

# process news

The magazine for the process industry

## Perfection piece by piece

Focus on food and beverage:  
The Altendorf cheese factory relies on  
quality in production and engineering

## Focus on food and beverage

From ice cream production to feed manufacturing, from breweries to cheese factories – there is hardly a sector as diverse as the food and beverage industry. Companies must combine gap-free traceability with flexible processes, responsibly and efficiently utilize resources, and meet the tastes of consumers – like the Altendorf cheese factory in Switzerland.

Cover photo: Felix Wey



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# “Diversity ensures competitive advantages”



Siemens AG

In addition to taste and quality, the food and beverage industry places great importance on high plant productivity and energy efficiency. These challenges are the focus of this issue of *process news*. Constantly changing consumer behavior and demands are typical for this industry, in which diversity ensures decisive competitive advantages. For production, that means constantly having to factor in new recipes, products, and packaging. What's more, the industry is highly regulated. Significant regional market differences result in a need for flexibility and sustainability. Each subsector of the food and beverage industry is subject to the challenges of its own specific market segment. Lower costs, reproducible quality, and efficient product tracking and tracing rank among the increasing challenges of the industry as a whole, as does sustainable production. Conserving natural resources, saving energy, and minimizing production losses are the order of the day, not only from a cost perspective but also for reasons of responsibility.

Complementing our powerful automation solutions based on Simatic PCS 7, tools for the digitalization of business processes are part of the indispensable repertoire of modern food production facilities. In this issue of *process news*, we provide examples of specific types of process support as well as solutions for transparent and reliable processes in various subsectors of the food and beverage industry. For example, at the Rajkot Dairy in India and the Swiss company Nutriswiss, which produces edible oils and fats, process control systems were upgraded and modernized to address future challenges. A cheese factory in Switzerland was the first plant to be fully programmed with the TIA Portal engineering framework. Companies in other industries also benefit from our years of expertise in developing cost-effective and energy-efficient processes, as two examples of cement factories show. We would like to provide you with some insights into the possibilities offered by technologies ranging from modern automation solutions to simulation tools and energy monitoring. Enjoy the read!

A handwritten signature in black ink, appearing to read "Gunther Walden". The signature is fluid and cursive.

Gunther Walden  
Vice President Food & Beverage  
Siemens AG



Nutriswiss, Switzerland

# Tank farming

The tank farm is one of the core elements of production. Here, dozens of kinds of raw materials and products must be stored and retrieved again in a reliable and traceable manner



Only six tanks, but 126 ways to access them – an example of the high level of flexibility required of the process control at Nutriswiss. The company specializes in the production of edible oils and fats with tailored properties. Currently, Nutriswiss is modernizing all its control technology with Simatic PCS 7 and Simatic Batch in order to work more efficiently and flexibly thanks to standardized architecture. The company already benefits from a modern application for tank farm management based on Simatic Route Control.

“We guarantee our customers complete transparency across our supply chain and stand behind the perfect quality of our products. This, of course, results in a number of special requirements, especially in the areas of product and raw material handling.”

Patrik Marti,  
Project Manager MES/PLS, Nutriswiss

What makes sweets creamy or crunchy? Why are some cookies soft and others crispy? One answer lies in the mix of edible oils and fats, which are not only important flavor carriers but also crucial to the structure and texture of food. That is why not only color and taste are important criteria in the selection of the correct oil or fat but also tangible physical parameters such as melting range and melting heat, crystalline form, and flash point. “Fortunately, the properties of edible oils and edible fats can be varied within a fairly large range,” says Patrik Marti of Nutriswiss, one of the leading manufacturers of edible fats and oils in Switzerland. “The properties depend first of all on the raw materials used, of course, but also on how these raw materials are then processed. This allows us to optimally tailor our products to the intended application, for example, as frying fat, as a coating for spices, or as a base for marinades or baking ingredients.”

#### Specialist in customized products

Nutriswiss, with some 100 employees, specializes precisely in such cases: developing and manufacturing high-quality custom-made oils and fats for the food industry, restaurants, and retail stores. At its production site in Lyss, Nutriswiss operates facilities for fat melting, fat processing, fractionation, hydrogenation, interesterification, formulation, and crystallization, as well as for filling and packaging. “This allows us to determine the fatty acid profile and melting and crystallization behavior of each product to precisely fit the requirements,” Marti explains. “And particularly for our customers in the food industry, we develop completely new products – from laboratory prototypes to factory testing.”

#### Complex quantity management

Approximately half of the Nutriswiss product line consists of exclusive products that are specifically designed for particular clients. Production must therefore be flexible and able to process many different batches in different quantities. More than ▶▶



## deleproject.ch

The Tank Farm Manager created by Siemens Solution Partner Deleproject AG can reliably meet even complex requirements for material logistics. Deleproject AG developed a separate application that centrally manages the material transfer and communication to the production processes, taking into account the physical plant configuration. In this way, all the characteristics of a tank farm can be mapped – for example, what tank groups are connected by pipe with which production processes in which directions of transfer. The application also handles automatic evaluation of the appropriate tanks and the allocation of production orders across several tanks. Simatic Route Control automatically switches the routes for each order.

The system also provides additional functions for efficient operation; for example, the pump power can be dynamically adapted to the height of the destination if this is supported on the plant side. Each process is given the corresponding batch number, making it easy to track batches in the tank farm manager.

The system has an intuitive interface and automatically suggests the appropriate solution for each request in order to facilitate the user's work. With the tank farm manager, Nutriswiss is able to transport material without any operator intervention, and, thanks to the simple engineering of Simatic Route Control, the company has a future-proof system that can be adapted and expanded with little effort.

### Deleproject AG

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Solution  
 Partner

Automation  
 Drives

**SIEMENS**



The tank farm manager uses intelligently designed routines to support the user in the process of moving items in and out of storage. The application is based on Simatic Route Control

20 different oils and fats alone are used as raw materials in the process. "We guarantee our customers complete transparency across our supply chain and stand behind the perfect quality of our products. This, of course, results in a number of requirements, especially in the areas of product and raw material handling," says Marti, summing up. Some figures illustrate this: six tanks are assigned to handle the products and materials for the fractionation process, but currently there are 126 different ways to address these tanks.

Flexibility and transparency were thus two key requirements as Marti and his team started to replace the existing process automation systems in 2010. Marti recalls: "At this time, we had an automation environment that had developed over the years. We had systems from different manufacturers, and we had to decide at the beginning of the project not only how to modernize the automation technology but also how to design it so that it would best meet the needs of our business." This included enabling the staff from the research and development division at Nutriswiss to create the many and frequently changing recipes without special automation knowledge. "In our view, this shift of responsibilities from the process to the specialist departments was an important step in allowing us to respond in a more agile manner to new requirements," emphasizes Marti.

After an extensive analysis of the installed base and the potential modernization strategies, Nutriswiss ultimately decided to gradually replace the existing systems with a standardized solution. "With this goal in mind, preliminary discussions were held with Siemens, which showed us how our requirements could be implemented with Simatic PCS 7, Simatic Batch, and Simatic Route Control. We had the opportunity to look at the systems in use in two reference installations at two different companies. Route Control in particular impressed me right away: it's a sleek, simple tool that is perfectly suited to our needs. With Simatic, we can easily automate units such as filter presses or weighing systems with a single platform, and we have good local system partners to assist us in developing the application."

### Simple engineering of complex applications

The functions for controlling the tanks were designed and configured by Siemens Solution Partner Deleproject AG of Uetendorf in Switzerland. Based

on Simatic Route Control, the company developed a tank farm manager (see box) that allows for easy monitoring and operation of processes. “We have very much come to appreciate the advantages of Route Control – the engineering is really tremendously efficient, and it’s fun to work with,” says Tobias Bächtold, project manager at Deleproject AG, who was responsible for the project at Nutriswiss. “Just one example: During commissioning, it turned out that we had to implement an additional route. This was done in less than half an hour – including all the tests. And even a completely new route to a

and information needs to be exchanged between the different platforms.

#### **Step-by-step to an integrated system**

Thus far, the first of the two refineries has been migrated to the new system, along with the fractionation system and the associated tank farm. Other parts of the system will gradually follow, so that by 2016 all the systems will run under a uniform architecture with Simatic PCS 7 and Simatic Batch. Overall, approximately 30,000 data points will be

“During commissioning, it turned out that we had to implement an additional route in the plant configuration. This was done in less than half an hour – including all the tests.”

**Tobias Bächtold, Project Manager and Automation Engineer, Deleproject AG**

new production process can be fully configured in just a few hours.” Currently, the new tank-farm control system has 22 tanks, with a planned expansion to around 120 tanks.

As the hardware for the control system of the tank farm, Nutriswiss uses the current PCS 7 process controller with a 410-5H CPU. The controller is designed with redundancy so that absolutely reliable operation of the tank farm is guaranteed. Because the material and product logistics play a key role throughout the process, faults in this area would have a direct impact on other systems.

Siemens supported Nutriswiss not only with the appropriate hardware and software but also in the implementation of interfaces to existing systems – a crucial point for Nutriswiss, as the modernization of the entire system landscape will take some time

integrated into the system, along with several sub-systems such as filter presses, which are automated with the S7-300 controller and also integrated into Simatic PCS 7. “Our experience with Siemens has been very positive,” concludes Marti. “In addition to the control system, we also have a Siwarex FTA weighing system in use, which works very well. We will continue to expand our use of Siemens technology.” ■

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Bunge Oil Mill, Germany

# An update for the future

Bunge Limited is a globally active agribusiness company. The Bunge Group includes the Bunge Oil Mill in Mannheim, a site that produces some 470,000 t of rapeseed oil every year. After a fire in 2010, the entire oilseed processing plant needed to be rebuilt. It offered an opportunity to also optimize the plant's energy management with B.Data.

**B**unge Limited employs some 55,000 people at 450 subsidiaries in 40 countries. At the Bunge Oil Mill in Mannheim, 170 employees produce approximately 470,000 t of oil from 1.1 million t of rapeseed every year. The rapeseed oil is further processed into biodiesel. Customers also use it for the production of margarine, lipstick, even floor coverings. In addition, it serves as a pharmaceutical carrier.

## Simatic B.Data – the future of energy management

Companies wanting to shape the future of these markets must fully exploit their energy consumption and production potential to increase their competitiveness. At Bunge, the existing energy management system had reached its limits as a result of the large quantities of data points and data volume requiring storage. When the entire seed processing plant needed to be rebuilt following a fire in 2010, the opportunity arose to optimize the complete energy management system of the plant. Specifically, that meant the Simatic WinCC system needed to be expanded with Simatic B.Data to allow energy data access for analysis purposes – which has become more important than ever before. Energy costs for industrial companies are



Bunge Limited

Energy data at a glance: Simatic B.Data helps optimize energy consumption and costs





rising rapidly. However, with the right technology, energy consumption can be significantly reduced at all production levels.

The Simatic B.Data energy management system from Siemens allows Bunge to analyze its energy data more precisely, giving it a solid basis for decisions regarding planning and energy purchasing. Another major selling point for Bunge was the availability of

### Compatible system

The standard B.Data software from Siemens seamlessly integrates with Simatic WinCC. It provides many pre-configured reports that the operators can customize on their own. During installation, the WinCC data points needed to be linked to B.Data. To verify energy savings, data were obtained from the existing Simatic controller

URL in the address bar. Reports are managed and generated by an administrator. Frank Pototzki, head of automation technology and energy manager at Bunge Germany, enthusiastically points out: "With B.Data, we have an energy monitoring tool that very well suits our needs."

### Energy monitoring enables users to plan for the future

B.Data has become an important energy planning tool for Bunge Germany. For example, whenever the oil mill wants to purchase energy from a producer, it can now accurately predict the quantity it needs. As a result, the producer can more accurately plan production capacities, which makes the energy less expensive – and provides the buyer with a price advantage. In this case, B.Data can help reduce costs because it enables employees to create highly accurate energy-consumption forecasts. Thus, it offers the best possible assurance for accurate energy supply planning. And that, as the team at Bunge in Mannheim knows, makes for a future that is predictable – and secure. ■

**“With B.Data, we have an energy monitoring tool that very well suits our needs.”**

**Frank Pototzki, Head of Automation Technology and Energy Manager, Bunge Germany**

on-site Siemens service and a systems integrator to enable its own company employees to manage the system.

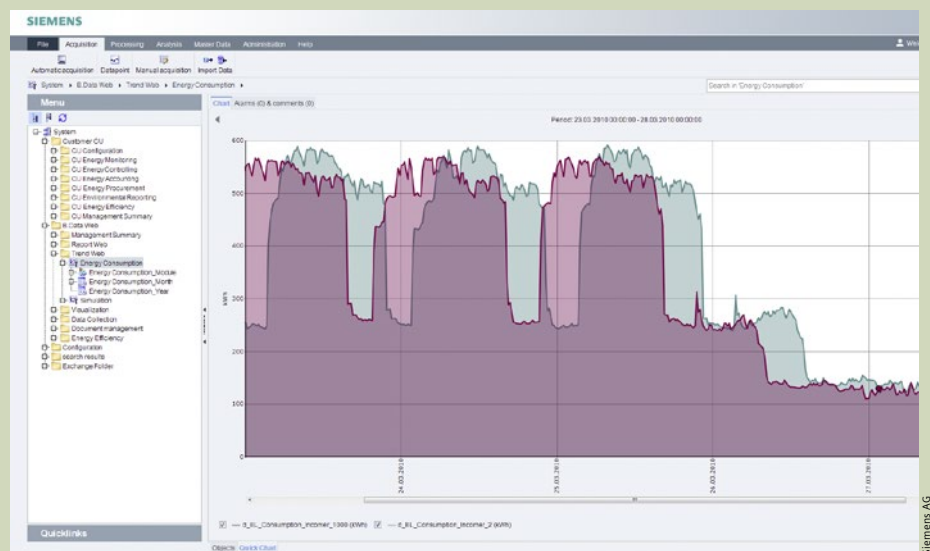
In April, Siemens delivered and installed the software along with the server. An external service provider implemented the software changes.

through special adaptations to the WinCC process visualization software.

This particular version of B.Data has web clients that grant simultaneous access to reports within the company network from several different computers. Users simply need to enter the

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Augustiner brewery, Germany

Control center with the Braumat system in the brewhouse of Augustiner brewery

# Tradition in taste

Founded in 1328, Augustiner brewery is the oldest brewery in Munich. This history creates a sense of obligation: anyone with such a long tradition wants to continue to brew premium beers in the future. For this reason, while remodeling the malt house, the brewery decided to also upgrade its Siemens Braumat process control system – in a single day – from Version 5.3 to Version 6.0. The brewhouse and fermentation and storage cellar areas as well as the malt house are now equipped with state-of-the-art technology and are well prepared to meet the challenges of the coming decades.



**A**ugustiner brewery has relied on a Braumat process control system from Siemens since 1996 to safeguard the high quality of its beer, which is cherished worldwide, especially in Munich. Braumat was first installed in the brewhouse. Later, the fermentation and storage areas were integrated into the system as well, allowing the brewers to work with the process control system in all the major production areas. A special feature distinguishes Augustiner brewery from many other breweries: it has its own malt house on the company premises in Munich to produce the malt needed for the beer.

**One structure, one direction: toward the future**

The malt house needed to be integrated into the overall brewery system. The upgrade called for the installation of a new process control system in the malt house along with appropriate operating stations. Pleased with its Siemens technology, Augustiner brewery decided to install the current version of the Braumat system, Version 6.0, which is based on Windows 7 and Windows Server 2008. Parallel to the modernization of the malt house, the existing Braumat systems in the brewhouse, fermentation area and storage cellar were also upgraded to Version 6.0 to provide a uniform process control system structure throughout the production facility. An additional control station was installed in the brewhouse control center to facilitate on-site operation. The upgrade of the existing control system and integration of the malt house was conducted on a Saturday, allowing for normal production start-up according to schedule on Sunday again.

**Planning pays off**

The Augustiner team performed all the preparatory work for the project itself, allowing Siemens to upgrade the plant to the new systems in just one day, as planned. After receiving the order, Siemens pre-installed the 10 operator stations featuring two monitors each and the new malt house control system with the new Version 6.0 at the Siemens systems integration center in Würzburg, Germany. Some 10 days prior to delivery, the current project was installed on all the control stations and adapted to the new version, and the communication of all the components was extensively tested. These preconfigured components were then delivered to Augustiner brewery on schedule, four days before the planned upgrade. The brewery technicians handled the set-up and connection of the new components (computers and control system).

On Saturday morning, technicians of Augustiner brewery along with a Siemens systems engineer migrated the current production data to the new com-



View of a loaded floor in the brewery's malt house

ponents. Then the system components were added to the existing LAN and booted up, one computer at a time. The ongoing production was not affected in any way by this measure. To make certain that the brewers could start work as usual on Sunday evening, a specified test program was run for each newly integrated area of the operation.

In the final step, the components of the new malt house control system were integrated into the existing network and linked to the Braumat stations. By Saturday evening, all the existing components had been successfully upgraded and the new ones integrated. Production started back up smoothly Sunday evening, just as before the upgrade.

**Automation throughout the entire production area**

Through the modernization and expansion of its brewery-specific Braumat process control system, Augustiner brewery now has an integrated automation solution for the entire production process – as well as a solid foundation for addressing current and future challenges. ■

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**Paulaner brewery, Germany**

# Virtually brewing

**When the Paulaner brewery in Munich decided to relocate its operations from the Nockherberg to Langwied, every aspect was thoroughly planned in advance. To ensure that the set-up of the new brewing site would go smoothly, Paulaner relied on the Tecnomatix simulation tool.**



Paulaner/sampics

**A**part from the actual construction, many factors can affect processes when designing a brewery and thus impact the design of both production and logistics – for example, continuously changing product lines, strong seasonal demand fluctuations, and changing packaging and bottles. Different recipes for the intermediate and final products as well as the technical specifications of brewing kettles, tanks, filters, and filling lines for various types of packaging require sophisticated technical solutions.

The Paulaner brewery has been brewing beer at the Nockherberg since 1634. It is the only brewery in Munich still operating at the original location, but by now it has reached its capacity limits. Therefore, on June 3, 2014, the foundation for a new brewery was laid at a 15-hectare site in Munich-Langwied. The new facility will take up operations in 2016, but brewing has already gotten under way – though only virtually thus far. As an integral part of the construction plan for the new state-of-the-art brewery, Siemens developed a solution for the beverage industry in cooperation with iSILOG, a leading service provider for simulations. The solution uses Plant Simulation software from the Tecnomatix portfolio provided by Siemens PLM Software.

The simulation model, which comprises brewery-specific components such as the brewhouse, fermentation

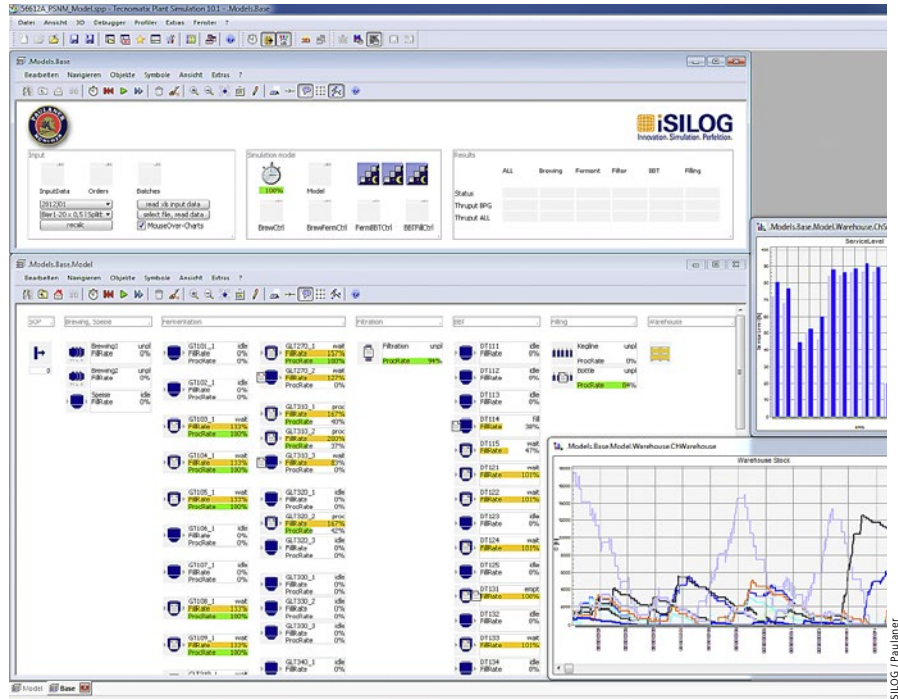
Paulaner is using brewing process simulation to compare scenarios and determine the optimal construction of its new facility on the outskirts of Munich



and storage tanks, filters, pressure tanks, filling lines, and storage enables simulation of the entire production process. As a result, various planning strategies and scenarios can be assessed in advance.

### Design scenarios for capacity and performance

The data for the simulation model are entered into standardized Excel spreadsheets. Inputs regarding customer demands and process step parameters (brewing, fermentation and storage tanks, filters, pressure tanks, bottling, storage) are structured with the help of various tabs. Additional tabs allow users to define tank capacities in terms of number and size as well as the availability of filling lines for multiple process steps. After the data are imported into the simulation software, the model components are automatically generated and configured – without the need for detailed knowledge of the simulation model architecture. As a result, various scenarios can be simulated, analyzed, and compared to other scenarios in a very short time. Stochastic processes such as these allow Paulaner to assess the various impacts of products, processes, and customer demands, even potential malfunctions, in order to determine needed tank and equipment investments. Planning for the new Paulaner brewery also called



Using a library specifically designed for the brewing process, iSILOG was able to automatically generate a digital model of the brewery with the Plant Simulation software from the Tecnomatix portfolio

for the optimization of other performance parameters such as heat demand and electricity and water consumption as well as beer loss during the brewing process.

With the help of the model and specific simulation scenarios, various improvement measures can be tested and compared. Only those measures that

actually prove to be successful are eventually implemented. As a result, poor investments can be avoided. The Plant Simulation software enables brewing experts to identify bottlenecks and develop ideal strategies for cleaning, retooling, batch sizes, production planning, and control. The essential result is a new sequencing strategy regarding the product mix and quantity.

### Ready for start-up

With simulation, various performance, flexibility, and cost objectives can be viewed together. The Plant Simulation software also enables strategic planning several years in advance, because decisions concerning new investments and optimization measures with respect to future needs and product offerings can be simulated and analyzed in detail. With this solution, Paulaner brewery is well equipped to keep things flowing smoothly at Oktoberfest 2016.

## Tecnomatix software from Siemens PLM

Advantages provided by the Tecnomatix production simulation and validation solutions:

- Early detection of suddenly occurring system faults as well as more cost-efficient and easier troubleshooting
- Reduced system start-up time through minimized need for physical tests
- Precise quantification of manufacturing process and production throughput changes
- Easier implementation of technical studies
- Connection to the automation simulation with Simit Simulation Framework (via OPC interface)

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Sutech, Thailand

# Sumatra sweets

Refining raw sugar into its processed form requires a great deal of energy. Sutech needed a process control system for a new refinery in Medan on the island of Sumatra, Indonesia, that would be safe and reliable. Siemens was happy to assist with its specially designed Nahmat application.

The sugar industry in Southeast Asia is undergoing rapid expansion to meet the demand of growing populations in Indonesia and Vietnam and the strong economies in Thailand and Malaysia. Large investments in modernization measures and the construction of new plants are currently being made to enable highly efficient regional sugar production. Sutech, based in Bangkok, is one of the major engineering, procurement, and construction (EPC) companies supplying and designing new sugar production plants throughout the region. Continuing a decade-long partnership, Siemens was chosen as the technical partner to supply a process control system for a new sugar refinery in Medan, Indonesia.

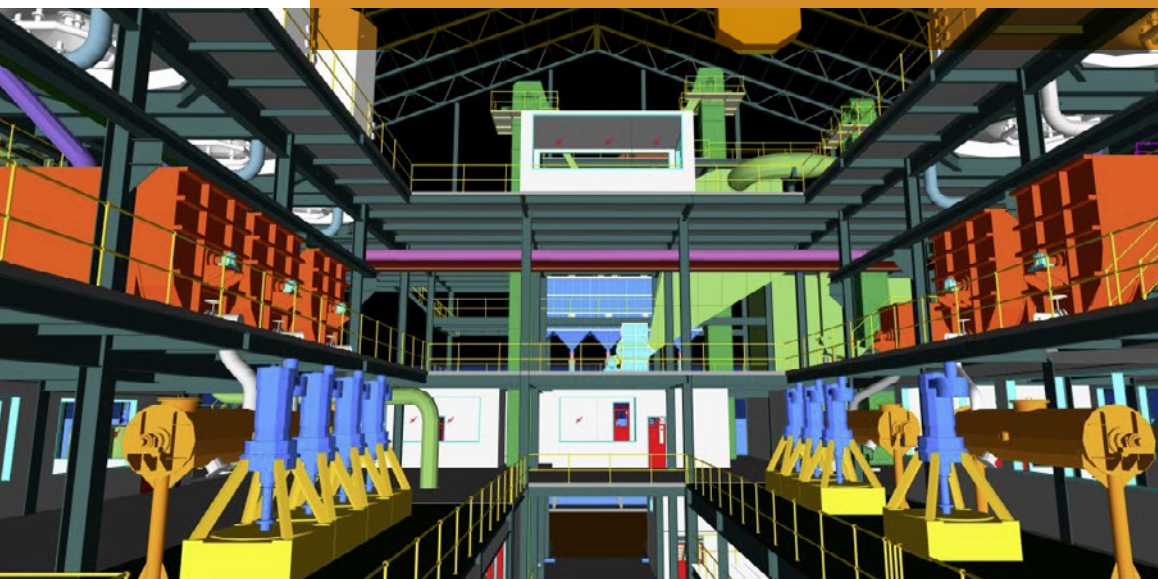
Sugar refineries require huge amounts of power to process raw sugar into its refined form. To ensure that energy levels were managed safely, a central

control room was needed that would provide reliable monitoring of all sugar refining activity, but with minimal operator intervention.

## Optimized process control with the Nahmat application

Siemens has worked with Sutech on many sugar-production projects with highly variable requirements. This experience has led to Siemens developing standardized automation layouts for sugar factories and refineries. In each project, the Simatic PCS 7 process control system is used as the basic control system. Its globally standardized libraries and functionalities make its implementation straightforward. For the sugar crystallization process, Siemens has developed the Nahmat application. Its cutting-edge

From digital plant ...





technology and advanced control features allow plant staff to optimize the ever-changing parameters when processing sugar. In addition to Simatic PCS 7 and the Nahmat application, Siemens supplied the Medan refinery with advanced field instruments to provide accurate flow, temperature, and pressure measurements.

### Close collaboration

The project was executed through a collaboration between Siemens Bangkok, as contract owner, and the sugar competence center in Erlangen, Germany. Support in Indonesia was organized via Siemens in Jakarta. The coordination of knowledge and expertise between different Siemens departments ensured that Sutech received the necessary technology and support to deliver the refinery project on time and on budget.

The combination of PCS 7 and the Nahmat application provided the Medan refinery with the ability to control key production parameters while maintaining high throughput at the most efficient levels. This technology has made the refinery the most advanced in Indonesia, and the powerful yet simple-to-control distributed control system package will allow it to grow if the need arises, by simply adding a CPU or operator station, without having to touch the existing set-up.

Sutech is now expanding into the growing green energy industry, and its partnership with Siemens looks set to continue. Modern sugar factories not only generate electrical energy for the grid (known as cogeneration) but can also produce green ethanol as a byproduct of the sugar production process. With

[suenco.co.th](http://suenco.co.th)

Sutech Engineering Company Limited is one of the largest suppliers of sugar processing plants in Southeast Asia. Founded in 1974, Sutech was formed by specialist sugar engineers in Bangkok to service the growing industry in Thailand and was instrumental in Thailand's emergence as one of the major sugar-exporting countries of the world.

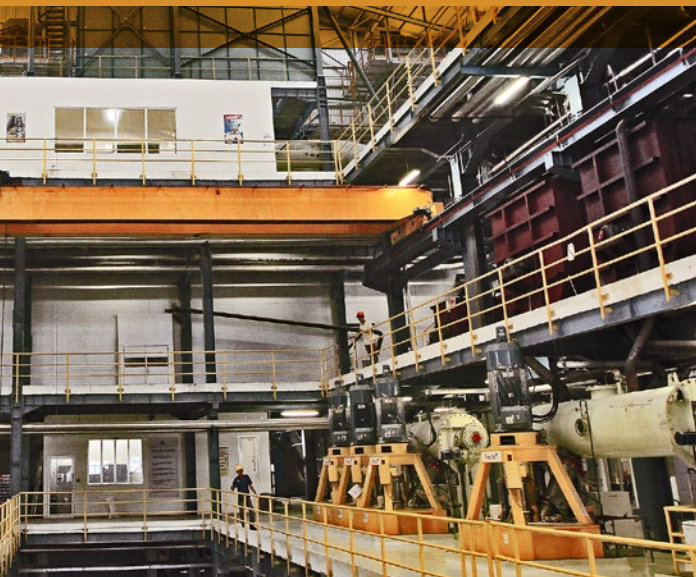
Sutech's head office is still in Bangkok, and the company has satellite offices in the United Arab Emirates, Indonesia, India, and on-site in various other countries. This network allows Sutech to manage major sugar projects and provide technical consultation to companies in the sugar industry all over the world.

Siemens' experience in second-generation ethanol projects all over the world, there is a good chance the collaboration will also extend to this new business area. ■

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... to real production



The new control room of the sugar plant





More milk: Through a set of initiatives, India aims at increasing productivity in its dairy industry to satisfy the rapidly growing market for milk and dairy products

Fotolia/Hyma

Rajkot Dairy, India

# Dairy performance



**In India, demand for dairy products is rising steeply, and producers feel challenged to keep up with this growth. To help bridge the gap between demand and supply, Ashish C. Sinha, CEO of Rajkot Dairy, realized his vision of implementing a state-of-the-art dairy automation system based on Simatic PCS 7.**

The Indian dairy industry needs to rapidly expand to meet the demands of the world's largest market, which continues to grow. Indian dairy plants already produce 132 million tons of milk per year but will need to produce 200 million tons by 2022. To achieve this huge leap, dairy farms throughout India are moving from traditional manual plants to plants using automation technology to increase speed, efficiency, and the quantity of milk produced. The enhanced performance achieved by automating manual tasks was quickly proven when Siemens integrated a state-of-the-art process control system into a dairy plant in Rajkot, India.

### Rajkot Dairy's first fully automated plant

The Rajkot District Co-operative Milk Producer's Union Limited, known as Rajkot Dairy, part of the Gujarat Cooperative Milk Marketing Federation known as "AMUL," produces a wide selection of dairy products. With assistance from the National Dairy Development Board, it wanted to open a state-of-the-art milk processing plant. Using

### Benefits

- Siemens as a one-stop shop for electrical and automation systems
- Dairy-specific tool sets that help achieve maximum efficiency
- Cost savings due to automation
- Minimal manual interventions for increased productivity
- High level of plant availability and reliability

machines imported from Germany, France, and Canada, the plant would be fully automated – the first of its kind in India. Creating a fully automated plant was a new concept for Rajkot Dairy. Project timelines were tight, and, to add to the project's challenge, Rajkot Dairy set the ambitious target of producing 0.6 million l of milk per day with the option of expanding up to 1 million l. Having invested \$15 million in this project, Rajkot Dairy did not want to risk working with an unproven or inexperienced process control technology partner. Siemens was already recognized as a leading provider of electrical systems and dairy-specific automation technology. This gave Rajkot Dairy the confidence that Siemens had the necessary expertise and proven systems to ensure a smooth and successful implementation.

### Standards facilitate smooth integration

At the start of the project, Siemens and the OEM demonstrated the recommended standardized dairy automation system to Rajkot Dairy and explained how easy it would be to operate. Siemens also conducted a technology workshop for Rajkot Dairy on the standardized products and systems it had already provided to dairy plants worldwide.

Siemens then integrated the entire automation system into the dairy plant's control room. At its core was Siemens' state-of-the-art Simatic PCS 7 process control system, backed up by a standardized Dairy Library (Advanced Process Function technology package). This combination of technology provided Rajkot with automation and process control specifically optimized for dairy plants. Siemens also provided laboratory PC and weighbridge data integration along with all the necessary in-

telligent motor control center software applications and hardware for smooth, safe control of all operations.

### Leading the industry

Siemens was the one-stop shop Rajkot Dairy needed, supplying all the technology in one package and integrating everything into the dairy plant's control room. This eliminated the risks associated with trying to combine technology from multiple vendors.

Especially the standardized library for dairy plants proved highly beneficial. With its preexisting tool sets for dairy applications, Siemens was able to integrate Simatic PCS 7 and the additional hardware into Rajkot Dairy's existing set-up quickly and easily. The new system also provided Rajkot with long-term cost savings thanks to its automated monitoring and control, which minimized manual interventions.

Ultimately, Rajkot Dairy succeeded in creating India's first fully automated dairy farm on time and on budget. It was a prestigious project in an industry that is rapidly modernizing, and its positive results have marked Rajkot Dairy as an innovative technology leader. Additionally, Rajkot Dairy was able to achieve its ambitious production goals and make a significant contribution to satisfying the demand of the world's fastest-growing market. The project's success has triggered future ambitions for Rajkot Dairy envisioned by CEO Ashish C. Sinha. He now plans to build a fully automated chilling center alongside the dairy plant. ■

### INFO AND CONTACT

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Altendorf cheese factory, Switzerland

# Just make cheese

**The new cheese factory in Altendorf is the first facility in Switzerland to be completely configured with the TIA Portal engineering framework from Siemens, including the drive technology. Every year, up to 8 million l of milk can be converted into Swiss cheese, which finds enthusiastic buyers not only in Switzerland but also internationally.**

**E**very day of the week, work at the Altendorf cheese factory starts early in the morning, at 5 o'clock, when regional farmers deliver their milk. The volume is detected automatically at the touch of a button. Using automation components, the next processing steps in the factory are set up to allow the entire production – two batches of between 7,000 and 8,000 l of milk per day – to be controlled by only two people. At the beginning of the production process, the milk flows out of the supply tank and into the finisher – a large tank with a capacity of around 8,500 l. In the next step, ripening bacteria (rennet) are added and the liquid is heated to 31.5°C. While constantly being stirred, the milk thickens. Finally it is heated to 57°C for a short time, pumped into round molds, and pressed into shape. ►



Felix Wey





More than 5,700 cheese wheels – tasting similar to Gruyère – are currently stored in the high-bay warehouse of the Altendorf cheese factory. “This represents an asset worth approximately 1.5 million Swiss francs,” says manager Erich Keller

After the whey is drained, the wheels go into a salt bath for 48 hours, after which they are taken to the storage cellar for ripening.

### Development with TIA Portal

The cheese factory in Altendorf is a perfect example of the use of the TIA Portal engineering framework from Siemens. Cheese factory manager Erich Keller commissioned the Solinaut company from Altendorf to implement the control and drive technology. At the start of the project, the decision was made to carry out all the project planning, including the drive technology, with TIA Portal. For the hardware components, the team relied on Totally Integrated Automation from Siemens, which ensures the efficient interaction of all automation components. A Simatic ET 200S CPU was selected as the controller for the cheese factory, along with Comfort Panels (19-inch) and Sinamics G120 C frequency inverters for the drives. "Working with the tools of TIA Portal is different than with Step 7 – it is a new kind of programming and software writing, with a new interface," explains Florian Rüegg of Solinaut. Like his colleague Reto Keller, he concludes that "you can work very well with this tool, and the idea behind it is really innovative."

The Solinaut team sees a major advantage of TIA Portal in the fact that everything is integrated into one project. "You don't need to save your data seven times and reopen seven programs," says Rüegg. He sees the diagnostic functions and the ability to link variables as particularly helpful. "Everything is stored in a project folder, so there is no need to jump back and forth between different versions. This makes it easy to work with." After the planning, the commissioning also required considerable effort. But the project team was pleased to note that after an extended transition phase, the actual operation ran smoothly.

### Highlights

The cheese factory in Altendorf is controlled by a Simatic ET 200S CPU and operated by a Simatic HMI Comfort Panel. Sinamics G120 C components are used as frequency inverters. The communication is supported by the Profinet Ethernet standard.

The cheese factory is the first facility in Switzerland that to be completely programmed with TIA Portal, including the drive technology and controller.



For further processing, the cheese flakes, including the whey, are pumped into large round molds and then pressed







Käserei Altendorf / Siemens AG

When the milk has thickened after the addition of rennet, it is cut with large rakes and stirred – a process that previously required extensive manual labor

## solinaut.ch

Based in Altendorf, Solinaut was founded in early 2012 as an engineering services and software developer specializing in the integration of automation solutions for new plants and older machine installations (retrofitting). The company also offers remote maintenance and support services.

Solution  
Partner

Automation  
Drives

SIEMENS



Käserei Altendorf / Siemens AG

## Making cheese in half the time

The new cheese factory has been in regular operation ever since. Many activities that had to be performed by hand before the automation are no longer necessary. "In the past, two cheesemakers were often working from 5 o'clock in the morning until late in the evening in order to process the milk delivered daily. With the new system, the time needed has been cut in half. We often complete the job with two people by noon," Keller is pleased to report. In terms of energy savings, the new solution has also achieved a great deal: the heat from the wastewater purification, for example, is used to warm the milk before it flows into the vat.

The Altendorf cheese not only stands out due to its maturity and taste; it is also produced with a technology that will significantly impact the future of the factory. ■

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Virtual commissioning with Simit Simulation Framework

# Got milk?



Fotolia / D. Sukharevskiy

**Bringing products of consistently high quality onto the market requires an optimized engineering workflow in automation as well as the shortest possible set-up and commissioning times for new production lines. Simit Simulation Framework enables real-time simulation for a comprehensive review of automation solutions. Moreover, it supports the virtual commissioning of plants, machinery, and processes, even without plant equipment – that is, from the office – as shown by the example of a milk drying plant.**

**V**irtual commissioning and the use of training systems can minimize not only the time factor but also the effort required by qualified personnel in the final phases of an automation project. Simulation provides an efficient way to meet increasing market challenges. As early as 2006, research at the Institute for Machine Tools and Industrial Man-

agement (iwb) of the Technical University of Munich on the added value of virtual commissioning demonstrated that this method makes it possible to increase software quality by 37% to 85% – quality in this context refers to the level of agreement with the specified requirements. As a result, commissioning time can be reduced by 75%.



## Plant simulation for extensive engineering tests

In this application example, a fluid bed dryer for milk concentrate was simulated with the objective of achieving efficient drying in compliance with the legal requirements with the highest possible yield. With the simulated plant, virtual commissioning was to be enabled in parallel. For this purpose, the project team created a plant simulation with Simit Simulation Framework. The real-time simulation system allowed simple testing of the inputs and outputs of the controller as well as complex plant simulation, in particular of not physically present hardware and the process sequence in the spray tower.

In the drying process, the previously evaporated milk is finely dispersed in a spray tower by nozzle spray and dried with hot air flowing with and against the current. The milk itself is heated only to 70°C to 80°C.

As open simulation software, Simit enables flexible connection options for the actual control technology. The simulation can be carried out with an emulation of the controller by connecting to Simatic S7-PLCSIM or to the new Simit Virtual Controller for checking the control logic, for example. Connection via Profibus, Profinet, or data interfaces (OPC or shared memory) to third-party controllers or the use of an actual controller is possible as well. For this purpose, direct interfaces to Simatic S7, Simatic PCS 7, and third-party controllers are integrated in Simit.

Process simulation can prevent costly and dangerous situations from developing. In the application example described, the process sequence was modeled and simulated based on physical formulas in Simit. In the process, many parameters of the milk drying process needed to be influenced at the same time in

order to produce milk powder with consistent quality. A particular challenge was to simulate the moisture of the final product, which is controlled by Model Predictive Control (MPC). Simit provides a convenient and intuitive graphical user interface for modeling processes. The operator of the actual plant can be trained for different plant states so that he or she can later operate the plant faster and without errors in the optimized actual production process.

Thanks to this application simulation and virtual commissioning, the tested software was virtually error-free, allowing the commissioning time on-site to be significantly shortened. In addition, the end customer will be able to quickly produce the desired target amount of milk powder at consistently high quality due to optimizations of the spray tower.

## Support for the entire lifecycle

Simit Simulation Framework provides valuable support not only for the engineering, commissioning, and start-up of a system but throughout the plant lifecycle. The simulation also allows users to gain plant expertise. Virtual commissioning supports the definition and clarification of plant specifications in an efficient manner and at an early point in time, ensuring that the subsequent actual implementation goes smoothly. ■

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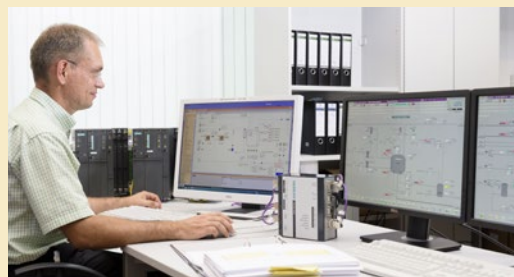
## Discover virtual commissioning with Simit Simulation Framework

The new Simit Simulation Framework multimedia demonstration system (MMDS) is now available online in English and German, taking the user on a journey into the world of simulation and virtual plants. Via a guided tour, users can explore the entire Simit Simulation Framework (Simit SF), the possible interfaces, modeling, visualization, and diagnostics, along with scripting, training workshops, and service and support.

Easy navigation moves the user through all the highlights of Simit V8.0 with all aspects of Simit SF. The various topics are described and illustrated, and the majority are supported with short videos (a total of 30 videos are available). From the explanation of the user interface and the introduction to simulation design to the possibilities of using Simit SF in real-world projects, such as in PCS 7 engineering projects, the multimedia demonstration presents all the important information about the system.

Selected links take the user to relevant information about Simit SF, PCS 7, and Comos, as well as to other topics, including selected articles and customer references.

Simit Simulation Framework MMDS on the Internet: [siemens.com/discover-simit-simulation](http://siemens.com/discover-simit-simulation)



Siemens AG / A. Kradtsch

Eisbär Eis Produktions GmbH, Germany

# Controlling the cold

In addition to ensuring the highest standards of hygiene, reliable measurement technology is key for ice cream production. At Eisbär Eis Produktions GmbH in Ribnitz-Damgarten, Germany, primary ingredients are stored in several dozen tanks 8 to 10 m in height. Reliable production is ensured by continuously monitoring precise fill levels.



Located between Rostock and Stralsund, Eisbär Eis Produktions GmbH of Ribnitz-Damgarten is one of the largest ice cream manufacturers in Germany. The company originated when ice cream maker and businessman Horst-Dieter Schröder, together with the shareholders of Eisbär Eis from Lower Saxony, founded a partner company with their own production following German reunification. The first production facility took up operations in 1994, and the following years saw repeated investments in new machinery, buildings, and packaging systems. Today, there are six production facilities, and capacity is being further expanded. During peak periods, more than 2.5 million servings of ice cream are produced per day.

## More reliable level measurements

Impressive daily quantities such as these can only be achieved if production, storage, and planning are perfectly coordinated. It requires reliable and timely data already at the point of raw material storage. Eisbär Eis, for example, previously used ultrasonic meters in approximately 30 raw material tanks, but the meters did not always measure reliably. "We need to know

precisely how much raw material we still have. For this reason, we invested a great deal of time in verifying the data supplied by the ultrasonic measuring devices and had the tanks monitored through visual inspection by on-site staff. That was not a very advanced way to approach the task," explains Jean Jung, head of electrical engineering and automation at Eisbär Eis. He turned to Siemens, whose process instrumentation department provided him with the Sitrans LR250. The level transmitter with two-wire technology convinced him immediately. Thanks to the 25 GHz frequency, the radar beam is narrow and focused. It decreases the sensitivity to tank inserts, which led to consistently correct measurement results already during the trial operation. "The Siemens transmitters precisely fulfill their purpose: they provide increased production safety at reduced personnel and monitoring costs," Jung concludes after several months of operation. Depending on deployment, the radar instrument can be used either with a simple horn antenna or with an encapsulated antenna combined with a hygienic fitting and respective hygienic certifications. The LR250 HEA (hygienic encapsulated antenna) is equipped with materials that



Sitrans LR250 HEA mounted on a cream tank

comply with US Food and Drug Administration (FDA) regulations and is approved in accordance with the provisions of the European Hygienic Engineering and Design Group (EHEDG) and 3A. The device can remain on the process connection during cleaning (clean in place, CIP). Disassembly is not required, saving Eisbär Eis a great deal of valuable time.





Cold treats: inside view of production at Eisbär Eis Produktions GmbH



Eisbär Eis / Siemens AG

“The Siemens transmitters precisely fulfill their purpose: they provide increased production safety at reduced personnel and monitoring costs.”

Jean Jung, Head of Electrical Engineering and Automation, Eisbär Eis

## Sitrans LR250 HEA passes field trials at the Weihenstephan research brewery

The Sitrans LR250 HEA is the first radar level transmitter to meet the strict aseptic requirements of the European Hygienic Engineering and Design Group (EHEDG). This was but one reason for a lengthy testing period preceding the market launch, which also included a practical test at the research brewery of the Technical University of Munich in Weihenstephan lasting over a year. The summary report of the research brewery staff was very positive: there were no failures, the hygiene requirements are met, and the sensors provide reliable measurements.

In the brewing industry, there is an increasing need for hygienic, reliable, and cost-effective systems that can precisely determine the contents of pressurized tanks prior to bottling, as well as those of fermentation and storage tanks. In view of these requirements, Siemens developed a suitable system based on the Sitrans LR250 radar level transmitter. The result is the Sitrans LR250 HEA (hygienic encapsulated antenna) radar level transmitter with a fully encapsulated horn antenna. It is considerably more cost-effective than comparable ultrasound-based systems and also allows replacement of the sensor's electrical system without opening the tank.



TU München / Siemens AG

### Convincing quality

Level transmitters are no longer the only process instruments from Siemens utilized at Eisbär Eis. Appropriate positioners and flow instruments have also impressed the company.

Quality assurance, product variety, and growth have been top priorities at Eisbär Eis Produktions for over 20 years.

With technology from Siemens, the company can cost-effectively meet all these demands in a market characterized by fluctuating commodity prices. ■

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Bröring, Germany

# An acquired taste

Radar level measurement is insensitive to variations in factors such as temperature, atmosphere, and pressure and is therefore ideal for level measurement of bulk solids. The latest generation of Sitrans radar level transmitters is also robust in regard to interference caused by fixtures and container geometry. These are just a few of the reasons why Germany's largest privately owned feed manufacturer has acquired a taste for this technology.



Bröring



Thanks to their extremely compact dimensions, Sitrans devices can be installed in places where level measurement was not possible before, such as in the silo floor, as shown here



Siemens AG

**A**t a half-dozen locations in northern Germany, the Bröring Group produces feed, the components of which primarily come from farms in the region. As the first mixed feed producer to do so, the group has successfully undergone certification with a variety of certification bodies. QS, KAT, GMP, REDcert, and HACCP certificates, along with certified energy management according to ISO 50001, show that Bröring is acting responsibly with regard to feed quality and the environment.

### From all over the world and from the region

The end products are made using a large number of individual ingredients that the company purchases from around the globe. However, the lion's share grows in the fields of the region: Bröring processes more than 200,000 t of native grain per year. From the grain collection points to the filling of the company's own special vehicles, countless silos, mixers, and conditioning units are used, all of which are tailored to the source materials, intermediates, and final products. This means that level measurement is critical both for individual production steps and for overall production planning. Previously, Bröring used capacitive level limit switches such as tuning fork sensors or

Raising livestock responsibly starts with proper feeding from the very beginning, and Bröring produces high-quality mixed feed mainly with grain from local farmers

rotary-wing detectors. However, these measurement methods, which involve contact with the medium, are not continuous and also require a great deal of maintenance. This prompted Bröring to keep looking for better alternatives.

"With more than 1,500 level measuring instruments in use, there was a large variety of devices," recalls Joseph Beverborg, the technical director for all locations of the Bröring Group. "When we were presented with the Sitrans LR560 from Siemens, we saw an opportunity to eliminate this variety of devices and the associated costs. After extensive testing of level measuring instruments from six manufacturers in different materials, silos, containers, and storage areas, we chose the Sitrans LR560."

### One for all

In 2011, with the Sitrans LR560, Siemens brought onto the market the first radar level transmitter to operate at a frequency of 78 GHz. The two-wire transmitter is based on FMCW (frequency-modulated continuous wave) technology and emits a very short wavelength. More important, however, is the flexibility gained through the new technology. This means the device can be installed at almost any distance from the side wall. Two other product features make the modern transmitter interesting for Bröring: its very compact dimensions – its installation height is just 166 mm – and its lens antenna. Unlike horn or parabolic antennas, the lens antenna does not protrude into the silo. This considerably reduces the surface for product caking. At the same time, the radar transmitter is equipped with

a (compressed air) flushing connection, which allows dirt to be easily and reliably removed from the lens.

### Proven in use


The radar level transmitter is suitable for silo heights of up to 100 m and can be used in temperatures of up to 200°C. This makes it ideal for applications in the cement or steel industry. It is also used in the chemical and timber industries and, as in the case of Bröring, in the feed and food industry. Thanks to the graphically based Quick Start Wizard on the optionally available Local Display Interface (LDI), the user can read the echo profile directly at the installation location without computer assistance. The Sitrans LR560 is available with a HART, Profibus, or Foundation Fieldbus interface and communicates via the relevant protocols with higher-level systems. The Bröring Group was impressed by the reliable continuous level determination even under difficult conditions, the fast commissioning, the maintenance-free operation, and the ability to meet the requirements of all applications with a single type of device without modification. In the future, Bröring will continue to rely on the Sitrans LR560. ■

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Evonik Industries AG, Germany

# Future absorber



In the Rheinmünster Industrial Park, Evonik Industries AG operates a manufacturing facility for the production of superabsorbent polymers. These powdered polymers can absorb and store liquids up to 300 times their own weight. Evonik is among the global market leaders in the area of superabsorbent polymers. To be well prepared for the future, the company has chosen to update Simatic PCS 7 to Version 8.0.

A handful of superabsorbent polymers: Rheinmünster produces superabsorbent polymer granules, a material that can store many times its own weight in water

Evonik Industries AG | U. Feuerbach

**B**ack in 2008, Evonik replaced its previous process control system with Simatic PCS 7. In the migration of the control system to the current version at the time, PCS 7 V7.0, the project team used the PCS 7 standard library for the implementation. For the planned update to Version 8, Evonik opted for the new features. The extended functionality of the new

library immediately impressed Harald Plöchinger, site manager of Evonik Rheinmünster: "The operator interface and the possibilities offered by Advanced Process Library (APL) were what convinced us. In the faceplates, there are now also functions that enable greater flexibility for the operator. As a side benefit, we will remain state of the art, as we can always



count on feature enhancements in newer versions of PCS 7.” Based on these findings, Evonik began planning for the update project in 2012.

### Migration plan with run-up period

The requirements for the plan to migrate the PCS 7 standard library to the PCS 7 APL were high: the aim was to migrate the software so that no loop check was necessary and so that the production facility could function again seamlessly after only a short interruption. With a system size of about 8,000 process objects, this was not an easy task.

It became clear early on that software tools would be needed for the AS and OS migration in order to ensure the required quality of the software and keep costs under control. The right software tools for such a library replacement were already available internally at Siemens and could also be used for the APL migration. For this reason, the plan was to divide the migration into two phases.

In the first phase, the project team created a new, customized typical library based on the APL with the corresponding migration types. This was implemented in a pilot plant. Then came the factory acceptance test (FAT) / software testing, operator training, and commissioning, followed by test operation. In the second phase, the team evaluated the experience gained in the first phase and implemented the system throughout the entire plant. Plant operation was gradually resumed with only very short interruptions.

### One project – two phases

The project began in August 2013. During numerous workshops on the creation of the new APL and migration typicals, team members discussed the new program structures. The team found that the migration of software is a highly complex process that requires a deep understanding of both libraries. Not just every interconnection, parameter, and text needed to be migrated; the program structures from the old program had to be dismantled in order to use the built-in features of the new APL blocks. Keeping the program sequence the same as before was always important.

Shortly after the end of 2013 and a successful software test, the pilot plant was ready for commissioning. The estimated time frame of only two days for installing the migrated software and resuming production was maintained. As the project progressed, other parts of the plant were commissioned in stages according to the production plan, with the last part successfully equipped with the APL in May.

### Off to the next level

The smooth implementation of this migration was due in part to the synchronized interaction between



Evonik Industries AG | U. Feuerbach

“The operator interface and the possibilities offered by APL were what convinced us.”

Harald Plöchinger,  
Site Manager, Evonik Rheinmünster

the project teams at Evonik Industries AG and Siemens. Workshops, regular project meetings, constructive collaboration, strong commitment on both sides, and the common systematic search for solutions were key to the project’s success. Andreas Schuble, project manager at Siemens, concludes: “A successful migration to the new APL requires careful planning and precise typification. As the saying goes: By failing to prepare, you are preparing to fail.” ■

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Hanson Cement/ Siemens AG

The new medium-voltage converters allow for speed-controlled operation of fans and eliminate the previously used damper for flow control

**Hanson Cement, United Kingdom**

# Fans of saving energy

Integrated Drive Systems help cut energy consumption and energy costs in the plant



Hanson Cement/ Siemens AG



Hanson Cement needed to upgrade the fans at its Purfleet factory. The Integrated Drive Systems implemented by Siemens not only saved the company £175,000 per year in lower energy bills but also provided a 1,487-t reduction in CO<sub>2</sub> emissions.

## Benefits of the fan upgrade

- Greater productivity through optimized speed and process performance
- Improved flexibility, with faster run-up and run-down times
- Standardization and reduced size and line attendance
- Increased information for preventive maintenance
- Significantly reduced total cost of ownership

Hanson Cement's factory in Purfleet, UK, produces a million tons a year of Regen – a cement substitute used in ready-mixed and precast concrete manufacturing. The factory had two closed-circuit ball mills and a Loesche vertical grinding mill. Mill 3's fan used a 1-MW 11-kV slip-ring machine running at around 980 kW. The fan was fixed speed and continuously running at 350,000 m<sup>3</sup> per hour, with a damper used to bring it down to approximately 241,000 m<sup>3</sup> per hour. Running a fan at such unnecessarily high volumes was extremely energy inefficient and expensive, so Hanson Cement decided to implement an upgrade. As Hanson Cement's electrical engineer Dave Jackson explains: "We were looking to achieve energy savings around the plant, and a survey had recommended a new drive and motor for this mill."

### Integrated drive improves performance and productivity

The Siemens solution centered around the Integrated Drive Systems (IDS) concept, which ensures that all products are as integrated as possible. The best operational performance can be achieved by improving the drive system and monitoring its performance. For the company's Mill 3, this meant replacing the fixed-speed fan with a 1,000-kW Sinamics Perfect Harmony 11,000/4,160-V medium-voltage (MV) converter, linked to Siemens' process control system at the plant. A new Siemens MV 1,000-kW, 4,160-V, six-

pole motor was also installed, along with new motor cable and a modified motor base (the bed plate was raised by 60 mm), all provided by Siemens as a turnkey solution.

Every element of the Sinamics Perfect Harmony cell-based drive portfolio is engineered to maximize productivity and protect a customer's processes in a way that other drives are unable to do. Its modularity allows for a scalable solution achieving near-100% reliability and 99% availability, two key factors that are vital for a busy plant like Purfleet.

### Greater flexibility and lower cost of ownership

In addition to greater productivity, the new fans have improved the flexibility with which Hanson Cement can control the run-up and run-down times. The increased availability of information can also enable preventive maintenance. Standardization has reduced size and line attendance, delivering a significant reduction in total cost of ownership over the product's lifecycle.

Jackson says: "It took about a month before we could clearly identify all the changes in operating costs, but we were very pleased with the whole system, and greater savings were achieved than originally anticipated. The Siemens solution means we are now running with the damper open 100% of the time, yet actual energy consumption has dropped by around 360–400 kW. A follow-up visit by Siemens led to further savings being achieved using the

new drive system, and the entire project was completed on time and within budget."

### Significant savings

Reducing energy usage and increasing plant availability are key goals for industrial companies. Since Siemens installed the new Integrated Drive System, Hanson Cement now saves more than £175,000 per year from a 36% decrease in energy consumption. It has also been able to gain a 1,487-t reduction in CO<sub>2</sub> emissions.

The Siemens UK account development manager for mining, aggregates, and cement Gary Chapman, says: "This upgrade proves that with the appropriate software and Siemens' knowledge of integrated processes and applications, plant owners can achieve significant savings and enhance the overall lifecycle of the plant."

Hanson's national operations manager for Regen, Steve Hall, concludes: "The project was a great success, with the new drive and motor enabling us to reduce drive speed and lower power consumption by approximately 37%. We are continuing to save about 4.5 WH/t on our overall process with this one fan drive, and these energy savings represent a rapid return on investment for us." ■

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Les Ciment du Sahel, Benin

# Foundations for success

Siemens collaborated with Sinoma/CBMI to build a new cement factory in Africa. With a tight time frame to get the cement manufactured and sold, close collaboration was vital to complete the project on time.



Senegal-based Les Ciment du Sahel planned to invest in a new cement factory in Benin. With many new cement plants already in the area, it was a growing market with tough competition. The plant had to be completed quickly to get the cement on the market.

Les Ciment du Sahel awarded the contract to build a turnkey plant with a capacity of 3,600 t of clinker per day to Sinoma/CBMI of China. The end customer specified that it wanted to use European technology, leading to the involvement of many well-known OEMs in the project. The plant would be the largest investment in Benin in recent

years and would be the largest producer of cement in the country. The project's significance was such that the president of Benin personally visited the plant to see what was planned.

## Harnessing proven technology

After an inquiry from Sinoma/CBMI, Siemens consulted with the end customer on the benefits of integrating its Cemat process control system. This is the most widely used process control system in cement plants globally, and it has been continuously developed for more than 30 years. Cemat's high quality and seamless integration and the support provided by Siemens convinced the end customer to ask Siemens to collaborate with Sinoma/CBMI on the project. Sinoma/CBMI's deputy general manager visited Siemens' head office in Erlangen, Germany, both to underscore the project's importance and to emphasize the tight time frame: the crusher, cement mills, and packing system all had to be operational by October 2013.

Siemens supplied all the hardware and software engineering for the en-

tire plant. This included the integration of PCS 7 V8.0 with Cemat V8.0 in approximately 80 automation cabinets, eight Simatic S7-400 controllers with a redundant plant bus, more than 1,000 ET 200 I/O cards for approximately 14,000 signals, and data archiving and reporting (the Sicement management information system). In addition, Siemens conducted a four-week training course in French and provided remote monitoring services for ongoing system support.

## Cementing foundations for future collaboration

"In spite of the many challenges – such as the tight time frame and the organization of the commissioning – collaboration between Sinoma/CBMI, the end customer, and Siemens was outstanding", said Zhang Liguang, technical project manager of Sinoma. Sinoma/CBMI stated on many occasions that Siemens had managed the project in an exceptionally professional manner. The project was so successful that the end customer is already planning a second line in Benin. ■



Les Ciment du Sahel

The new cement mill and packing line will help Les Ciment du Sahel benefit from the market potential in Benin

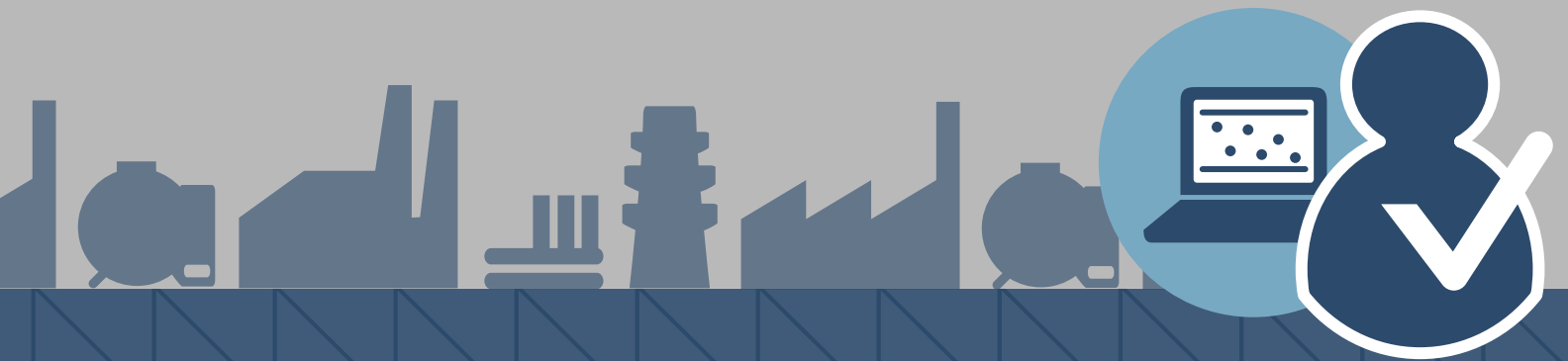
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## Analyzer System Manager

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[sie.ag/1DagOVA](http://sie.ag/1DagOVA)

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Plant operators are often faced with a dilemma with regard to the maintenance of analytical instruments, especially at larger process plants. The devices are essential for smooth operation and critical to the quality of the final product, yet there is hardly any detailed information on the state of the analyzers in the control center. This means that the maintenance staff spends a great deal of time in the plant inspecting the analyzers.

With the Analyzer System Manager, Siemens has introduced a tool that allows information from process analyzers to be validated and verified at a central location. This has a number of advantages: The plant operator can check from the control room whether the measured values are within the specified limits and in this way recognize aging effects such as drift at an early point in time. The actual maintenance requirements of the analyzers can also be better determined, the availability and reliability

of process analysis increased, and the maintenance intervals between the analyzers extended, thus achieving higher plant availability.

The Analyzer System Manager consists of a central data server, optionally a client for operation, and a toolbox of applications that can generate reports on the status and history of the analyzers. The analyzers in the field can be connected to the system via Industrial Ethernet or various fieldbuses. Thus, the Analyzer System Manager works with virtually any system environment and plant configuration. ■

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## New process control keyboard for Simatic PCS 7

# Key efficiency

Controlling a plant with just one key: that's how Siemens facilitates process plant operation, using a freely configurable keyboard. Important functions can be assigned to a single key, without the operator needing to navigate through a menu or use a mouse.

Usually, the standard tool for operating process control systems is an off-the-shelf PC keyboard and a mouse. However, there are cases in which it is also useful to assign important functions and tasks to a specific key. These typically include functions for pulling up specific plant displays; for selecting alarms, messages, and acknowledgments; for increasing and decreasing control values; or for sequence control.

For such applications, Siemens has developed a special process control keyboard for Simatic PCS 7. It can be

ordered through the Simatic PCS 7 add-on catalog. It is designed as a membrane keyboard and consists of a standard PC keyboard and a total of 90 function keys. All function keys have an LED and can be labeled to customize the keyboard according to specific plant or project needs. Actions of the individual function keys on the process control system and control of the individual LEDs can be defined by configuring the keyboard driver that comes with the keyboard.

The keyboard also has two integrated speakers for sounding alerts. A mouse

or trackball can be connected via a USB port. The keyboard can be used either as a tabletop system or as an integrated version in a console, in which case it can meet specifications up to IP65 depending on the type of installation. ■

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The new process control keyboard allows users to easily access important functions with a single key



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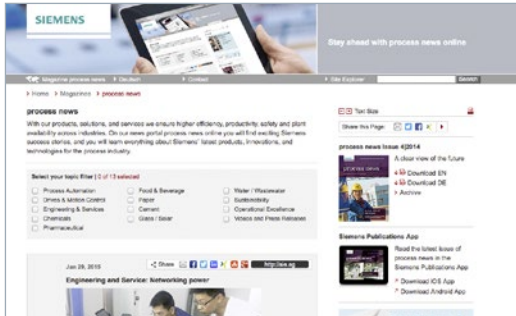
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process news 2/2015

## Trends in the process industry

Looking ahead to *ACHEMA* in June 2015 in Frankfurt, the next issue of *process news* highlights current trends in the process industry, giving special focus to the chemical and pharmaceutical industries. A number of articles show how Siemens solutions have enabled companies to use their plants more flexibly and reduce the cost of quality. We also take a look at digitalization in the process industry, a widely discussed topic at the moment. For example, a joint colloquium of the VDI and DECHEMA last fall dealt with the question of how Industry 4.0 can be applied to the process industry and what the term means for the chemical industry. Companies are already developing appropriate solutions for the far-reaching digitalization of production and automation processes in intelligent process plants. In the next issue of *process news*, we will therefore also highlight current trends surrounding this exciting topic and provide insights into the latest technologies.

*process news* 2/2015 will appear in May.

### process news 1/2015

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The image shows three men in a professional setting, likely a control room or engineering office. They are gathered around a large wall-mounted monitor and a laptop. The monitor displays complex process diagrams and data. One man is pointing at the screen, while the others look on attentively. The overall scene conveys a sense of collaborative engineering and technology use in an industrial environment.

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## Innovation you trust

Integrated engineering throughout  
the entire plant life cycle

Integrated Engineering with COMOS and SIMATIC PCS 7

Working in the process industry can bring you many challenges every day, for example, improving your product quality, adhering to statutory requirements and of course, increasing your productivity. Wouldn't it be easier if you could take an integrated approach to solve these challenges at your plant? Perhaps plant management that was innovative and efficient across the entire plant life cycle?

Thanks to the interaction between COMOS software and the pioneering process control system, SIMATIC PCS 7, you can now meet your specific needs across all project phases in a single electronic workflow. Siemens integrated engineering solution helps create up-to-date plant documentation, enables shorter product launch times, saves you money, and enhances product quality.

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