optimization of overall energy supply and consumption.

Siemens – providing answers for the present and the future.
Siemens uses intelligently networked infrastructure solutions to meet today’s challenges. Innovative products, systems and solutions for electrical installation technology and building automation provide comfort and energy efficiency in buildings while reducing CO2 emissions. Comprehensive fire protection equipment and electronic security systems protect people, properties and business processes throughout the entire life of the building and will keep the Building Technologies Division from Siemens firmly within the megatrend in the future.
How far can a building go with intelligence?
Facts & figures

- For the past **160 years**, Siemens has been at the forefront of innovation and technology.
- The Building Technologies Division from Siemens employs **37,900 people at 500 locations across 51 countries**.
- Siemens is familiar with the official guidelines for building technology in **119 different countries**.
- Siemens holds the rights to **2,370 patents** for electrical installation technology, building automation, fire protection and electronic security systems.
Intelligent, integrated infrastructure solutions create comfort, energy efficiency and security.

The character of a building is shaped by external factors such as its location, its architecture and the materials of which it is made. What is less apparent and yet just as influential are the inner values. It is the technical infrastructure, perfectly adapted to the building’s individual needs and business processes by Siemens, that creates its essential character. Whether it is an industrial complex, an airport, a hospital, a hotel or a stadium, the vision for the building comes from its constructors and architects, while the depth comes from Siemens.

Intelligent buildings are on the rise. The more seamlessly the technical infrastructure functions, the greater the productivity and profitability of the business. This is why building technology is no longer merely a silent partner but an operational element within the company, playing an ever more significant role in helping it to achieve its targets. If the building technology functions reliably, employees are free to get on with their work more efficiently and with more enthusiasm. Our clients are therefore free to concentrate on their core business, giving them a real competitive advantage.

Total Building Solutions (TBS) make buildings more productive. The intelligence of the technical infrastructure increases with the degree of integration. The more systems and components are designed to work together and the more intensively they communicate with each other, the higher the levels of comfort, protection and security in the building:
- Employers provide more security for their workforce and more protection for business processes if their fire protection system is networked with the ventilation management system,
- or if the fire detectors are linked to the opening-and-closing system for doors in the access control system,
- or if the lighting is coupled with the alarm system.

This is why there is such a strong trend towards the harmonization of building and information technology. Siemens uses Ethernet/IP, Web and control systems based on client/server architectures to further the coexistence of the two technologies. This greatly increases the comfort, protection and security of both people and properties.
Total Building Solutions increase benefits for the customer.

Total Building Solutions, embracing the intelligent integration of electrical installation technology, building automation, fire protection and security systems, turn buildings into attractive business partners for companies:

- Having a more reliable infrastructure boosts the company’s profitability.
- Reduced costs throughout the entire life cycle of the building as well as increased energy efficiency provide a greater return on investment. This improves the profitability of the business and the market value of the building.
- More comfort for the building’s occupants, improved working conditions and the fact that employees can focus totally on core business sharpen the company’s competitive edge.
- Secure business processes and material flows combined with the ease of migrating systems and services throughout the entire life of the building provide the ultimate protection of investment and reduce business risks.
- Comprehensive software tools reduce costs as early as the planning stage and pave the way to more efficient buildings.

As regards Total Building Solutions, Siemens holds a very special status worldwide. No other company is able to draw on its own products and solutions for the networking of every element involved in building technology.

Protection for your investment throughout the building’s entire life.

The individual elements of the technical infrastructure are renovated in predefined cycles throughout the entire life of the building and thus always based on the latest technology. This increases system dependability, improves the operational reliability of the building and protects the investment.

Our customers are in good company:
How much comfort, protection and security do people need?
Facts & figures

- People in industrialized countries spend **95% of their lives** inside buildings.
- Innovative building automation helps prevent building-related illnesses, reduces absenteeism and saves up to **1% of the gross national product**.
- **70%** of businesses are forced to close down within 3 years of suffering a serious fire.
- Siemens is the **world leader** in fire protection systems.
- Siemens is one of the **world’s leading providers** of electrical installation technology and building automation.
- In recent years, the Building Technologies Division from Siemens has installed over **125,000** electronic security systems.
- Remote diagnostics identify faults the moment they arise and **reduce** downtime by up to **15%**.
- Regular maintenance can **reduce** energy costs by up to **20%**.
Installation technology, building automation, fire protection and security systems: working around the clock to improve the quality of life and the work environment.

A building should function efficiently. It should use energy sparingly and react automatically to external climate influences. And it should protect people, properties and business processes against intrusion, theft and fire, as well as providing a maximum of comfort. For all of these reasons, a growing number of building owners and operators are turning to products, systems, solutions and services from Siemens.

Electrical installation technology for secure power distribution.
Siemens electrical installation technology includes all-round power distribution systems that ensure the entire technical infrastructure stays up and running. Innovative products ranging from distribution boards, low-voltage circuit protection and building management systems all the way through to switches and socket outlets fulfill all national and regional standards worldwide. Ensuring that lighting, shade, heating, air conditioning and cooling systems together with security and fire protection measures go on functioning reliably around the clock:

- Versatile distribution boards and terminal blocks guarantee safe, efficient power distribution.
- All-round protection, switching, measuring and monitoring devices ensure complete protection for installations, buildings and people.
- Intelligent building management systems make buildings more efficient, more comfortable and more secure.
- An attractive range of switches and socket outlets with designer finishes, guarantees safe, innovative functionality for building installations conforming to virtually any standard worldwide.

Thanks to high-quality manufacturing, engineering and design, our innovative products, systems and solutions are constantly setting new standards.

Building automation for optimum comfort.
Building automation from Siemens provides all-round products, systems, solutions and services for heating, ventilation, air conditioning, light and blind management systems for both single rooms and entire buildings. Our systems monitor, optimize, and manage the individual components, creating perfect interior conditions and maximum comfort. On top of this, they can be controlled from a single, user-friendly control center. Intelligent building automation saves energy and increases corporate productivity.

Building automation for sustainable energy efficiency.
Solutions for building automation with integrated energy services save energy, lower operating costs and ease the strain on the environment. We are constantly looking into new ways of maximizing energy efficiency. For instance, our systems take local and regional weather forecasts into account when monitoring and adjusting the settings of the various components, enabling sensors and certified regulators to react even more quickly to external influences. To help us better understand the challenges of urbanization, Siemens and McKinsey have conducted a joint study that identifies the most pressing needs when it comes to supplying cities with more sustainable energy. The results point the way towards our future energy optimization portfolio.
Fire protection to meet all safety needs. Siemens is the global market leader in fire protection. From initial risk analysis all the way through to service, our products, systems and solutions are technologically superior and continue to set new benchmarks for the entire industry:

- Innovative fire detectors with state-of-the-art ASAtechnology™ (Advanced Signal Analysis) are individually configured to potential dangers and even come with a Genuine Alarm Guarantee*. Voice-controlled evacuation systems, which guarantee gradual, priority-based evacuation of danger zones and also serve as internal communication systems for customers and employees and as a means of transmitting information during everyday operations.
- Modern extinguishing systems, which are geared to the specific needs of the location and react quickly to fires while doing as little damage as possible to the surroundings.

Apart from this, our products and systems can easily be integrated into existing and future solutions.

Intelligent security solutions for buildings and public infrastructure. Security is no longer seen as a luxury but rather as an integral part of company strategy. Instead of buying solutions to individual problems, more and more customers are opting for all-in packages that generate a real return on investment throughout the building’s entire life cycle. Our portfolio includes comprehensive security solutions and services with the emphasis on intrusion detection, video surveillance, access control and danger management.

- To promote a more holistic approach to security, we are breaking down the barriers between individual system components and developing technologies that offer fully integrated and interoperable security solutions based on our 30 years of security expertise.
- Integrated systems permit central management of entire sequences of events. Precision assessment of situations, efficient resource allocation and complete control over the measures deployed guarantee the continuity of all business processes.
- Seamless interaction between various digital systems calls for open, uniform standards. Siemens has identified this need and put it into practice; with the result that the company can now deliver integrated solutions for individual rooms, buildings and even entire cities.
- As the need for security expands to cover increasingly large areas, we are moving away from static building solutions towards dynamic networks and opening up new ways of tackling the global challenges that face us today.

Our security systems and solutions enable users to monitor fire protection and security devices as well as their HVAC systems from a single control point. Future-proof and compatible with existing systems, they will grow with the business and its evolving requirements, delivering true return on investment for years to come.

Comprehensive services for greater flexibility, productivity and profitability. Our Advantage™ Services were designed to meet a whole host of different requirements. Moreover, they are individually configured for every specific customer worldwide to meet their individual needs:

- Life-cycle management provides customized solutions which ensure that all systems are always at the cutting edge of technology.
- Alarm and service centers guarantee rapid, professional management of event, fire and intrusion alarms, preventing damage and disturbance, and minimizing potential hazards.
- Energy services monitor, analyze and optimize energy consumption in the building, save energy and minimize the strain on the environment without sacrificing comfort or convenience.
- Operational services help with the running of the various systems. The agreed system performance guarantees that the customer’s requirements are fully met.
- System maintenance provides preventive and corrective measures to obtain trouble-free, safe and efficient system operation.
- Expert services offer advice, training and the tools needed for the management and operation of all systems.

(*not available in all markets)
Ecological fine-tuning for buildings: how does it work?
Facts & figures

- By the year 2030, we will be consuming around 50% more energy than today.
- About 80% of greenhouse gases are produced by cities, even though they occupy only 0.4% of the earth’s surface.
- Around 40% of global energy consumption comes from buildings.
- Intelligent solutions can save 20 to 30% of the energy consumed by buildings.
- Intelligent solutions can reduce a building’s CO₂ emissions by up to 4,100 tons per year.
- Over the past 14 years, Siemens has completed more than 1,300 energy efficiency projects.
- These have reduced energy costs by some 1.5 billion euros.
- CO₂ emissions were reduced by around 700,000 tons. This reduction is the equivalent of approximately 3.6 billion vehicle kilometers.
Comprehensive energy solutions save up to 30% energy and substantially reduce long-term CO₂ emissions.

Intelligent technologies could reduce the energy used for electrical installations, heating, cooling, ventilation, lighting, water supply and energy distribution – not to mention occupants’ behavior – by up to 30%. More and more entrepreneurs are discovering the energy-saving potential of their own premises.

**Exploiting a building’s savings potential.**

In 2005, according to the International Energy Agency (IEA), commercial premises accounted for around 40% of global energy consumption and 21% of energy-related CO₂ emissions. Our solutions for saving energy resources (oil, gas, electricity and water) are being used with increasing regularity in buildings and provide occupants and operators with a significant return on investment. Since 1994, we have been involved in more than 1,300 energy efficiency projects which have saved some 1.5 billion euros in energy costs while reducing the effect on the environment by around 700,000 tons of CO₂ every year. The use of intelligent solutions in renovations can generate energy savings of as much as 30%. A hospital project in Germany, for instance, slashed yearly CO₂ emissions by 4,100 tons.

**Implementing climate-change strategies with Siemens.**

A responsible attitude toward the use of resources is becoming part of the way an increasing number of companies think and act. Siemens offers comprehensive support for the implementation of climate-change strategies and uses state-of-the-art technologies in its products, systems and solutions that often exceed the targets defined by authorities and businesses. Here are two examples:

- Permanent light management and regulation, coupled with an access control system and motion detectors, saves up to 45% electrical energy.
- Cooling systems linked to an access control system and motion detectors save up to 15% energy.
Energy saving and increased comfort are not mutually exclusive. On the contrary: With their advanced energy management systems, our products, systems and solutions provide the perfect room temperature for your physical wellbeing, while our ingenious energy management gives you peace of mind.

Increasing sustainability through products, solutions and services.
Around 30% of the energy consumed in buildings could be saved merely by modernizing and improving the efficiency of the HVAC systems. One of the main aids here is a building automation system. Integrated, intelligent building automation is the only way to ensure that a building meets the needs of its occupants and to guarantee secure, energy-efficient operations. The efficient use of energy in buildings starts with energy-saving components such as operating devices, control valves, drive motors and measuring sensors for temperature, air quality and humidity. High-performance, web-based software facilitates energy management, while comprehensive energy optimization services featuring analyses, benchmarking, reporting, training and coaching round off our range.

Using energy performance contracting to finance modernization.
Exploiting your energy-saving potential to the full means you reap double rewards. Energy performance contracting not only saves energy and operating costs but also generates the cash needed to finance necessary investments. When you opt for energy performance contracting, selective modernization carried out during the contract period maximizes the building’s energy-saving potential, while the savings made on energy and operating costs directly cover the costs of upgrading. Our energy-saving guarantee makes energy performance contracting totally risk-free and improves the efficiency and operational reliability of the infrastructure, increases the value of the building’s facilities and plays an important role in environmental protection through energy savings and reduced emissions.
What do high-performance buildings such as airports, hospitals, stadiums, hotels and pharmaceutical laboratories have in common?
Facts & figures

- **9 out of 10** of the world’s leading pharmaceutical companies work with Siemens.
- Siemens technology has been installed in **90%** of the world’s 300 largest airports.
- Intelligent, integrated infrastructure solutions for pharmaceutical companies speed up development times for new drugs.
- Efficient infrastructure solutions for airports reduce **aircraft holding times**.
- All-embracing hospital infrastructure solutions reduce **in-patient times**.
- Comprehensive infrastructure solutions for shopping malls boost customer loyalty and frequency.
- Individual infrastructure solutions for hotels increase **guest satisfaction levels** and their willingness to spend.
- Innovative infrastructure solutions for industries reduce production time and costs.
- Modern infrastructure solutions for residential buildings increase the security and comfort of occupants.
Siemens expertise in specific industries makes all the difference.

Industry-specific knowledge and experience, an in-depth understanding of our customers’ business processes and the combined expertise of all Sectors from Siemens are what turn a piece of real estate into a dynamic, high-performance environment and help entrepreneurs make their visions come true. Regardless of whether their target is growth, transformation or a change in business strategy.

Simulating solutions in our own airport center and hospital facilities.
The occupants and operators of specific types of buildings such as hotels or shopping centers, of complex infrastructures such as airports or hospitals, or critical environments such as the pharmaceutical or food industry, place entirely different demands on building technology. This is the reason why we gather the comprehensive expertise we need for our customers in our own airport center, hospital facilities, laboratories and test areas, and then apply this know-how to specific types of projects. It also enables us to develop technical innovations that take into account the future development potential of our customers and their businesses.

Using our expertise to turn customers’ needs into reality.
To help us gain a better understanding of our customers’ needs and priorities, we work with them closely right from the development stage. This intense cooperation, together with the insider knowledge we glean from it, enables us to realize solutions precisely tailored to the needs of their business. At Siemens, professionalism is closely linked with individuality and flexibility.

Solutions for airports.
Airports are at the cutting edge of technical development in terms of electronic security and the exchange of data across various systems. Autonomous management systems for air traffic, security, building automation and energy monitoring are all managed by a single command and control center from Siemens. This sets new standards in terms of efficiency and safety, enabling passengers to get from the car park to the gate more quickly and reducing aircraft holding times. But airports are packed with other Siemens innovations – flight information and telecommunication systems, energy supply and distribution, airfield navigation lighting, check-in desks, baggage sorting and conveying equipment, traffic and parking guidance systems.

Solutions for pharmaceutical companies.
No other industry is subject to stricter regulation than the pharmaceutical industry. The value creation chain is enormously time-consuming and capital-intensive. For every 50,000 active ingredients evaluated, only five will be clinically tested and just one will make it to the market; all at a cost of 15 years’ production time and some 500 million euros. To ensure that processes run at maximum efficiency, we offer protection from unauthorized interventions, avoidance of costly interruptions due to false alarms, constantly defined and seamlessly documented ambient air conditions, and precise pressure differential regulation in clean rooms, as well as surveillance of warehouses. An electronic validation tool designed by Siemens details the process, includes validation guidelines and documents, and helps pharmaceutical companies meet the stringent requirements of the US Food and Drug Administration (FDA).

Solutions for hospitals.
The Siemens solutions portfolio for hospitals creates added value for all parties concerned. Thanks to the seamless interplay of Siemens medical, energy, automation and building technologies, we are able to provide highly efficient solutions that make the patient’s stay in hospital more efficient and pleasant, while providing tangible support to the doctors, surgeons and nursing staff and easing the administrative
and financial burden on health insurers. Our solutions make an important contribution to healthcare in Europe in over 1,500 reference projects.

**Solutions for hotels.**
Be it a small, family-run guesthouse or an extensive luxury resort, Siemens supplies customized technical infrastructure solutions that are the answer to every hotel owner’s needs. They include integrated systems for resource, building, service and room management together with state-of-the-art lighting, fire protection, security and communication solutions that make the building more efficient and profitable all the way from the underground car park to the Presidential Suite. And ensure that business travelers and vacationers alike feel completely at home from the moment they arrive.

**Solutions for stadiums.**
Whenever tens of thousands of fans gather for an event, security is one of the greatest challenges facing the organizers and stadium operators. Behind the scenes, ensuring that events go off smoothly, is a complex of intelligent interactive systems for power distribution, building automation, access control and video surveillance as well as fire protection, extinguishing and lighting systems. Together, they guarantee an unforgettable experience for the fans, the athletes and the media. And ensure that the stadium itself delivers the star performance of the evening.

**Benefiting from international exchanges of experience.**
As a leading technology supplier, we invest a great deal of time and money in research and development. Our close cooperation with the world’s leading universities and a lively exchange of ideas with major industrial associations enable us to identify trends at an early stage and to incorporate them into our innovations. This is why our products, systems and solutions have an influence on current industry standards, why they regularly exceed the most exacting standards and test criteria, and why they continue to win national and international design awards. It also explains why they pass the toughest test of them all: everyday use.

**Making the most of the experience of 400,000 partners.**
With some 400,000 employees, Siemens is one of the world’s leading electronics companies. We think and we work on the principle that customers will have greater competitive advantage if they can get more innovations from a one-stop shop. Being able to combine expertise from all our Sectors means we are in a position to provide the kind of total, tailor-made solutions for specific needs which customers seek in vain elsewhere.

We look forward to tackling your challenges with you. Welcome to Siemens.
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.