Focus on Drive Technology

Drive technology is key to increasing energy efficiency and productivity in the process industries. Many companies are facing new challenges – one example is the Linde Engineering Division based in Munich. The cover photo shows a furnace that is part of Linde’s hydrogen production plant in Burghausen, Germany.

Photo: The Linde Group

Editorial
03 Higher Productivity, Higher Efficiency

Cover
04 “The Market Is Changing”
Linde AG, Germany

Drive Technology
08 Standardized yet Individual
Sinamics G120
10 The Next Level
Geldersheim Sewage Treatment Plant, Germany
13 More Productive Grinding
Drives for Vertical Mills

Cement
14 Solid Foundation
Building Materials Industry Company, Egypt

Packaging
16 Pack Smart
Meypack Verpackungssystemtechnik GmbH, Germany

Condition Monitoring
18 Absolute Availability
Penig Gear Plant, Germany

Process Control Technology
20 Merging Systems
Switchgear Integration
22 No Access
Industrial Security
24 Virtual Commissioning
Simulation for the Process Industries

Plant Engineering
26 Perfect Optimization
Zeppelin Systems GmbH, Germany

Pharmaceuticals
28 Clean and Integrated
Schülke & Mayr GmbH, Germany

Renewable Energy
30 Sustainable Power
North-Tec Maschinenbau GmbH, Germany
32 Complete Process Package
Arnold-Blume Bioenergie GmbH, Germany

Web Exclusive
34 Weighing Technology, Water Treatment, Sipart PS2

Dialogue
35 Preview
Higher Productivity, Higher Efficiency

Up to 70 percent of the power consumed in factories today is used for the operation of drive systems – and that is why drives can also make a significant contribution to total energy savings. This is especially true for an energy-intensive field of production such as the process industry. Drive technology is an important factor for optimizing plant lifecycle costs, and our customers are becoming increasingly aware of this issue, as Kurt Eder from Linde Engineering confirms in an interview on page 4.

As the leading industrial supplier of electrical drive solutions, Siemens Drive Technologies has an obligation to both its customers and the environment. We are committed to working together with partners and customers to identify potential for energy savings. We also demonstrate this commitment in our own processes, where we strive for maximum energy efficiency during the production of our motors and drives. Read on page 18 how the Siemens gear production facility in Penig, near Chemnitz, was able to improve productivity and reduce overall energy consumption through plant monitoring and energy management.

When we talk about the next steps in the development of our automation and drive portfolio, IT integration is a key topic. Through tight integration of control and drive components with IT systems, our customers can improve their productivity in both engineering and operation. Our Simotics motors are a major component of integrated drive systems and they are part of our TIA product range, just like our converter solutions for the process industry and high-performance drive concepts for mills. You can read more about these and other topics concerning our products for the process industry in this issue of process news.

Enjoy the read!

Ralf-Michael Franke
CEO, Drive Technologies Division
Mr. Eder, as head of the electrical engineering department in the Linde Engineering Division, you are responsible for electrical equipment in plants throughout the entire world. Why are you so intensely involved in drive technology in this context?

Kurt Eder: In these plants we are responsible for practically everything that has a connection to a power supply – from the medium-voltage cable to even the telecommunications and access control systems, if the customer requires this. But, of course, we’re involved with drives in particular because they constitute – maybe not in numbers but certainly in terms of the power required – the largest part of the power consumers in a chemical plant.

But one would think that drive technology is more a run-of-the-mill business – as the technology is very mature.

Eder: You’d think that at first glance. But in fact, the technology is evolving and changing, so drives are a market that is quite dynamic. One example is variable-speed operation of drives, where inverters were introduced very early into process applications. It took a while for this new concept to catch on because it is relatively complicated compared to a simple on/off contactor. Today, the technology is considered established, and we are equipping large drives with starting inverters.

The next big challenge is increasing energy efficiency. At first this was only discussed among specialists. Today our customers specify energy-efficiency standards in their tender documents. In addition to the capital expenditures of a plant, operational expenditures are increasingly included in plant specifications. We see this in the tender documents; operators are rethinking and changing their focus in order to reduce operating costs. And as they are large consumers of power, drives offer a correspondingly large savings potential. The basic principle of an electrical drive has indeed remained unchanged for well over a hundred years – but we are facing constantly evolving requirements in the application and process environment.

And does this have specific consequences for your company and your partners?

Eder: Definitely. We have to find innovative solutions that are both cost-effective and resource-efficient in a competitive and cost-driven market. So we need...
all-purpose drives in order to limit our engineering expenses. And, as we are serving customers in many regions of the world that allow us to have to comply with different standards and meet different market requirements, we need systems where we can reuse the parts or components of a solution. That helps us capitalize on the knowledge we’ve gained.

But we also need drives that are flexible. Ideally, we want to be able to design or build a motor in such a way that it has only the features that are really needed for the given application. One customer may include many features in the specifications – which we are happy to provide, of course – while another customer asks us for a more streamlined and economical version. It is therefore helpful to us when a supplier can offer options like this with products that meet our requirements in terms of price and performance. In Siemens, we have found such a partner: they can provide the required option packages and collaborate with us in the bidding process.

What does this collaboration look like?

Eder: We create our requirements based on the tender documents. What might happen next is that the experts from Siemens come back to us and ask whether an alternative, often more cost-effective solution would be possible for a certain large drive system. We really work together as a team in this process, aligning requirements and solution in order to find the optimum solution for the customer. Just recently, we won a contract exactly because of this.

“We have to find innovative solutions that are both cost-effective and efficient in a cost-driven, competitive environment.”

Kurt Eder, Manger of Electrical Technology, Engineering Division, Linde AG
Larger and more powerful

Along with the scale of the plants they are used in, drives are getting larger and larger. Ten years ago, a typical drive would have a power of around 10 MW; today, engineers are designing single drives with 70 MW. Such a drive will consume the power equivalent of a well-sized city, which has engineering companies facing completely new requirements.

Team approach. In this case, Siemens could offer a solution with a roller bearing that was considerably more cost-effective than the planned solution with an oil unit, and that was ultimately the winning factor. Through working as a team, we could come up with a more attractive offer – and that is what we expect from a drive technology partner. Large drives are a business that requires a lot of consulting; off-the-shelf solutions just won’t get you far.

So partnership and expertise are important even when you think you are dealing with an established technology?

Eder: They are in fact absolutely critical – and not just because of what we have just discussed. Another trend in the market is that chemical plants – and thus also the capacity of individual drives – are becoming larger and larger. Today, 60 MW motors are more the rule, not the exception. Such huge motors will typically come with a starting inverter, not to make them more energy-efficient but to limit the start-up load for the power grid. So when we are building a new plant, the growing scale means we face issues that used to be the domain of grid operators and power utilities.

A project that we worked on recently included the power supply to a large air-separation plant via a 220 kV overhead power line. This type of power supply is not what you would consider part of the classical scope of a process engineering company. However,
because the required power just can’t be transmitted at a lower voltage level, we are facing new challenges – also because the grid operators themselves have become very lean in their organizations and they are telling us, “You have to build this transformer station according to our specifications.” For us, that means we have to integrate our systems into the public power grid. And the power utility would, of course, like this integration to be absolutely smooth.

Do you benefit from the collaboration with Siemens in this area as well?

Eder: Absolutely. With such amounts of electrical power, you really have to look closely at things like power supply quality. However, our customers are chemical companies, not power utilities. Therefore, we have to work with the experts at Siemens to identify filtering capabilities and solutions for the grid connection that provide the greatest economic benefit. We then present the result to our customer in the chemical industry, who, in turn, takes this solution to the power utility.

Especially in the very dynamic markets in Asia, the grid operator is often planning the power supply while we are already engineering the large-drive systems. We have to collaborate intensively in such an environment so that in the end, the power utility will accept our solution. That was one of our great success stories that we had recently: we – Linde, Siemens, and the plant operator – jointly developed a solution that the customer presented and that was accepted by the specialists at the Chinese utility. This proves that you really can develop a good solution even in a difficult environment when you team up with the right experts.

A very rewarding project for you and also for Siemens. So what do you think is next in the area of drive technology?

Eder: The developments in the market definitely present opportunities for innovation in the area of drive technology. When we look at inverters for large drives, we can see new options emerging in the design of the process itself – for example, we can design the compressor differently, creating a wider range for partial loads over the entire plant. And suddenly, frequency inverters in performance classes up to several dozen megawatts are really worth looking at.

And the drives themselves will continue to get bigger. We have already designed a 70 MW machine for a project. As electrical power is the most cost-effective source of energy in many cases, steam turbines will be displaced to even higher performance and power ranges by electrical drives.

Another important area is power electronics, where components are generally becoming more cost-effective, which will have new implications and allow new options for drive design. The inverters themselves are also becoming smaller, more compact, and less expensive. The use of frequency inverters will certainly trigger more changes in drive concepts – so drive technology really is a much more dynamic business than you’d think.

Mr. Eder, thank you very much for speaking with us.
Standardized yet Individual

Variable-speed operation of motors – for example, in pumps, fans, and compressors – has more benefits than just saving energy. In the performance range between 0.37 kW and 250 kW, the Sinamics G120 modular inverter series offers many possibilities for optimizing processes, perfecting automation, and performing safety-related tasks.
The Sinamics G120 consists of a power module, a control unit, and either an intelligent operator panel or a basic operator panel. The high overload capability of this drive is especially suited for applications in the process industry, as it helps prevent faults due to jamming caused by particles or when moving parts become stuck after extended downtimes.

Energy efficiency due to recovery

The Sinamics drives support energy efficient equipment operation in several ways. The inverter can be kept in a standby position with the hibernation function. When it is implemented in a communication environment using Profinet and the Profienergy protocol, users can configure comprehensive system solutions that can be completely switched off during breaks in production, thus decreasing power consumption. The Sinamics G120 features the Efficient Infeed Technology for regenerative feedback into the line supply for energy savings – and users can convert potential energy into power and thus eliminate braking resistors. Even a power choke is no longer required.

Modular and flexible

The trademark of the Sinamics G120 is its modularity. The power module, control unit, and software functions can be adapted to a wide range of tasks. Electrical planners can select precisely the components suitable for their application and assemble the optimum frequency inverter.

Due to the completely customizable configuration of the power module, controller assembly, and software, the Sinamics G120 can be adapted to the most diverse requirements. There is, for example, a CU230P-2 control unit especially for pumps, fans, and compressors. Up to four proportional-integral-derivative (PID) controllers – depending on the type of control unit – can be used to control process parameters, which relieves some of the burden on the plant control system. In addition, the G120 also supports integrated safety functions and fail-safe communication via Profsafe. Altogether, the result is a system suitable for many tasks.

Integrated functions for safety and rapid commissioning

Of course, the inverter series also offers integrated functions for plant safety. Five different objectives can be set here – from safe torque shut-off to completely stopping a drive. Due to the shared-device functionality, the safety technology is particularly easy to use. Standard automation and safety technology can be planned separately. The system engineers, for example, can use a dedicated fail-safe programmable logic controller (PLC) for safety technology, or they can run standard process automation and safety technology on the same platform. Users also benefit from the functionality of the Sinamics devices during commissioning of the drive system. Tools support the adaptation and configuration of the motors. Using the simulation mode, the motor function can be tested even without a higher-level control and feedback to the controller.

System solution for variable-speed operation

With the Sinamics G120 model series, users benefit from a fully customizable drive series according to the specific requirements for hardware, software, and functional modules. This approach facilitates creating an optimized drive solution that is safe, energy-efficient, reliable, powerful, and cost-effective.

The Sinamics G120 variable-speed drives are not only an ideal solution for the process industry but also for typical mechanical engineering applications – for example, in conveyor technology; in mixing and stirring plants; in centrifuges, compactors, extruders, and fans; or in packaging technology.

INFO AND CONTACT

www.siemens.com/sinamics-g120
rolf-dieter.weissenfels@siemens.com
Sewage treatment plants hold a special position among municipal facilities. On the one hand, they are large consumers of power and will typically rank even above schools and hospitals. On the other hand, most sewage plants can also generate power and heat. Anaerobic sludge decomposition produces biogas, which – after purification – can be used for power or heat generation with gas motors or cogeneration units. Treating wastewater, however, also requires a great deal of energy, and a different type of energy as well, especially large quantities of compressed air that is produced by rotary compressors or turbocompressors, a process that is a major consumer of electrical power. The process also requires heat energy, for example, to control the temperature in the decomposition and fermentation processes. So energy optimization of a sewage plant includes both aspects: reducing energy consumption and increasing energy efficiency.

**The Next Level**

Energy consulting and technical modernization are perfectly integrated in the optimization measures implemented at the sewage treatment plant in Geldersheim, Germany. The result is a system that is up-to-date in terms of consumption and power production.

**Basic and detail analyses are the keys to success**

This was also the aim at the sewage treatment plant in Geldersheim, where more than four million cubic meters of wastewater are purified annually. As manager Jürgen Seufert explains, in addition to upgrading the Simatic controllers, the replacement of the existing process control system was planned. In order to successfully implement these projects, Seufert consulted specialists – both the Nuremberg branch of the H2Office engineering firm, which specializes in wastewater treatment plant optimization, and the experts at the Siemens office in Würzburg – to help boost the facility’s efficiency.

The optimization of energy use in wastewater treatment usually starts with an energy audit. During the basic analysis, a basic classification of the plant is performed and potential savings are identified. The de-
Tail analysis then lists all the major electrical loads with sufficient data and compares specific consumption figures and target or ideal values. Within this energy optimization study, the identified measures are examined in terms of their technical and economic feasibility and placed on a timeline. The result is a specific action guide for energy optimization.

**Replacement of instrumentation and controls**

In Geldersheim, it quickly became clear that in addition to process engineering expertise, the use of modern technology was also required in order to achieve the desired increase in efficiency. The Simatic WinCC Supervisory Control and Data Acquisition (SCADA) system, initially installed to monitor the exterior buildings, and the Acron logging tool established the basis for the detailed analysis. Upgrading the drives with variable-speed Sinamics frequency converters also played a role in ensuring energy-efficient plant operation. The integration into the SCADA system and the visualization of energy data were easily accomplished. The automatic motor speed control allows for the immediate adjustment of power consumption in partial-load operation. Virtually no energy is wasted, unlike with mechanical systems.

Multifunctional measuring devices from the Sentron PAC series round out the technical equipment of the wastewater treatment plant. With these devices, measured variables such as voltage, current, and power supply values can be recorded precisely. These data are then also made available to the higher-level control system. Visualization of the newly captured operating data in Simatic WinCC required an extension of the operating protocols. The experts from H2Office and Siemens worked together to achieve this. The engineering firm specified which energy data were to be incorporated into the calculation of ratios and how the values recorded were to be evaluated and displayed. The Siemens specialists then took on the appropriate programming and visualization in the control system.

As part of the detailed analysis, the experts from H2Office set up dynamic energy models for individual areas of the Geldersheim sewage treatment plant. Secure remote access to the protocols then allowed the simulation of pumping stations with all the actual operating parameters. This enabled other operating modes and control behaviors, as well as their effects on power consumption, to be examined without affecting actual operation.

Energy generation was also to be increased in addition to energy savings. According to the general analysis, it made sense to treat other organic waste as well. In the detailed analysis, the result was confirmed by measurements indicating that gas production could be increased by about 30 percent through the co-fermentation of the grease separator contents, enabling savings of more than 20,000 euros per year.

**Positive balance**

“We are proud of the optimization measures we have implemented,” says plant manager Seufert, “and the next steps have already been identified.” Among other things, the team plans to introduce an energy management system for the reduction of peak loads.

Jürgen Seufert, Plant Manager, Geldersheim Sewage Treatment Plant

“We are proud of the optimization measures we have implemented, and the next steps have already been identified. Among other things, we plan to introduce an energy management system for the reduction of peak loads.”

Jürgen Seufert, Plant Manager, Geldersheim Sewage Treatment Plant

INFO AND CONTACT

www.siemens.com/water

petra.geiss@siemens.com
More Productive Grinding

More and more, faster and faster – this is the trend everywhere, even in the cement industry. For this reason, larger and larger vertical roller mills are being used. New concepts optimize the power transmission between drive and mill, and productivity and availability are increased.

The drive systems usually used for vertical roller mills consist of a gearbox and an asynchronous motor; outputs of up to about 8 MW are possible. Larger cement mills, toward which there is a clear trend, require far higher drive power. The demands on availability also increase with the mill size. In order to allow at least partial-load operation in case of malfunctions, the drive concepts must be modularly designed and adequately redundant. If the processes are then optimized using more precise speed control, the grind and productivity can be improved.

Innovative systems: Flender MultipleDrive ...

Two new drive systems meet these requirements. The central idea of the Flender MultipleDrive concept is redundancy. The input shafts of up to six small and compact helical bevel gear units are each driven by a frequency-controlled asynchronous motor. Since the gearbox, motor, drive coupling, and oil supply system are arranged on a carrier, the replacement of a drive for inspection purposes is not a problem. Because of the redundancy, the operation of the mill is also possible with a reduced number of actuators. The parameterization of the Flender MultipleDrive frequency converter ensures uniform load distribution while subjecting the parallel drives to a low dynamic load. The frequency converter enables all the required operating conditions as well as precise control and regulation of the mill speed. Outputs of up to 16.5 MW are possible. The much lower height in comparison to conventional drives favors more efficient mill construction.

... and Flender EMPP

The Flender EMPP mill drive is based on a new motor in the gearbox under the planetary gear stages. The simple structure without a bevel gear stage optimizes power transfer. A very compact unit is created from the five planetary wheels in the main planetary gear stage. The Flender EMPP is mechanically compatible with existing mill drives but has been optimized in terms of power density and function. The brushless permanent magnet motor is wear-free, and its cooling system is very efficient. The entire drive is wear-free due to the use of sleeve bearings. Compared to a system with a bevel gear and two planetary gear stages, the drive system has 20 percent fewer moving parts. This reduces sources of faults. The size and the weight have been reduced by approximately 25 percent through the integration of the motor into the gearbox. The inverter-controlled motor allows active damping and optimum adjustment of the grinding table speed, for example, to different materials and thereby enables the cement mills to achieve higher efficiency.
Solid Foundation

Teamwork and partnership are the key to building a cement works from scratch in Upper Egypt.

When a major industrial production facility is to be created on a greenfield site, many different organizations must come together to ensure the success of the project. Just such a situation occurred in Egypt in 2007 when the newly founded Building Materials Industry Company of Egypt (BMIC) acquired a license to build a new cement plant in the Upper Egyptian governorate of Assiut. When it is in full production, the plant will produce 1.5 million tons of cement per year, making it a major production facility by world standards. Modern cement plants contain some of the largest rotating equipment in the world and require motors with up to 12 MW of drive power.
Complete package

Construction of the plant began in 2010, and in March 2011, ASEC AUTOMATION, the main contractor for the entire scope of electrical systems on a turnkey basis, awarded the contract to provide all the large electric motors and drives and the distributed control system (DCS) to Siemens Egypt. Siemens won the contract against stiff competition. A decisive factor was Siemens’ ability to provide the technical support to develop a complete solution that met the specifications of both the process provider and the electrical contractor, optimizing the function and costs and meeting the complex specifications in a tight time frame. Additionally, Siemens provided technical support to the customer in selecting some of the project’s components (such as transformers and starters), which helped ASEC AUTOMATION stay within budget.

Motors, drives, and DCS all from a single source

The electric motors and drives solution for the main process as well as the cooler, crusher, and conveyor systems comprises an H-compact high-voltage motor, an H-compact PLUS high-voltage motor with modular cooling, an N-compact low-voltage three-phase motor, and Sinamics G150 and GM150 drives. The DCS employed in Assiut is Cemat, based on the Simatic PCS 7 platform. The Cemat control system is an industry-specific software suite designed for the special requirements of lime and cement works. It is the result of over 35 years of close collaboration with manufacturers and has been proven in use in the exceptionally tough environmental conditions of cement works. ASEC AUTOMATION handled all tasks related to the PCS 7 system implementation.

Smooth execution, planned start-up

The project has run smoothly and according to schedule thus far. Clinker production started in mid-2012, and cement production will commence in early 2013.

INFO AND CONTACT

www.siemens.com/cement
moataz.mohamed@siemens.com
From refill packages for laundry detergent to conventional instant food bags to resealable beverage packaging, sealed-edge pouches or doypacks are becoming more and more popular for consumer goods. However, these bags provide challenges for the manufacturers of machines that combine the individual packs into larger batches. The material used for this purpose generally is very soft, so the bags have no defined dimensions. However, as one of the leading international manufacturers of special packaging machines, Meypack has been an expert in such applications for years. The latest innovations from the German company include a new generation of highly flexible machines that perfectly pack sealed-edge pouches into wraparound cartons or trays.

The key features of the new generation of machines are an innovative network topology and the use of energy-efficient drive technology based on the comprehensive Optimized Packaging Line (OPL) standardization concept. One of the first packaging machines using the new concept is the Meypack VP 453. The machine packs sealed-edge pouches into display trays with lids partially inserted on the long side of the tray and secured against slipping with glue dots. Before the sealed-edge pouches are packed in the trays, they pass through a vibrating conveyor. There the content of the bags is precisely weighed and distributed as evenly as possible. Then the bags are

"The way in which Siemens has achieved savings through the optimization of consumption and mains quality using OPL is absolutely compelling and constitutes a valuable sales argument for our new packaging machines."

Klaus M. Vogel, Export Sales Manager, Meypack
stacked horizontally and, after reaching the desired quantity, pushed to the tray section in such a way that no bag can fall over in the process. After being packed, the display trays are conveyed out of the packaging unit.

Increased energy savings potential

In order to perform these highly motion-controlled processes efficiently and with the lowest possible plant lifecycle costs, Meypack relies on the comprehensive OPL standardization concept for automation and drive technology. Based on the hardware and software topologies provided by Siemens for this specific case, Meypack decided to use the energy-efficient and flexible Motox gear motors as well as the matching regenerative and distributed Sinamics S120 drive technology. With this intelligent drive technology, brake power can be used again and, if necessary, fed back into the mains – virtually without unwanted feedback, thanks to the new active line module (ALM). Because the Meypack VP 453 also includes Sentron PAC multifunctional measurement devices, operators benefit from full transparency in terms of consumption, network quality, and demand peaks.

Potential energy savings of up to 40 percent result from the hardware configuration alone, representing an enormous economic advantage, as energy costs constitute up to 70 percent of the lifecycle costs of a machine. The technologies used have a positive effect not only on power consumption but also on the quality of the power grid, so that transformers and network components can be better sized according to actual requirements. Intelligent planning tools such as Sizer have made it possible for the company to eliminate overdimensioning during engineering, which enables additional energy savings and cost reductions. “The way in which Siemens has generated savings through the optimization of consumption and mains quality using OPL is absolutely compelling and constitutes a valuable sales argument for our new packaging machines,” says Klaus M. Vogel, export sales manager at Meypack.

Considerably reduced operating costs

The Meypack VP 453 is characterized by its standardized drive technology, flexibility of processes, and innovative energy management. While performance remains the same, this ultramodern packaging machine helps minimize energy consumption and thereby consistently reduce lifecycle costs. In other words, with the Meypack VP 453, those who look beyond just the initial investment costs of acquiring a packaging machine for sealed-edge pouches can benefit from considerably lower operating costs over the entire service life of the machine.

INFO AND CONTACT

www.siemens.com/opl
guenter.gerweler@siemens.com
The production of gearwheels that transmit torque is a highly energy-intensive process. To reduce power consumption while at the same time increasing plant availability, the Siemens gear-production facility in Penig, Germany, uses the ePS Network Services condition monitoring system.

At its plant in Penig, Germany, Siemens produces gears for industrial applications and rail transmission systems. Siemens is one of the world’s leading companies in this field. Its customer base includes OEMs and industrial customers as well as all the major railway vehicle manufacturers in Europe and some in Asia. Railway drives from Penig are successfully deployed on every continent around the
globe. The component manufacturing facility produces up to 600 torque-transmission parts every day. To reduce power consumption while at the same time boosting productivity and plant availability, the plant operators rely on the ePS Network Services condition monitoring system and the B.Data energy management system.

**Systematic plant monitoring**

Approximately 300 employees work at the Penig gear plant on approximately 130 machine tools. The efficient use of the machines is an important key to success, and service and regular monitoring of the production machines are key prerequisites to achieving this efficiency. Preventive fault detection and safeguarding availability and productivity are also becoming more and more important.

At the Penig gear plant, systematic plant monitoring takes place using the ePS Network Services condition monitoring system. Axis tests are performed on the machine tools weekly, and individual variables such as temperature, vibration, and pressure are recorded. These tests help detect trends and initiate service measures in a timely manner. Newly delivered machines are also subject to mechanical as well as energy fingerprinting, where values specified by the OEM are recorded during initial commissioning and the machines undergo special tests.

The second comparative fingerprint is taken after installation in the machine shop and used to detect signs of wear and defects before they can affect production. This comprehensive approach to machine monitoring helps sustainably boost availability.

**Maximum transparency**

In addition to plant status monitoring, the project managers wanted to reduce power consumption. This was achieved using the B.Data energy management system. While the software itself cannot automatically reduce consumption, it provides information to adjust the processes for more energy-efficient operation.

The hardening processes in Penig, for example, are particularly energy-intensive. The parts are carburized over several hours in a thermochemical process and then quenched in oil baths. Energy consumption in this process step is optimized through an analysis of the precise consumption data by B.Data.

Increases in machine availability

After the implementation of ePS Network Services and B.Data, plant management at the Siemens gear plant in Penig is very satisfied with the results. In addition to the financial benefits, the systems also motivate the employees. The high level of transparency promotes a sense of responsibility, and the employees feel they have a direct effect on the company’s power consumption. Condition monitoring has also increased the availability and productivity of the machine tools. Valuable information on process optimization has been derived from the automatic correlation of the operating state and the power consumption of the machines.

INFO AND CONTACT

www.siemens.com/industry/cmr
sandra.schuster@siemens.com
Merging Systems

Generally, electrical switchgear and process automation systems are two separate worlds that require custom coupling and interfacing. Integrating the two system environments produces significant benefits over the entire plant lifecycle.

For controlling switchgear in process plants with high power requirements, IEC 61850 is the globally recognized standard, and a wide array of safety devices – known as intelligent electrical devices (IEDs) – cover virtually every system automation task. These safety devices are generally controlled via a control system that is operated and monitored separately from the plant’s distributed control system (DCS). For efficient overall plant operation, however, this system should be integrated into the DCS – preferably as smoothly as possible. In other words, two different but technologically related system environments must be interlinked.

Increased effort

Networking different systems results in numerous drawbacks for the plant operator throughout the entire lifecycle of the system, starting with engineering and commissioning. The integration of two independent control systems requires an extensive coordination effort, which results in higher project risks. With ongoing operation, in turn, the different user interfaces for operation and monitoring require separate spheres of responsibility and staff with the appropriate background knowledge. Service and repairs too must be handled separately.
Cost reduction through integration

With Simatic PCS 7 PowerControl, there is now a solution for electrical switchgear with IEDs that is based on the standard IEC 61850 protocol. Both the electrical system and the process control systems are integrated into Simatic PCS 7, creating a common system platform for power and process control. This not only reduces the effort expended for engineering and commissioning but also lowers the plant lifecycle costs. Thus, switchgear and automation, for example, will have a uniform user interface, enabling uniform operation and monitoring of the system and minimizing the risk of operating errors.

The IEDs are operated and monitored with the same operating philosophy that the user is already familiar with from the motors, valves, and regulators. Faceplates are available for typical components such as branch circuits, motors and generators, transformers, synchronization devices, and busbars that correspond to the electrician’s perspective and mind-set.

Engineering as usual

The standard controllers of the DCS are used to automate the switchgear systems. When there are only a few protective devices to address, the specific IEDs are integrated as subsystems in the DCS controller. In this way, process-dependent interconnections can be configured easily in the control system. If stand-alone station controllers are required, they too can be integrated into the overall configuration.

During control system engineering, the individual IEDs are simply integrated by importing the device description files (IED capability descriptions, or ICDs) and checking the input objects. Any data objects that are still missing can be created with an instance editor in order to expand the library on a project-specific basis. The mass data project planning is carried out via a database automation tool, with which all the required instances of the IEC 61850 IEDs are generated.

System benefits with added value

The seamless integration of the switchgear control systems into the process control system not only lowers the lifecycle costs of the plant; it also enables features that are difficult to implement in traditional solutions. An example is the automatic archiving of process values and messages. Tasks such as alarm management with time stamping and the sequence-appropriate processing of the results can be handled in a uniform way through the entire process plant.

The system also provides for standardized user management as regards access rights. In addition, the technological integration serves as the basis for comprehensive power management. The process data required for this are provided by the IEDs and can thus be processed by the control system for the entire plant.

INFO AND CONTACT

www.siemens.com/simatic-pcs7/powercontrol
roland.wieser@siemens.com
No access, no harm. The systematic restriction of access rights is an important barrier to prevent attacks from inside and outside the organization. In this context, it is just as important to consider the users and operators as the hardware and software components.
The path to efficient industrial security is a multi-layered defense-in-depth concept. It is composed of different security measures that wrap around the system, forming protective barriers and giving potential attackers the smallest possible area for an attack. Two of these measures are system hardening and user management.

**Efficient user management**

Consistent user management is one of the most important security measures against attacks from inside and outside the organization. The guiding principle is that of least privilege. This means that users and operators as well as devices and network and software components are always given only those rights that are really necessary to perform their assigned tasks. This also means that users who log into the system must identify themselves correctly and individually. The rights should be assigned according to a hierarchy that is closely aligned with the structure of the company and the relevant production area. Security planners need to answer these critical security questions: How are the areas of responsibility divided within production? What functions do the individual users and operators perform? Which operational and access rights are required to do this?

**Clearly defined rights**

With Simatic Security Control, Siemens provides a high-performance tool for systematic system hardening. During system installation, the tool ensures a structured assignment of rights and the application-specific hardening of computers within the local subnet. Simatic Security Control is a standard component of Simatic PCS 7 and Simatic WinCC. Simatic Security Control follows the established Microsoft recommendations for rights management. During system installation, it supports defining the required rights for each function. For example, during the installation of a Simatic software product, Simatic Security Control configures the local Windows firewall to allow only Simatic-specific communication between the components. In addition, the required Simatic user groups are created through the installation of the Simatic products. As a result, user accounts with identical functions can be combined in the respective Simatic groups and will be granted only the rights required for their specific functions. The use of Simatic Logon together with an active directory domain is the basis for the highly available and fail-safe user authentication and log-in. For the configuration and rights management of users and user groups, local user accounts and groups in the production domain are assigned to the user groups in the Simatic environment based on their activities.

**Systematic system hardening**

Having a secure system also means that all devices, network components, and software functions are granted only those access rights that are required for their specific functions. Thus, all nonessential services and software components should be switched off or uninstalled, and availability of services as well as access rights should be limited. This applies to a programmable logic controller (PLC) just the same as it does to network components such as switches or routers and, of course, PCs. Software components not being used should be removed, especially from standard PCs. In the production area, this also includes media components and games.

**Technical and human factors**

Every automation system has its own characteristics and very specific security requirements. Therefore, Siemens offers comprehensive consulting services ranging from the evaluation of system security to the design of appropriate solutions to system maintenance. There are also special training courses addressing all security questions relating to process plants. System hardening and user management are important components of a multilayered defense-in-depth concept, but not every attack comes from the outside and not every attack is intentional. Therefore, trained employees are also an important component in a comprehensive industrial security concept.

---

Note on industrial security: Suitable protective measures (including industrial security, e.g., network segmentation) must be taken to ensure the secure operation of the plant. Further information on industrial security can be found at [www.siemens.com/industrialsecurity](http://www.siemens.com/industrialsecurity)
Realize more projects with fewer people in less time. Simulation is a strategic lever that can be used to attain these objectives and achieve a high quality standard. The simulation platform Simit is an essential element of integrated product and production lifecycles. Simulation maps real-world installations into a virtual plant environment. A virtual plant supports engineers throughout the entire plant lifecycle. Simulation enables high-quality engineering through extensive configuration testing, which results in reduced time to production, risk, and cost during commissioning and plant start-up. Simulation also contributes to the achievement of operational excellence, including workforce excellence and optimized system and asset utilization. For engineering test and operator training purposes, generic plant models are either generated directly in Simit or, in the case of more rigorous process models, through the use of highly specialized process simulators. The simulation concept is embedded in the complete lifecycle management concept to drive down the plant’s total cost of ownership.

Simulation in a virtual plant environment

During plant design, the plant exists only as a digital image in process descriptions, piping diagrams, process charts, wiring diagrams, and other engineering documents. Automation and electrical configurations are based on these engineering documents. During commissioning and
plant start-up, this digital world meets reality. Data inconsistencies and bugs in the automation configuration appear too late to be easily corrected. Through plant simulation, planning meets reality sooner and necessary corrections are identified in an early stage of the project. The earlier a required change to the configuration is recognized, the less effort, cost, and resources are necessary to implement the change.

Commissioning in a virtual plant

Simit increases quality in automation engineering through “virtual commissioning,” meaning early and extensive testing in a virtual plant environment. Simit supports virtual commissioning by simulating signals, field devices (actuators and sensors), bus communications, and processes. Simit takes advantage of existing engineering data and generates the first level of simulation, such as the signal simulation, with only a few mouse clicks. For more rigorous, high-fidelity process simulation requirements, third-party process simulators can be easily interfaced with Simit. The automation program is executed either hardware-in-the-loop, meaning on real S7 controllers, or software-in-the-loop, meaning on emulated virtual controllers. Simit is optimized for Simatic PCS 7 for continuous and batch processes and Simatic S7 for discrete processes. The test bed also includes the ability to test the response of the automation system to malfunctions and critical situations. In the early phase of the project, the automation engineering is thoroughly debugged, resulting in increased reliability. The end result is the seamless transfer of a faultless automation configuration to the real-world plant. Actual commissioning efforts and the total project duration as well as time to production are significantly decreased.

Effective operator training

The Simit simulation platform is also designed for plant operator training. While the primary requirement of engineering tests is rapid configuration of the virtual test bed, operator training systems require additional features to challenge plant operators with important plant states. Simit provides the necessary features to design and customize training schemes, including scenarios and snapshots of various plant states. Well-trained operators and deeper plant knowledge enable excellence in plant operation.

A leap forward

Simit enables a leap forward in engineering efficiency and operator excellence. Project and plant managers appreciate the reduced technical and financial risks to their investment.

Simulation with Simit

Functional scope:
- Testing of engineering configuration in virtual plant
- Operator Training System
- Both hardware-in-the-loop and software-in-the-loop supported
- Interface to third-party high-fidelity process simulators

Benefits:
- Higher engineering quality
- Well trained plant operators
- Lower commissioning effort
- Reduced time to production
- Reduced total cost of ownership

INFO AND CONTACT
www.siemens.com/simit
christoph.pfleger@siemens.com
Zeppelin Systems GmbH has a long history stretching back over the past century to when Graf von Zeppelin first developed his legendary airships. After Zeppelin stopped producing airships, the company went on to found numerous companies that continue to be successful in various markets in today’s industry. These companies include Zeppelin Systems GmbH, a leading manufacturer of plants for storing, conveying, dosing, weighing, cleaning, and blending premium bulk solids. The company, based in Friedrichshafen, Germany, is a world market leader in engineering and building silos and logistics centers that are tailored to the individual requirements of the customer. Through the implementation of a comprehensive plant engineering system, Zeppelin Systems has

Improve plant processing quality, save time generating P&IDs, and optimize global engineering – these are just three of the numerous advantages achievable by using the innovative engineering software Comos at Zeppelin Systems GmbH.
The project aimed at implementing more efficient, consistent plant engineering. In doing so, the processing and engineering of plant construction, document management, and data management were to be improved in terms of quality and implemented in a more cost-efficient manner. “Up to now, we have been working in Excel and carrying out plant engineering using a software tool that was no longer up-to-date. After that we started using a benchmark of four renowned CAE products,” recalls Mark Niestroj, head of engineering at Zeppelin Systems. The first step was to specify what exactly was required from the software solution. This included software functionalities such as the ERP (enterprise resource planning) system interface and integration into current IT systems. In particular, great importance was attached to global usability of the software, as engineering collaborations across the globe had become increasingly important and branch offices around the world had continuously grown over the years.

High level of acceptance among colleagues

After carrying out exhaustive comparative studies, the company selected the Comos software solution. The quality of plant engineering has significantly improved since the software has been introduced. Thanks to the integrated database and the software’s object-oriented approach, the engineering process now offers increased transparency. In turn, this has resulted in an improved exchange of information between the individual technical departments. The error rate in plant processing and engineering has been minimized, while the development time has been reduced, and costs have been lowered. In addition, the open software architecture guarantees easy connection from the engineering software to the ERP system. “The more experience the staff gain in using the software, the better they can put the integrated engineering software’s potential to use,” Niestroj explains. Previous experience of customer-specific software adjustments can be utilized along with other data, resulting in continual improvements. “The level of acceptance for Comos is very high among the teams,” says Tobias Schlunski, administrator for Comos at Zeppelin Systems.

By now, the branch offices in China and India are also working with Comos. Access to the integrated data structure has saved significant amounts of time. In addition to version control, the multilingual support was another important factor. Flow diagrams and specifications were partly prepared in Friedrichshafen and then finalized in India according to local supply quotas.

Considerable boost in productivity

In the future, Zeppelin Systems plans to further expand into the electrical engineering sector. Here, the software’s integrated engineering approach should also prove beneficial in cabinet engineering and automation. This expansion should enable the company to offer its customers a wider range of engineering solutions. What’s more, the company also plans to connect the engineering software to the SAP ERP system. A further increase in efficiency is expected, as the results achieved to date have been perceived very positively by the management. “All in all, Comos has been a success story for us. We were able to standardize and improve our work processes, resulting in a considerable increase in our plant engineering productivity.”

Mark Niestroj, Engineering Manager, Zeppelin Systems
Niestroj (seated) and Tobias Schlunski, Comos administrator at Zeppelin Systems, are responsible for the successful use of Comos.

INFO AND CONTACT
www.siemens.com/comos
ingo.kaiser@siemens.com
Schülke & Mayr GmbH, Germany

Clean and Integrated

Thanks to the Simatic PCS 7 process control system and the Simatic Batch software, a new plant for disinfectant production at Schülke & Mayr is running smoothly. The managers are enthusiastic about the high degree of system integration and the resulting improved ease of use.

Working under sterile conditions would be impossible without the use of disinfectants. Schülke & Mayr GmbH have long played a major role in this field, starting in 1913 with the introduction of Sagrotan, the first brand-name disinfectant for the consumer market.

The company, founded in 1889 in Norderstedt near Hamburg, Germany, now produces 200 specialized products in the fields of wound care, disinfection, and specialty chemistry. Until the recent construction of a new plant, however, Schülke & Mayr had no plant for the production and bottling of surface disinfectants.

Close collaboration

The contract for the automation of the new plant was awarded to the Siemens Solution Partner on/off engineering. “Prior to the project, we conducted several intensive workshops to determine the requirements,” reports Lars Schulze, project manager at Schülke & Mayr. These requirements were recorded as specifications for the engineering of the process control system based on Simatic PCS 7 with Simatic Batch. “Crucial for this project was that Simatic Batch is in accordance with the requirements of the S88 standard, and we would get a 21 CFR Part 11–compliant solution with PCS 7,” Schulze explains.

For on/off engineering, good preliminary work in the design and engineering phase and close collaboration with all the project participants were crucial for the successful implementation of the specification requirements. In this process, documenting the software design was as high a priority as the engi-

“We benefit from the integration of the systems. Everything runs automatically – and that saves us a lot of work.”

Lars Schulze, Project Manager, Schülke & Mayr GmbH
neering itself, as it ensured that the detail design approved by Schülke & Mayr was implemented into the corresponding PCS 7 application software in a qualified manner and that the program contains only defined and documented states. It was also critical to define functional processes and recipe structures with the electrical engineers, process development engineers, and plant design engineers in order to have a validated plant at the end of the tests. According to the project managers at on/off, this interdisciplinary teamwork is the key to success in many projects.

**Simplified operation**

In collaboration with on/off engineering, the existing standard reporting was tailored to the special needs of production. The process control system is readily equipped for possible future production expansions and the integration of the SAP enterprise resource planning (ERP) system already in use today.

Before the PCS 7 system was delivered to the site, Schülke & Mayr approved the programs in a factory acceptance test (FAT), together with the machine manufacturer for some parts, on the premises of on/off. Then the system was installed on-site, tested, and accepted. At Schülke & Mayr, the staff are satisfied with the progress and the results. “We worked together constructively and successfully,” confirms Schulze. “The biggest advantage, in our opinion, lies with the introduction of Simatic Batch.” The option to integrate the ERP system later on and thus automate the job and batch regeneration process is another advantage. “We benefit from the integration of the systems,” Schulze concludes. “No connection needs to be set up by hand – everything runs automatically – and that saves us a lot of work.”
As an innovation specialist, North-Tec Maschinenbau GmbH in Bredstedt uses concepts typical of modern industrial facilities for equipping its biogas plants. In collaboration with Siemens, North-Tec designs solutions that are characterized by high availability and standardization. Ralf Breckling, managing director at North-Tec, reports: “Our business used to comprise just service and spare parts for biogas plants. And we realized very quickly that the best investment for a plant operator is in consistent, robust overall systems based on rugged, flexible industry solutions.” One illustration of this line of thought is a biogas plant in Leckeng near the Danish border that was built in mid-2010. It consists of wet fermentation, a secondary fermenter, and fermentation residue storage and...
supplies gas to two combined heat and power plants (CHPs) with a power output of 400 kW each. Using the discontinuous method, every hour new material is introduced by a feed screw to keep the methane production at a maximum.

**Highest availability**

An efficient, reliable, and flexible automation solution based on Simatic WinCC and the Simatic ET 200S distributed I/O system with Profinet provides optimum control and monitoring of the system. Mobile phones are being increasingly used for remote control and visualization. Detailed diagnosis has a high priority, as a prolonged outage of the feed supply results in significant financial losses. A modem for remote maintenance can be connected in order to enable the fastest possible 24/7 service. This allows the service personnel to immediately give the plant operator valuable information, such as where an alarm is coming from and how a fault can be remedied.

**Plug and play**

For the first time, North-Tec has equipped the motor and load feeders – consisting of Sirius 3RT2 contactors and Sirius 3RV2 circuit breakers for motor protection – with IO-Link. Sensors, control units, and actuators can be uniformly connected to the control level with convenient plug and play and standardized connection components. This reduces the effort required in connecting the individual devices and wiring the modules. Moreover, this approach provides valuable diagnostic information on each motor controller. These networked components and systems can be easily integrated into the existing system. They are also easy to maintain and can later be expanded in a flexible manner. The connection of the CHP satellite via Profinet illustrates this as well. The second CHP plant, located 2 kilometers away, supplies around 160 residential units with power and heat. Breckling says, “Through communication based on TCP/IP and Profinet, such distributed solutions can be as easily controlled as centralized facilities.”

**Efficient energy management**

To allow the operators to always keep an eye on power quality, power consumption, and system performance, the Leckeng facility is equipped with a multifunctional PAC 3200 that can detect and provide over 50 different readings. With the information from the field level, it is possible to determine at any time whether, for example, a motor contactor has started or whether voltage is present at all stages. The system controller also ensures that energy-intensive drive processes do not run simultaneously. This is important for the efficiency of the system because utility company contracts define the peak load at any given time. When these consumption limits are exceeded, the result is high additional costs. The transition to industrial automation solutions is a logical step for cost-effective and sustainable power production in biogas plants. Plant operators benefit from a consistent, transparent, and flexible system. The intelligent combination of all diagnostic information makes it easier to service the system and helps optimize operating costs. Automation plays a role in achieving an excellent return on investment.

“Biogas plants must achieve the same high level of availability as industrial plants in order to make energy production cost-effective.”

Volker Storm, Plant Operator, Leckeng Plant Storm (left) and certified engineer Ralf Breckling, Managing Director, North-Tec
The small town of Rhinow, with just over 2,000 residents, will soon be able to meet up to half its energy needs with a biogas plant. Currently, 560 kW of electrical power and 640 kW of heat are being fed into the supply grid by two combined heat and power plants (CHPs) designed for a total capacity of 1,454 kW. For the automation of its first biogas plant, Arnold-Blume Bioenergie GmbH in Rhinow decided to use a complete and comprehensive instrumentation package from Siemens.

The plant in Rhinow is operated with corn and grass silage as well as liquid manure. Biogas as a source of energy is created through the fermentation of organic substrates into combustible methane, carbon dioxide, water, and trace gases such as hydrogen sulfide, ammonia, nitrogen, hydrogen, and oxygen.

Whether it is a small plant with the simplest measurement equipment or a large plant with gas cleaning and a feed-in to the natural gas supply, a great deal of information on temperature, flow, level, pressure, and gas composition always needs to be collected directly from the process. When planning a biogas plant, the following questions must be asked in advance: Which method is more reliable, radar or ultrasonic level measurement? And which is the most cost-effective option in this case?

**Arnold-Blume Bioenergie GmbH, Germany**

**Complete Process Package**

Integrated process instrumentation enables continuous process monitoring and optimization at a biogas plant in Rhinow, Germany, ensuring cost-effective plant operation.

**Process instrumentation in Rhinow**

The system operates largely autonomously and is equipped with a complete process instrumentation solution from Siemens:

- Sitrans P DSIII for gas pressure measurement in the fermenter
- Sitrans FM for flow measurement of the liquid manure
- Sitrans T for temperature measurement, including in the fermenter
- Sitrans Probe LU for contact-free level measurement in the mixing tank
- Sitrans Probe LR for level measurement in the fermenter
- Multiranger for level measurement in the fermentation residue silos
- Pointek CLS for level detection in the mixing tank
The Arnold-Blume Bioenergie GmbH biogas plant

All process data at a glance

The gas quantity in the gas collector is measured using a differential pressure transmitter that is especially designed for very low pressures in the single-digit millibar range. A magnetic-inductive flowmeter records the liquid manure flow. Suitable sensors and measurement transmitters were selected for temperature monitoring. The fermenter, in particular, requires exact temperature measurement. Continuous stirring in the 15 m wide tank creates a high flow rate and thereby friction on the edge of the container, which, without special protection, would damage the sensor.

Biogas plants require level measurements at different points that perform many different tasks in a wide range of physical and chemical conditions. Accordingly, ultrasonic, radar, capacitive, and hydrostatic measurement methods and devices are used.

As there is next to no gas in the mixing tank, for example, a cost-effective ultrasonic device measures the level here. A useful side effect is that the ultrasonic waves prevent caking on the sensor. In the fermenter, in contrast, the level measurement is contact-free and takes place from the outside through the weather-protection and gas tarpaulin. This prevents the formation of deposits such as sulfur.

An integrated solution improves cost-effectiveness

The experts in Rhinow all agree: the efficiency and cost-effectiveness of a biogas plant increases with a greater degree of automation. The integrated process instrumentation allows the user to measure all the processes securely and precisely, making them transparent and optimizing performance.
Water Treatment

Motion Detection Means Process Protection

The Seymour-Capilano Filtration Plant (SCFP) is the largest of its kind in Canada. The plant uses process protection devices from Siemens that consist of a Milltronics MFA 4p motion failure alarm controller and a Milltronics XPP-5 heavy-duty motion sensing probe. Since SCFP first installed the Milltronics MFA 4p and the Milltronics XPP-5, operators report that the devices have been working well. They are an ideal fit in the plant’s dewatering and disposal system. This noncontacting technology also means reduced maintenance requirements.

Read the complete article online: www.siemens.com/processnews/412a

Weighing Technology

Unique Flexibility

Due to its diverse configuration and scaling capabilities, the new Siwarex WP231 weighing module offers a very high level of flexibility. The module for the Simatic S7-1200 is programmable via the Totally Integrated Automation (TIA) Portal engineering platform. In addition, the excellent measuring capabilities ensure reliable weighing. The Siwarex WP231 is therefore the ideal solution for industries with high precision requirements — such as the food, beverage, and pharmaceutical industries.

www.siemens.com/siwarex

Sipart PS2

The Flexible All-Rounder

The Sipart PS2 positioner is multitalented. It is the most-used position controller for push and swivel drives in the widest range of processing industries, and with good reason: with its functionality, its robustness, and its expandable modules and numerous available add-on sets, the Sipart PS2 positioner can be used to control flaps and valves even in demanding applications with harsh ambient conditions, such as in metal and mineral processing or in the paper industry.

Read the complete article online: www.siemens.com/processnews/412b

www.siemens.com/processnews/412a
Do you want to know more about the systems and solutions for the process industry from Siemens? Simply visit our information portal on the Internet at:

www.siemens.com/processautomation

Online

Browse through thought leadership articles on what drives the process industry today and what strategies can help address key industry challenges. You can access additional news, case studies, detailed technology articles, and videos on key topics, plus read all past issues of the print edition. Via RSS feed, you will be instantly notified of new publications on the site. Stay ahead today!

www.siemens.com/processnews

Focus on Migration

While products and systems in process automation are fine-tuned for sturdiness and a long service life, at some point every system operator is faced with this challenge: modernizing the existing process control system. What makes this challenge even more complex: the individual components in process automation have very different lifecycles. This is why we will focus on different aspects of system modernization in the upcoming issue of process news. In our focus on migration, we will be addressing several pressing questions in system migration projects, such as the following:

- How can companies standardize their automation environments to save costs and make production more effective?
- How can a company gradually modernize an existing system and thereby achieve an optimum return on investment?
- Which tools are available to migrate the system software and where are the limits of a tool-supported system migration today?

Additionally, as always, there will be numerous other articles on technologies and applications from different industries. process news 1/2013 will be published in April.
Learn how companies are implementing Siemens technology to increase their productivity and browse through thought leadership articles on what drives the process industry today and what strategies can help address key industry challenges.

With a new and improved design, process news online will help you stay ahead with even more news and articles on the latest trends and developments in the process industry. Stay ahead today and visit our new homepage on the Internet!