Energy efficiency raises productivity.
Economically and ecologically expedient handling of resources

Tougher competition and rising costs of raw materials and energy, as well as a string of new and stricter regulations for environmental protection, make the efficient and sustainable use of resources a key topic in the glass industry.

In this brochure, the Siemens Glass Team introduces you to its range of products and solutions. Discover how we can support you as a partner in structuring your production processes for greater energy efficiency.
Partners in every aspect of energy efficiency

As a partner to the industry, we are also focused on energy efficiency. By means of competent advice and targeted solutions, we support the glass industry in reducing raw material and energy costs and cutting emissions to a minimum, so that the production process is as energy-efficient and environmentally sound as the end product itself.
Thorough knowledge of the technology and sector

In principle, energy savings of 5% are possible in the glass industry. This represents a savings of six Terawatt hours per year – approximately the same energy consumption as a city with a population of five million. In order to determine where the hidden potential lies, we conduct Energy Audits to analyze individual processes. Using our vast experience of your sector and comprehensive technological expertise, we show you ways in which you can achieve significant energy savings – taking into consideration every type of energy.

Effective leverage of greater efficiency

- Our SIMATIC PCS 7 process control system facilitates continuous optimization of the production processes – even with regard to the use of energy. A typical example: the combustion process in the glass melting tank.
- Power Management: By means of intelligent power management integrated into SIMATIC PCS 7, it is possible to determine exactly which unit is using how much energy. This reveals where energy is being wasted, enabling the offending units to be replaced by more efficient systems.
- Heat recovery: the waste heat generated in the manufacturing of glass can be reused in order to save energy.
- Efficient products and systems: The replacement of obsolete and inefficient units with the latest technology offers enormous potential for energy saving. For example, the use of variable frequency drives alone enables energy consumption to be reduced by as much as 50%.
Advanced Process Control: Targeted reduction of energy and raw material costs

Advanced Process Control (APC) opens up completely new opportunities for intelligent process control.

The use of energy and raw materials can be significantly reduced, quality levels raised on a permanent basis and production processes more flexibly structured.

The key to greater efficiency

With our innovative SIMATIC PCS 7 process control system, even very complex APC applications of major software suppliers can be integrated easily and cost effectively.

This facilitates the use of predictive process control from which greater throughput can be achieved while maintaining consistent product quality. We offer solutions in collaboration with our partners.
Totally Integrated Power: Customized energy distribution

The reliable and demand-oriented supply of electrical energy is a basic prerequisite for uninterrupted plant operation. Apart from the basic availability, the economic distribution of electrical energy is also becoming more important.

Consistent exploitation of potential savings

Totally Integrated Power is our extensive range of fully coordinated products and systems for electrical energy distribution. These form the ideal basis for implementing integrated solutions in industrial and special-purpose buildings – from the medium voltage network through to the consumer. Our range covers all phases of an energy distribution project and facilitates considerable savings – in planning, configuration, construction and operation.

More security in planning

Even at the draft planning stage, our SIMARIS® design planning software analyzes all relevant project data to work out the ideal order of scale and thus the most economical solution for the project. This greatly simplifies the dimensioning process. The overall costs of planning are reduced, as well as the time required for selecting the optimum resources.
Custom-made low-voltage energy distribution

Our portfolio comprises the entire range of low voltage energy distribution – from a single source. It comprises switchgear, busway systems, protective, switching and measuring devices as well as intelligent solutions for power management. One particular highlight from our range: the new SIVACON® S8 switchgear for maximum personal and plant safety up to 7000 A.

High-precision measurement of energy data

SIMEAS P is our compact measuring device for recording all relevant measured variables in electrical supply networks. The measured data can be transmitted by means of PROFIBUS DP to our SIMATIC PCS 7 process control system. SIMEAS P indicates more than 80 variables directly on the graphical display or transmits them to central computer systems for further processing.

Improvement of energy efficiency by means of:

- Identification of energy-intensive consumers and processes
- Efficient process design
- Evaluation of consumption and costs
- Adherence to the contractual performance limit

Reduction of operating costs with Power Management

Our Power Management System based on SIMATIC technology helps you to optimize the use of energy and to bring down costs, making energy savings of up to 20% possible. To achieve this, the energy data recorded by the switchgear, protective or measuring devices with communication capability is processed accordingly in the higher-level Power Management System. The Power Management Premium add-on SIMATIC PCS 7 powerrate, which is completely integrated into Totally Integrated Automation and SIMATIC PCS 7, enables the energy values to be displayed and evaluated accordingly. The result: a transparent representation of your energy consumption, correct assignment of costs to the appropriate consumers and automatic load management.
Using waste heat to reduce energy costs

The waste heat generated during glass production can be re-used in order to cut energy costs and to help protect the environment.

Integration into the process control system

Together with well-known plant constructors, we support the glass industry in the planning and construction of innovative heat recovery systems that will show a return-on-investment in a very short time.

The plants are controlled and monitored directly by means of the SIMATIC PCS 7 process control system from one central control room without the need for additional operating personnel. This ensures the consistent automation of the entire plant. And there is one more advantage: our experts provide the operating team with all necessary training during the commissioning phase.
Heat recovery in the glass industry

Heat recovery

Plant efficiency

Energy for production process

Waste heat

Raw materials

Glass
Energy-efficient drive technology

As much as 70% of the total industrial power demand is consumed by electrical drives. This means there is considerable potential for savings which can be unlocked through the use of energy-efficient drive technology.

Our products show the way

You can benefit from energy-efficient drive systems in many respects. They contribute to a reduction of production costs, raising the return-on-investment and cutting CO₂ emissions. A switch to energy-saving systems will start to pay back immediately. The investments are paid back in a very short time, often within just a few months.

As one of the world’s leading suppliers of drive systems, we offer a particularly extensive range of energy-efficient drive technology: From the appropriate products and advice to the services that support you in unleashing the greatest potential for making savings in your plant.
Motors for all applications

Our high-efficiency motors for the global market can reduce power loss by up to 40%. Our range of motors covers voltages from 230 V to 13.2 kV and power ratings from 0.37 kW to 500 MW. Our motors up to 690 V are available for both mains and converter operation and interact perfectly with our SINAMICS frequency converters as well as with our SIRIUS motor starters.

Speed-controlled operation

The use of variable-speed drives with frequency converters is the economical alternative to mechanical control in which the motor runs constantly at the rated speed that is required for maximum flow volume. These drives adapt the flow volume to the current requirement, achieving savings of up to 70%. We offer corresponding solutions together with our extensive range of SINAMICS drives.
All members of our SINAMICS series of drives are characterized by a clear, well-structured design that ensures maximum ruggedness and reliability. Other advantages: Integrated engineering, lower expenditure on commissioning and operation, compact design, low noise level and integrated PROFIBUS interfaces as standard, as well as numerous analog and digital interfaces for effortless integration into automation architectures.

Work out the potential savings in advance

Our SinaSave software tool enables you to calculate how soon your investment in an energy saving motor or frequency converter will pay for itself. On the basis of the respective plant characteristics, SinaSave works out the possible savings for the specific application. The program compares the monthly total saving and the purchase and installation costs for motor or frequency converter – and uses this information to determine the payback period.
Medium voltage switchgear in the industry must offer high reliability, personal safety and compact design. Particular attention must be paid to the optimum design and the reactive current compensation.

Compact and maintenance-free

Our SF6-gas-insulated medium voltage switchgear in the 20 kV design version, with its excellent performance values and compact dimensions, ensures an economical and completely reliable distribution of energy. Thanks to the gastight encapsulation of the high-voltage section, the use of SF6 as an insulating medium and the use of maintenance-free drives, our plants require no maintenance for life.

Energy quality thanks to reactive power compensation

Our reactive power compensation systems enable you to reduce your energy costs with lasting effect. The savings are often so great that a return on investment can be achieved in less than two years. Our systems are modular and can be used in the voltage range from 3 to 36 kV. Using the compensation systems, it is possible to adhere exactly to the power factor precisely defined by power supply companies in their supply contracts.
You can also save energy by using intelligent, integrated building technology. With a comprehensive range of products for building automation and lighting we support you in achieving the highest energy classification in your buildings.

**Measurable savings**

The European standard EN 15232 defines standards for effectiveness of building automation systems that are divided into the Energy Efficiency Classes A through D. In the highest class (A), the energy savings in office spaces are 30% lower than standard values.

Our flexible products and systems for building automation, provide the conditions for attaining Energy Efficiency Class A. By means of continuous recording and evaluation of the energy consumption, any existing potential for saving energy can be reliably tracked down. In order to safeguard the optimum energy efficiency of the building in the long term, we not only offer the products and systems, but also numerous services and a wide range of training courses.

**Success guaranteed**

For the successful implementation of modernization measures concerning every aspect of building technology we offer you an Energy-Saving Contracting service which guarantees that the improvements to your buildings will actually be financed through savings in the operating costs, while at the same time raising comfort levels.

**More efficient lighting technology**

About 19% of electricity consumption worldwide is used to generate artificial light. Over 30% of this energy can be saved by using more efficient lighting technology. Using energy saving lamps from Osram, a subsidiary of Siemens, you can unlock this potential. Compared to conventional light bulbs, energy saving lamps consume up to 80% less electrical energy – while lasting up to 15 times longer.
Sensor Systems: Precise measurement results and reliable control

On the basis of our sound technological and industry-specific knowledge, we develop sensor systems that set new standards in terms of their precision and reliability. These deliver accurate measurement results and reliably check all process steps during glass production.

Temperature measurement

Our extensive SITRANS T range stands for high-precision temperature measurement – even under extreme conditions. For flexibility of application, the devices offer different types of mounting: in the connection head, on the mounting rail or in the field-device enclosure.

Pressure measurement

SITRANS P is our complete range of devices for precise measurement of relative, differential and absolute pressures. Whether digital or analog: All measuring transducers exhibit absolute reliability and a sophisticated safety concept, great ease of operation and extreme ruggedness.

Level measurement

Our range covers both limit level measurement as well as continuous procedures: capacitive, electro-mechanical, gravimetric and the procedures radar, guided microwave and ultrasonic methods.

Flow measurement

Our SITRANS F range offers you a wide variety of devices on the basis of different measurement principles: magnetic-inductive, Coriolis, ultrasonic (in-line or clamp-on), cylindrical piston meters, vortex and differential pressure flow meters.

Scales and metering systems

Our SIWAREX weighing cells and electronic modules for weighing systems, in combination with the Milltronics belt scales, weigh feeders and solid flow meters ensure the greatest precision.

Proximity switches

Whether you are measuring solids, liquids or powders; whether you are recording, counting, metering, monitoring or positioning: our extensive range of optical, inductive, capacitive and ultrasonic proximity switches reliably meets all requirements of a modern automation system.
Strong together for a successful future

Our range of services helps you to use energy more efficiently and simplifies the execution of energy audits.

Energy Optimization Services

Our Energy Optimization Services (EOS) can help your company to cut energy costs by at least 10%. First, we carry out an assessment of the energy currently used in your operations and then we point out the potential for improvements.

In the next stage, the specified measures are examined for their technical and economic feasibility.

Partner to the glass industry

The Siemens Glass Team supports glass manufacturers worldwide with an extensive and innovative portfolio of products, coordinated solutions based on Totally Integrated Automation, with expertise in the glass industry and a comprehensive range of services covering the entire product life cycle.

Let us meet the current challenges together. We will be pleased to advise you on a personal basis. Simply send us an e-mail to:

glass.industry.automation@siemens.com
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