Can old buildings be just as energy-efficient as new ones?

Intelligent, energy-efficient building automation reduces emissions and costs in every building.
Efficient energy use to protect the environment

Increasing changes in the climate, dwindling resources, and rising energy costs as well as stricter government regulations are an urgent request to drastically reduce energy demand and greenhouse gas emissions. Growing consciousness of our environmental responsibilities also drives the demands for energy savings.

Today about 40% of all primary energy consumption is for supplying buildings. This consumption includes heating, hot water production, cooling, ventilation, lighting, and the necessary auxiliary energy.

For years, Siemens has been committed to environmental protection and the improvement of energy efficiency in buildings. Today, the use of energy-efficient building automation functions can save up to 30% of the energy required in buildings without compromising comfort.
Investing into the future

Intelligent comfort
Products and systems from Siemens are designed to provide an ideal climate in any environment for work or living, because comfort in buildings and rooms are important requirements for human well-being and satisfaction. Products and systems from Siemens are matched precisely to the requirements of use in individual rooms, providing comfortable conditions with the lowest possible energy consumption.

Reliable partner
As an experienced partner, Siemens has a profound understanding of the building technology market as well as energy-efficient building and room automation. This is apparent in both the combination of products and systems to create successful, energy-saving solutions and in the simplicity of installation, startup, and maintenance. Siemens also supports your use of renewable energies.

Great expertise for energy-efficient solutions
The Siemens portfolio includes building automation for heating, ventilation, and air conditioning as well as low-voltage power distribution, lighting systems, and more. Siemens is thus a provider of integrated solutions for saving energy. The well-matched full selection of products enables any technical building application to be handled in an energy-efficient, flexible manner.

Long-term investment protection
Investment in buildings requires security. Siemens offers you long-term investment protection in each phase of the building life cycle through the continuing development of new energy-efficient technologies as well as full compatibility with the preceding generation of products and systems.

Highlights
■ Ideal climate in buildings and rooms
■ Integrated solutions reducing costs and energy consumption
■ Experienced and reliable partner with comprehensive product and solution portfolio
■ Long-term investment protection through continuing development of new energy-efficient technology and backward compatibility of products and systems

Primary energy consumption

- Mobility 28%
- Buildings 41%
- Industry 31%
Innovative building automation for increasing energy efficiency

Sustainable energy efficiency
Sustainable solutions for buildings play a key role in the protection of the environment. Various options are available, such as optimizing the building envelope and replacing heating, air conditioning, and lighting systems. Savings of up to 60% can be achieved this way. The disadvantage of many of these investments is the long amortization period of 10 to 60 years.

Reduced energy consumption
The automation of building technology plays a key role. In both new buildings and renovations of older, less efficient buildings, significant reductions of energy consumption and CO₂ emissions are achieved relatively quickly. Potential energy savings are as much as 30% with a short amortization time of a few months to 10 years. Intelligent building technology from Siemens enables you to save energy and cut costs every day without compromising comfort.

Optimized energy use
Innovative building automation systems influence the energy efficiency of a building in many areas. They ensure precise control of temperature, humidity, and air quality in the room while providing optimal generation and distribution of heating and cooling media. Optimized control of lighting and blinds and energy recovery are also important. The trend is quite clearly toward networking of building and information technology and energy management adapted to individual needs. This leads not only to sustainable improvement in energy efficiency and a lasting reduction of operating costs, but also to greater property value and a noticeable gain for your company’s image.

Highlights
- Energy-efficient building operation
- High energy and cost savings achieved quickly
- Reduction of CO₂ emissions and protection of the environment
- Short amortization periods
- Networked building and information technology
Demand-dependent control for more comfort and lower costs

**Automatic control**
The energy efficiency of a building is largely determined by the needs of those who use the space. But energy losses and gains, thermal influences from the outside, and users and equipment in the room also make contributions. Thus, for rooms with different uses, demand-dependent control of the units and their integration in a building automation system is one of the most important requirements to increase energy efficiency.

**Getting the most from the possibilities for saving energy**
There are many ways to save energy. Examples include individual regulation of room temperature using window contacts, daylight-dependent lighting all the way up to a building automation system adapted to customer requirements. Such a system automatically controls each room temperature, lighting, and shading taking into account the time, day of the week and use. If a user is in the room, the heating or cooling, lighting, and sun protection are controlled as required by the environmental conditions. If the employee leaves the office in the evening, the heating and lights are turned down or shut off. Intelligent energy management is needed for this.

**Maximum comfort**
With their comprehensive expertise, Siemens supports you in choosing the right solution for intelligent automation of the technical facilities in your building. This enables you to increase the energy efficiency of the building while optimizing or even improving comfort.

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**Highlights**
- Demand-dependent control
- High energy efficiency due to integration of all technical installations
- Building automation system matched to customer requirements
- More comfort for all users of the building
Planning basis for evaluating energy consumption

Benefit from the close collaboration of Siemens with government and international institutions, leading universities, and industrial enterprises.

Directives and standards
Some years ago, the EU issued a directive for the overall energy efficiency of buildings. It aimed for an improvement of overall energy efficiency and required, among other things, a uniform method of calculation. The EN 15232 standard was created for this purpose. It can be used as a working tool for planning, because it makes it clear for the first time in a standardized way what great potential for energy savings exist in the operational management of technical systems in buildings. It enables the influence of building automation functions on the energy efficiency of the building to be calculated, providing economic proof of value for building automation.

BACS Efficiency classes
The EN 15232 standard divides building automation systems in four efficiency classes A to D. These provide clear information on how much thermal and electrical energy can be saved in particular building types such as office buildings, hotels, schools, auditoriums, restaurants, shopping centers, hospitals, and residential buildings. A decisive factor for assignment to efficiency class A is cross-system communication along with demand-dependent control. A class A building automation system implemented throughout an office building can save up to 30% of thermal energy and 13% of electrical energy compared to efficiency class C.

eu.bac quality assurance system
Siemens is also involved with the European quality assurance system of eu.bac. This has assumed the task of developing solutions to reduce CO₂ emissions in buildings and a European quality assurance system for energy-efficient building automation. In the eu.bac certification tests, such as for individual room controllers, the quality of control is tested. To receive certification, the minimum requirement of 1.4 Kelvin must be achieved. A Kelvin temperature difference enables energy savings of approximately 6% to be achieved.
As a member of global initiatives such as CEN and ISO, eu.bac, Green Building, LEED, the Clinton Foundation, and Business for Climate Protection, Siemens supports efforts to reduce CO₂ emissions.

Convincing results
Siemens “best in class” controllers achieve up to 8% higher energy savings than other eu.bac-certified controllers meeting the 1.4 Kelvin criterion. Products and systems from Siemens provide all the functions required for efficiency class A and even often exceed the strict standards and test criteria.

Profitable collaboration
Siemens has decades of experience and comprehensive expertise in control technology for the most diverse range of HVAC applications and building automation. The company responds quickly to changes and always keeps the individual needs of customers in focus during the development of new, energy-efficient technologies. Siemens has a strong commitment to sharing this knowledge as a member and partner in many organization and initiatives and thus helps to shape current standards. Moreover, Siemens works closely with leading universities in Europe, the US, and China and uses their extensive expertise in more than 50 countries for developing new energy-efficient products, systems, and applications.

Tested applications
To ensure the highest quality and control accuracy, all applications are subject to thorough testing and perfect calibration in the unique 800 m² HVAC laboratory from Siemens. Only testing of this kind under real conditions can guarantee the energy savings of the applications. These ensure optimal, energy-efficient control of the temperature, humidity, and air quality in the room as well as satisfaction of individual requirements for comfort.

Optimal utilization of new building construction
In collaboration with Swiss Federal Laboratories for Materials Testing and Research (EMPA) and the University of Lucerne, a research project was carried out on the subject of thermoactive building component systems (TABS). These are used for thermal conditioning of rooms and have demanding requirements for control. The use of the Siemens application enables the settings for a specific building to be calculated and the time for precise initial adjustment to be reduced drastically. Buildings with TABS installations are also outstandingly suited for the use of renewable energy.

Highlights
- Evaluation of energy savings based on official standards
- Products and systems for achieving energy efficiency class A
- Intensive collaboration with public institutions, associations, and universities
- Improved energy efficiency and reduction of operating costs
- Experienced partner with comprehensive expertise and a wide selection of products and services
Reduce your energy consumption and costs to a minimum with integrated room automation and demand-dependent control systems from Siemens.

**Innovative control strategy**

AirOptiControl, an innovative new control strategy, provides considerable energy savings while taking into account comfort conditions. It optimizes the air flow volume, thus providing a basis for energy-efficient operation of ventilation and air conditioning systems. This not only leads to reduced operating costs but also to lower maintenance and service costs.

**Complete control systems**

Siemens always looks to do more and also works with leading manufacturers of micro-thermal power plants and designs control strategies or develops and produces complete control systems, even for heat pumps.

**Comprehensive choices**

The many tested, innovative, energy-efficient applications available enable you to achieve a sustainable reduction of energy and building operation costs while conserving energy resources and cutting CO₂ emissions. You too can benefit from the broad specialist expertise and the special tools developed by Siemens for documenting energy savings and calculating the time for investments to pay for themselves.
Your capable partner for building automation

Benefit from comprehensive options
Our wide range of innovative products, systems, and applications enables all building functions to be coordinated with each other and automated. In this way we ensure the greatest energy efficiency and more comfort in buildings. Experts from Siemens are ready to advise you. Let us exceed your greatest expectations!

Highlights
- A capable partner for energy-efficient building automation
- Comprehensive options cover the range from energy production to distribution and optimal use in rooms

Active climate protection demands the responsible use of existing resources and a rapid reduction of CO₂ emissions. Siemens supports you in this effort and does its part as well.
Answers for infrastructure.
Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

“We are the preferred partner for energy-efficient, safe and secure buildings and infrastructure.”