Our comprehensive offer for the sugar industry
with Totally Integrated Automation
Producing sugar used to be easier. But today, in addition to the fluctuations in the quality of the raw material which continually have to be compensated for, there are additional challenges: soaring costs for the raw material, be it cane, beet or raw sugar, high energy costs, along with growing requirements for more consistent quality of the finished product. In addition, there is increased pressure resulting from the globalization of the sector, with demands for levels of efficiency and transparency that were previously unheard of. But you just have to take some things as they come and try to make the best of them. That is exactly where we can support you. Regardless of the challenges you have to face in the future.

As a long-standing partner for your sector – Siemens has been developing specific solutions for the sugar industry for well over 50 years – we are very familiar with the processes in your industry. Regardless of whether you extract the sweet taste from sugar cane or sugar beet, we can assist you in every aspect of your sugar business. With a special understanding of your processes, with global expertise and with one of the most extensive ranges of products, systems and solutions for every single stage of the process.

Our range of services for your sector is based on our desire to ensure consistent integration of all the solutions. With an industry-specific portfolio ranging from automation, instrumentation, drive technology and low-voltage switchgear, to global services throughout the entire life cycle of the plant, we cover every phase and area of sugar production, ensuring that all stages of the process are perfectly coordinated.

Whether you are planning a new plant or wish to modernize an existing subprocess, our detailed knowledge of your sector and our commitment as an innovation driver mean that we are not only your one-stop solution provider but also your adviser on all questions relating to sugar production.
Our solutions for the sugar industry

In all their development work our engineers follow one simple guiding principle: boosting output with reduced expenditure and resources. This is based on the clear objective of raising the capacity and profitability of your plant as well as production quality. Combined with reducing the use of resources such as energy, personnel and materials and the cost of maintenance and repairs – at every level.
High product quality through continuous monitoring
The demands for consistent sugar quality, especially with regard to crystal size and color, are equally high today among both sugar consumers and end users. Meeting this demand is no easy undertaking: you have to take the raw material as it grows, whether it is cane or beet.

Nevertheless, in order to achieve a perfect result at the end of the manufacturing process, we offer specific solutions for sugar production from the moment the raw materials are delivered to the factory to the time the finished goods leave the factory. Whether in the optimum crystallization process or the regulation of the juice preparation based on the raw materials, our integrated solutions provide continuous control and precise handling of all stages of the process and ensure constant quality all the way to the finished product.

Maximum profit with integrated automation
Given the different process steps in sugar refineries, it is absolutely essential to keep an eye on the entire workflow, at both process and plant management level, if production is to be optimized. Our automation systems based on Totally Integrated Automation support this integrated approach, as they allow end-to-end automation of all the process stages from goods-in to goods-out. With its end-to-end integration, Totally Integrated Automation plays a big part in keeping production costs down, while at the same time improving transparency, quality and the availability of your production in the long term.

Reduced costs due to lower use of energy
One of the major cost factors in sugar production is the energy required. The best example is starting up and stopping the centrifuges. With intelligent and sustainable solutions – for example, the use of the latest, energy-efficient converter drives – savings of up to 60% can be achieved in comparison with pole-changing drives. With extensive experience in power distribution, we can also support you in safeguarding and optimizing your supply network.
For successful campaigns: Industry Suite Sugar

In the Industry Suite Sugar you will find our extensive range of solutions for your sector. Specially tailored to the challenges you face, this portfolio offers you everything you need for every aspect of sugar production. From automation and energy concepts to global services throughout the entire life of the plant. Our offer is based on Totally Integrated Automation and Totally Integrated Power – as well as our comprehensive know-how in your industry.
Understanding the technological requirements: Process know-how
The numerous different plant sections in the sugar industry can be automated most economically with flexible solutions using the building-block principle. The step-by-step automation has considerable advantages: any production restrictions caused by conversion to automated operation can be reduced and the plant operators learn from the start how to operate a comprehensive process control system like SIMATIC PCS 7 which grows in line with the level of automation thanks to its modular structure. On the basis of Totally Integrated Automation, all subprocesses can be integrated step by step into a homogeneous overall solution, in which each stage of the process meshes perfectly with the next.

With our industry and process-specific expertise we support you in a close partnership on the way to perfectly automated sugar production – with customized solutions that best meet your requirements.
Demand-based and economical energy concepts
As a leading manufacturer in energy supply and distribution we can provide the complete power supply system from a single source – from the infeed to the consumer. In doing so, we actively promote the development of new energy concepts and offer you modern power management systems as well as intelligent components for a demand-based, cost-optimized and future-oriented energy supply.

Complete solutions from a single source
Whether you are modernizing or starting from scratch, our complete solutions are perfectly tailored to your requirements. When modernizing your plant, we attach great importance to the integration of your existing plant into the new automation solution, together with new devices for measurement and open and closed-loop control solution. In the case of new plants, we rely on fieldbuses such as PROFIBUS or the AS-Interface for the transmission of process signals and for the open and closed-loop control of the individual process sections. The advantage for you: significantly less expenditure on commissioning and maintenance. Fieldbuses and conventional single-wiring can also coexist as your plant is being modernized.
Our automation solutions ensure an optimum workflow and safeguard your business success with lasting effect. You benefit from our unique expertise. In addition, single-source implementation ensures a high level of valuable synergies and learning effects – for consistently higher quality and continuously optimized efficiency of resources.

Practical training
In response to the current and future demands in your sector, we offer you a host of customized training options to increase your level of expertise. This includes on-site training during commissioning as well as additional courses in one of our numerous training centers or at your plant.

Global services for the entire life cycle
Whether it involves an individual task or a complete maintenance contract, our comprehensive range of services covers every project phase of your plant – from design, engineering and commissioning to maintenance and retrofitting. Our solutions facilitate optimized processes and lower life cycle costs.

Global sugar community
We are at your service worldwide – with a global network of experienced sugar experts who work together with local support specialists just as closely across continents as they do on site. Clearly focusing on one target: the maximum possible earnings for your project.
The ingredients for maximum productivity: automation and control technology

If you want to produce sugar with maximum efficiency, you must look at the overall picture: the entire process chain from the incoming raw materials to the outgoing goods. Because the more integrated the workflow is, the greater your competitive edge. We can offer you the appropriate ingredients in the form of Totally Integrated Automation and the NAHMAT PCS 7 process control system that perfectly combines all stages of the process, thereby ensuring productivity along the entire line.

Controlled crystallization for crystal-clear advantages – all the way
NAHMAT Crystal Control automates the entire crystallization process – from drawing in the viscous juice to discharging the massecuite. The system records all the required readings such as juice level, viscosity, steam pressure, vacuum in the juice chamber, temperature or status of the drive and control units and converts them into control pulses – according to the progress of crystallization.

At the same time, NAHMAT Crystal Control monitors the nonlinear characteristic of the viscosity measurement. The required value for the juice control output is taken from the boiling graph, which is assigned to the corresponding product and pan. Since the automatic pan boiling system of a crystallization pan can
store several boiling curves, one pan can seamlessly crystallize different products in succession. With Crystal Control you can either implement a single automation process or integrate the entire crystallization process into a higher-level process control system such as NAHMAT PCS 7.

**Perfect process control – all through the factory**

NAHMAT PCS 7 is suitable for the automation of complex plants and process cells. Even in its minimum configuration, the process control system can automate a variety of operations, including, for example, 10 to 12 crystallization units, an evaporation station or a juice purification system. Complete automation of an entire sugar product plant requires that a wide array of automation and HMI systems all work together smoothly. The networking of these systems ensures that the data from all readings is available to all bus stations. Smaller distributed systems such as Crystal Control or control units for centrifuges, scales, filters and other machines, for example, are connected to the entire system.

Our process control system has the option of being integrated via an innovative PROFIBUS network or conventionally wired – for example in the course of a plant modernization project.
Power and efficiency at once: drive technology

Drives keep production running – in all sectors of industry. As a leading vendor, we offer a vast range of different drive systems. From motors and converters to gearboxes, supplemented by our special range of solutions for the sugar industry, ranging from small drives for servomotors and standard drives for pumps to special drives for centrifuges.
Energy-efficient drives
For maximum energy efficiency, we can help you to select the appropriate drive. Within our complete range of standard drives we offer you a whole variety of highly efficient motors and frequency converters. Especially in the field of flow control, these demonstrate their value as an economical alternative to mechanical controllers, thanks to their throttle flaps, as they consume up to 50% less energy.

Ultrafast and powerful centrifugal drives
Siemens has already installed over 1,200 converter-powered AC drives for centrifuges worldwide, in new facilities as well as for upgrades. The unique selling point: high hourly cycle counts and fill masses that can exceed 2,000 kg per batch.

We are able to offer you a reliable solution for discontinuous centrifuge drives based on the SINAMICS drive family.

All of our three-phase drives are characterized by a high level of technical quality. Utilization of Active Infeed with clean power engineering minimizes phase effects and optimizes operational security – especially when line voltage dips and power failures occur. And our drives can be easily integrated into higher-level control systems for the implementation of the technological parameters. A control unit with an operator- or Multi Panel facilitates comprehensive local operation, diagnostics as well as troubleshooting directly at the centrifuge.

Towering performance from tower drives
The integration of the extraction tower into the process control system – with all key values and parameters – is now standard procedure in many sugar plants. The tower drive consists of several motors, as many as ten. Steps must be taken to ensure that the total torque is evenly distributed among the individual motors. Siemens offers two different drive solutions: either with a group converter for all motors or with individual converters for each motor.

Electrically driven sugar cane mills
Instead of steam turbines, electrical drives are being used in a growing number of sugar cane mills these days. They operate at a significantly higher level of efficiency, can be integrated perfectly into the control concept and, of course, do not require any steam network.

As a response to the demand for maximum availability with minimum maintenance expenditure, sugar factories are now generally opting for modern converter drives for their mills. The same applies to the drives of cutters and shredders in the sugar cane industry.
Refined control: instrumentation and MIS

What is the point of the best automation system if you do not have the necessary instrumentation? Sensors and actuators are the “senses” of the system. Our extensive range of measurement and analysis equipment offers you the right solutions for every requirement.
Precise recording of measured values for a complete overview

The quantity of data that are exchanged and processed on a daily basis in modern factories never stops growing. Not only do many of the analog values have to be recorded quickly and comprehensively, but the operator should also be able to check the process reliably at all times. To ensure that the right action can be taken if need be, our advanced measurement and analysis units provide all available data with a hierarchical structure – where necessary, with relevant details as well.

In combination with NAHMAT MIS, our management information system for the sugar industry, all our automation packages offer perfectly graded functionalities that keep the essential factors in focus: the process and the operator who has to control it.

Integrated networking via PROFIBUS

Exchanging information is a decisive success factor, even in process automation. One crucial aspect is the optimum interaction of all automation components: from measurement transducers or limit switches via the analysis system or the converter to the engineering system on the upper level of the process pyramid.

These days, plant engineers in sugar factories must act faster than ever before: it must be possible to carry out error analysis within a short space of time, or quickly calibrate new transmitters in the field, for example. And the maintenance department needs to be informed of which maintenance tasks are to be carried out when. None of which would be possible without the system-wide networking of all components via PROFIBUS.

The management information system for the sugar industry

While the plant operator has his or her operator terminal, the sugar factory’s plant management is equipped with the Management Information System, or MIS for short, giving a window onto the process. Tiresome, high-overhead manual calculations are a thing of the past. Instead, electronic information systems, such as our manifold tried and tested NAHMAT MIS, can give you information about the overall performance of your factory at any time and provide you with specifically-tailored calculations and representations. Energy consumption, measurement reports, and the entire production process are clearly visible and can be called up at any time wherever you are in the world.

As an integrated system partner, we offer everything required for a modern management information system: from assembly and service, to spare parts and maintenance, to teleservice and training.
Totally Integrated Automation

**SIMATIC PCS 7**
SIMATIC PCS 7 offers more than a conventional process control system: scalable system architecture, powerful engineering tools, extensive additional functions such as alarm management, process safety or asset management and the option for flexible modernization of existing systems. The result: considerably more efficient plants with greater availability.

**SIMATIC**
The core of Totally Integrated Automation: the SIMATIC automation system

**SIMOTION**
The fully modular and scalable motion control system for complex motion control tasks

**SINAMICS**
The integrated and complete series of drives for all performance levels, versions and voltage classes

**PROFINET**
The open and cross-vendor automation standard based on Industrial Ethernet

**Component Based Automation**
Consistent modularization: coordinated machine and plant items that can be configured and put into service as autonomous modules and therefore integrated into complete plants more easily and cost-effectively

**Safety Integrated**
Integrated safety technology by means of PROFIBUS or AS-Interface – directly integrated into the standard automation

**ECOFAST**
The integrated and standardized connection technology for communication and energy distribution with a high degree of protection
Always at your side: Service and Support

With a comprehensive range of services we can support you quickly, reliably and practically throughout the entire life of your plant. Whatever aspect of service is required – a competent contact is available to you on demand with the minimum of fuss. Anywhere in the world!

**Online support**
Obtain comprehensive information about our range of products at any time via the Internet:
[www.siemens.com/sugar](http://www.siemens.com/sugar)

**Technical support**
We offer competent advice on technical issues and a wide range of demand-based services concerning every aspect of our products and systems.
[www.siemens.com/sugar](http://www.siemens.com/sugar)

**Technical consulting**
Support in planning and designing your project: from detailed analysis of the current situation and definition of objectives as well as advice on products and systems to designing the automation solution. Find out more by sending an e-mail to:
[www.siemens.com/sugar](http://www.siemens.com/sugar)

**On-site service**
We offer a range of services for every aspect of commissioning and maintenance that safeguard the availability of your automation plants and systems.
[www.siemens.com/sugar](http://www.siemens.com/sugar)

**Optimization and modernization**
We even offer services aimed at raising productivity or cutting costs in the context of optimization and modernization. Find out more by sending an e-mail to:
[www.siemens.com/sugar](http://www.siemens.com/sugar)

**Repairs and spare parts**
Comprehensive repair and spare parts services offer you the highest level of reliability.
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