Process News
INFOS, NEWS AND TRENDS FROM THE WORLD OF PROCESS AUTOMATION

A clear choice

Simatic PCS 7 helps treat Melbourne’s waste water

In Melbourne Water’s Eastern Treatment Plant, Simatic PCS 7 is impressing plant operators with the speed and flexibility with which the process control system can be adapted to high demands.

For the three million people living in Melbourne, Victoria, Melbourne Water has the important role of looking after the treatment of sewage in Melbourne and the surrounding district. Melbourne Water’s Eastern Treatment Plant, about 30 km southeast of Melbourne in Bangholme, treats an average of 380 million liters of sewage a day using a secondary treatment conventional return activated sludge process.

Since being first commissioned in 1975, the Eastern Treatment Plant has had a history of keeping up with changing technologies. The first conventional mainframe-based control had to be centralised and very support intensive – gave way to a modern distributed control system in 1984. Various improvements allowed the system to stay in operation until the late 1990’s. Then, with rising costs of ownership and declining support, another change was necessary.

Modern, open and reliable

When Melbourne Water decided again to upgrade the process control system, they had one clear goal: to find a modern, open and manufacturer-neutral automation solution which could be easily serviced by local companies and which offered a defined upgrade path to the future. “To treat the large quantities of sewage smoothly, with just three operators per shift, we need a process control system which is available 365 days a year, 24 hours a day. Moreover, it must offer a high degree of automation with minimum manual intervention,” as John Stanley from Melbourne Water explains the special requirements for the process control system. “In addition, the amount of sewage can increase by a factor of 5 during prolonged wet weather periods. Here, a control system failure has the potential to spill large quantities of untreated sewage to the environment in 30 minutes”. Furthermore, the process control system needed to offer possibilities for plant-wide access from other locations on and off the site and needed to slot easily into the existing infrastructure.

The Simatic PCS 7 easily satisfied all these requirements. Its open communication standards via Industrial Ethernet, Profibus and AS-Interface, its open hardware architecture and integrated software solutions make PCS 7 a remarkably open and flexible system.

Intuitively operable configuration and visualization tools also provide maximum operating comfort. Since PCS 7 can also exchange data with MES or information systems using standardized interfaces, it can also be integrated in the company and plant-wide information landscape without any problems. Thanks to its field-proven, rugged hardware components and redundant communication systems, PCS 7 also satisfies the demand for very high plant availability.

The partnership with a global player like Siemens ensures that Melbourne Water can get local support in operating the new system. “However, as PCS 7 was still a relatively young control system at the time of awarding the contract, we wanted to test its capabilities in action at real conditions,” says John Stanley.

Simatic PCS 7 is impressing plant operators with the speed and flexibility with which the process control system can be adapted to high demands.

Contents

Focus Environment/Safety

2 Milltronics InterRanger DPS 300 at Brisbane Water
3 Siemens Aziva – the Safety Experts
4 Innovative Sewage Treatment with Spun Biomass Power Station uses Simatic PCS 7
5 “Green” Projects in China

Products

6 Simatic IT Framework Chromatography Business in Italy
7 Simatic PCS 7 in the Production of Titanium Dioxide

Applications

8 Saving Costs with EnvironRanger ERS 500 IQ Radar 160 solves Digester Level Monitoring Dilemma
9 Simatic PCS 7 in the Production of Titanium Dioxide

From Around the World

10 Success Stories, Net News, Fair Preview, Latest News

Progress in this important field is not possible without suitable analytic and automation systems. Field instruments, analytical and process control systems as well as the process know-how supplied by Siemens make a substantial contribution to many successful projects, as you can see in this issue.

Process safety is closely connected to environmental protection. Quite a few industrial accidents have dramatically affected the environment. To prevent such accidents, knowledge about the safety critical aspects of a given process is indispensable. Siemens Aziva is a renowned and sought-after expert in the broad field of process safety and supports the process industry in finding suitable preventive safety concepts. You will find more on this topic on page 3.

Dear reader, the events on the 11th of September have left us with disturbing feelings of fear and sorrow. With the New Year coming up, I do hope you will find the strength and the courage to overcome these feelings and have a peaceful Christmas.

Yours sincerely, Cornelia Dürrfeld, Editor

(Continued on page 2)
Reduced Costs, Improved Efficiency
Sludge Monitoring with InterRanger DPS 300 at Brisbane Water

Monitoring sludge levels in clarifiers is important for efficient operation of a wastewater treatment plant, but accurate measurement has traditionally been a challenge. In Brisbane, Australia, Brisbane Water sought a better solution for its Island wastewater treatment plant. The plant used infrared optical sensors to detect sludge levels in each of its six final settling tanks and two thickening tanks. Three sensors were needed per tank for a range of measurement points. Sensors were expensive at 2500 Australian Dollars each and needed replacing every 12 months. Plant management wanted a more reliable, cost-effective approach.

In 1998, the plant installed a Milltronics InterRanger DPS 300 interface detection system on a trial basis on one of its final settling tanks. The system uses ultrasonic technology with Milltronics Echomax® transducers mounted just below the liquid surface. The sensor does not contact the sludge, and can be submerged for long periods of time without fouling or maintenance. It never interferes with the rakes in the bottom of the clarifier.

Successful trials

After a successful trial, Brisbane Water installed InterRangers on each of the five remaining settling tanks, feeding the signal to the SCADA system for easy monitoring. When sludge levels reach a certain height, InterRanger automatically increases pump speeds moving more sludge to the contact tank where it is mixed with influent. This keeps sludge levels at their optimum levels in the final settling tanks.

In November 2000, they installed InterRangers on the two thickened waste activated sludge tanks to monitor two levels and communicate the information to a Siemens PLC. The PLC then controls the sludge pumps based on sludge levels, balance tank level and belt press operation. These are all used in concert to dry and treat the sludge before removal.

The plant’s rotating bridge clarifier design made it difficult to connect the 4-20mA signal into the SCADA system. Brisbane Water used radio telemetry, a very cost-effective solution as all eight transmitters communicate with a single receiver.

Saving costs, improving performance

“Using InterRanger DPS 300 systems on all the sludge settling tanks made level monitoring easy and improved efficiency,” said Michael Benfer, Plant Electrical Coordinator. It also reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters in Australia, Brisbane Water sought a better solution for its Gibson treatment plant, but accurate and fast response times of the process control system, the complex processes in the treatment plant are much easier to control.

With PCS 7, Brisbane Water has chosen a rugged and efficient system, which can easily be expanded and modified at any time. A number of qualified local providers are competing for the system support, ensuring that the Eastern Treatment Plant will continue to release only clean water into the environment in future. In the years to come, Melbourne Water has plans for on-going process improve-

A convincing performance

This procedure also ensured that the additional requirements of Milltronics InterRanger were met. Each InterRanger system consists of a total of ten automation systems, a redundant server pair and 12 operator stations for local access within the plant. Four operator stations enable access to the plant from other locations. Moreover, the system comprises an engineering station and one server each for archiving the plant data and for transmission of the multimedia applications such as the plant radio communication system and the video data of the surveillance camera.

In Queensland, the sludge-removal contractor, reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settlement tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final settling tanks. Monitoring sludge levels in the thickened waste tank provides the data needed by the Siemens PLC to efficiently manage the sludge levels and from the Siemens headquarters to the PCS 7 engineering system. Four months after starting up, the operators had already reduced maintenance costs by thousands of dollars in the first year. Continuous monitoring and automatic pumping of return activated sludge into the contact tank maintains optimum performance levels in the final
Optimum protection

More safety in industrial plants with the process know-how from Siemens Axiva and Siemens process control technology

Plant safety is an important and at the same time very sensitive subject for the chemical and pharmaceutical industry. However, safety risks are often not recognized and eliminated until something has gone wrong – as accidents in the past have shown. Siemens Axiva is a renowned and sought-after expert for chemical and pharmaceutical plants. The emerging Siemens subsidiary offers know-how in process technology and automation from a single source – a combination unique in the industry, supporting plant operators in establishing the optimum level of safety for their plants.

In most process safety is subject to a whole set of standards and regulations which are a challenge for operators of industrial plants but also an opportunity. “Process safety has two central tasks. On the one hand it has to protect the people and the environment as far as possible from the dangers that can arise from an industrial plant. On the other hand it has to avoid restricting production in these plants more than is necessary”, as Dr. Odo Klais, Head of Safety at Siemens Axiva, sums up the aim of his tasks. The first essential step towards greater plant safety is being aware of the potentially dangerous properties of the substances, mixtures and reactions, i.e. whether they are inflammable, explosive or toxic. Odo Klais and his interdisciplinary team determine the safety-related indices with the latest test methods. “We calculate these indices taking into account both regular operation conditions as well as irregular process conditions. These indices then allow us to set up and evaluate preventive measures in the first place. We then develop a safety concept for the process control in cooperation with the plant owner which also includes potential risks caused by human error”, the safety expert explains. Effects resulting from interconnected individual process steps – for example recirculation of production streams – must be taken into account and continuously re-evaluated when the process sequence or technology is modified. It goes without saying that a very profound process-technical know-how is required. “We are intimately familiar with the details of a given process and know just what is needed. We develop and implement preventive safety concepts on the basis of this extensive understanding of the process and the plant – made-to-measure for the individual local requirements”, Odo Klais outlines the competencies.

Tracking down the cause – with laboratory experiments
If an accident does happen despite these preventive measures, Siemens Axiva is also a sought-after partner when it comes to identifying the cause. International pharmaceutical companies such as Novartis rely on the Siemens Axiva’s expertise in clarifying all the facts. For this purpose, but also for other tasks, laboratory experiments with simulation tools are an important part of the work of Odo Klais and his team. “Our primary goal is to largely rule out the risk of accidents by process-technical means and to produce an ‘intrinsically safe plant’ already during concept development”, Odo Klais explains. To guarantee the safety of a plant, all regular processes are monitored by process control systems (PCS). If Siemens Axiva discovers deviations from the process, it is back to the laboratory again. “There we can simulate the abnormal state to examine the time behavior of the fault. The experiment gives us a reliable basis for developing suitable countermeasures”, Odo Klais explains the advantages of the laboratory.

Increasing use of intelligent control systems
"Process control systems have become a central part of process safety”, Manfred Wick, Head of Production Logistics and Automation Planning at Siemens Axiva points out. Well into the 1990’s conventional electro-magnetic control systems were used almost exclusively. Now a new generation has taken over: safe programmable logic controllers or SFLC for short.

Their contribution to newly installed PCS equipment today reaches already 80 percent. The new S7-400F/FH is a very intelligent addition to the Simatic family. “It is a failsafe control system that immediately goes into or stays in a safe state when a fault occurs – the result is maximum safety for the human life, equipment, environment and process”, Manfred Wick describes the properties of the system. The innovation here is that the conventional controller and the fail-safe system are integrated on one common platform in a single system for the very first time.

The advantage: the communication between separate safe and non-safe systems is no longer necessary. “Process control systems and technology are an excellent example of just how well the competences of Siemens A&D and Siemens Axiva cooperate in the field of safety engineering,” Manfred Wick explains. From the so-called safety talks held prior to the conception of a PCS for process safety, through classification also including risk observation and determination of technical and organisational measures up to the correct selection of sensors and actuators, both parties constantly work hand-in-hand. “With our combination of process-technical know-how and intelligent control systems, we offer a concentration in the field of safety engineering which is unique in the industry”, Manfred Wick emphasises.

A partner to the customer – from the very start
Siemens Axiva supports its customers through all the phases of a project – this principle also applies of course for process safety. The range of services – especially for the field of process control systems, – covers:
• Consulting in the conception of process control systems,
• Moderation and support in safety talks,
• Complete project handling in consistence with the relevant guidelines: engineering, planning, installation and commissioning of plant safety equipment,
• Programming, testing and commissioning of safety-related programmable logic controls,
• Documentation for safety-related PCS devices and test specifications.

"This gives our customers an all-encompassing safety monitoring in process plants”, Odo Klais and Manfred Wick stress.

Safety competence from a single source

Siemens Axiva is a leading provider of process and engineering services for the chemical-pharmaceutical process industry. The fields of expertise range from process development and optimization, engineering and project management to implementation of individual production processes. In the field of substance- and equipment-related safety technology, Siemens Axiva has developed a wide expertise over decades. The company was part of the former Hoechst group and has been a subsidiary of the Siemens A&D Division since October 2000. The interdisciplinary team of experts has the necessary know-how to “get to grips with” even the most complicated process and safety tasks.

The Safebag is patented by Siemens Axiva and prevents emissions in the case of a malfunction. It has already been successfully implemented in several applications.

Siemens Axiva is performing extensive laboratory experiments to design a dust protection concept that is perfectly suited to the conditions.

Siemens Axiva will be a partner to the customer – from the very start.
Phytoremediation project uses Siemens technology

The Leipzig-Halle Environmental Research Center is currently carrying out a research project looking at the effectiveness of phytoremediation for wastewater treatment. Precise and reliable analytical and automated systems from Siemens used in the pilot system are making their contribution to develop an environmentally friendly and resource-conserving way to reuse wastewater.

In arid areas of the earth, enormous volumes of freshwater are required year after year for the irrigation of agricultural land. The increasingly intensive use of the cultivable land means that the water required by agriculture will continue to increase in coming years. To ensure that this development does not lead to a further shortage in groundwater, experts have long been searching for alternative sources of irrigation water.

One of these alternatives is currently being studied at the Leipzig-Halle Environmental Research Center in a bilateral cooperation project sponsored by the Federal Ministry for Education and Research between Germany and Mexico. In this project, phytoremediation is used to recover irrigation water from municipal wastewater. That means that plants (phytos: Greek for plant) like reed exhibit the contaminants from the wastewater so that it can be reused for irrigation purposes.

Over a planned period of around three years, the opportunities and limitations of the purification potential of phytoremediation will be tested at plants in Langen阿里巴巴, Saxony, and Mexico City. The advantage of this method is that phytoremediation plants can be simply constructed with low technical requirements, making them particularly suited to rural and remote areas.

Technological utilization of natural processes

Around six cubic meters of wastewater daily are preclarified with straw in an open rotting tank. An automatic sample collector is cyclically taking samples from the raw feed for the determination of important parameters such as nitrate, ammonium and phosphate content, and biological and chemical oxygen demand. The preclarified wastewater is then passed through 16 different treatment tanks over the next two days.

Municipal sewage is processed in the experimental treatment tanks and will be reused as irrigation water for farming.

The Westfield Power Station converts poultry litter to electric power

Innovative biomass power station operates with PCS 7

The world’s first power station fuelled by poultry litter is now generating electricity near Fife, Scotland. Providing a unique environmental solution to waste disposal and energy provision, the site converts 120,000 tons of poultry litter each year into electricity and high-grade agricultural fertilizer. Siemens PCS 7 is the process control system used in the plant.

Westfield Power Station is owned by Energy Power Resources Limited, one of the country’s leading renewable energy businesses. The plant uses the latest in automated process control technology, to ensure that the boiler and fluidized bed combustion unit operate at optimum efficiency. Westfield is the first biomass to energy plant in Scotland and is equipped with a Siemens Process Control System utilizing a Prokbus-SP distributed I/O architecture.

Automation specialists from Siemens Process Automation (SPA) design, configure and support PCS 7 and APACs systems from three offices in Yevr, Worcester, Bolton and Manchester. This biomass PCS 7 system provides top-level plant control and communicates to the remote I/O via the Prokbus network. As well as the innovative fuel use demonstrated at Westfield Power Station, which has been selected by the EU as a reference site to demonstrate the viability of alternative energy, the control architecture itself incorporates many advanced features. In place of conventional cabling, normally used to transfer information between a power station’s control room and the site itself, the PCS uses fiber optics for communications. These transfer data between the programmable controllers used to manage the boiler, combustion feeder and fluidized bed incinerator, and the human machine interfaces (HMI) which provide operators with access to operating information. The combination of fiber optic links and HMI panels significantly reduced the cabling and hardware costs normally associated with this type of installation.

Poultry litter has a number of advantages over conventional waste, when it is used as a fuel source. The ash produced during combustion is high in potash and phosphate, making it ideal as an agricultural fertilizer. This secondary reuse of waste ensures maximum efficiency of the plant.

Essential: Constant access to all information

Access to information relating to the optimization of plant efficiency was an important consideration for Energy Power Resources, when they initially considered the Process Control System. Management, engineering and maintenance staff all required access to data, while the system also needs to be capable of controlling the plant automatically.

In common with all other power stations, safety of the plant and its personnel was a priority for the system builders. Automatic shutdown must be possible without compromising the integrity of the plant.

PCS 7 handles the safe control of critical processes, including the unscheduled shutdowns due to faults. Alarm messages are automatically transmitted to the operators in the control room and on the generating floor, allowing decisions to be made quickly. “Developing a control system for this novel form of power generation provided an interesting alternative to our usual work,” commented Jon Keswick, Marketing Manager for Energy Industry Solutions at SPA.

“While over 50% of the power generated by conventional power stations is controlled by our automation systems, this is the first biomass application we have worked on.”

Although poultry litter as a fuel was new to SPA, its experience in the control of power generating plants, coupled with a detailed knowledge of distributed control architecture and plant-wide data communication systems meant that the Westfield installation was completed without difficulty.

Richard Ahearne, Yeovil

Unusually clever

Michael Gilluck, Leipzig
Ready, steady – go!

The Siemens City Business Concept for China

When the Olympic flame is lit over Beijing in 2008, this event will mark the end of seven very busy years for the municipal administration. By then, almost the entire infrastructure of the Chinese capital will have been modernized. With its City Business Concept, Siemens is not just the ideal partner for the preparations associated with the Games themselves, but also for other projects dealing with modernizing the infrastructure of China’s cities.

Many municipal governments of the 700 largest cities in China are faced with the task of rebuilding their infrastructures to make them fit for the new millennium. Two tasks are of paramount importance. First of all, the infrastructure must guarantee the supply of water and energy to the population. Secondly, the increasing demand of the rapidly growing industries must be satisfied, laying the basis for healthy and sustainable city development by means of new transport concepts, efficient wastewater treatment and well considered waste management.

A concept for China’s cities

This is why, two years ago, Siemens Automation and Drives in China has put forward the City Business Concept, offering modular and standardized solutions for all these tasks. As the problems are very similar in almost every city, one successful implementation can be adopted anywhere in China with just a few minor modifications.

The City Business Concept has enabled Siemens to make a substantial contribution to industrial development in numerous projects in recent years. In fact, over 1,000 successful projects in the water and wastewater sector, 100 garbage disposal or dressing plants and around 80 district heating projects are impressive testament to the capability and flexibility of the concept.

Fit for the Olympics

These excellent references also make Siemens a promising candidate for another demanding project. In the summer of 2008, Beijing will host the Olympic Summer Games. Before then, the city does not just need to extend its airport and the public transport network, but also relocate industries from the city, modernize its garbage and sewage treatment facilities as well as implement stricter emission guidelines.

In order to be able to provide China and Beijing with optimum support in this ambitious projects, Siemens set up an Olympics Project Board a few months ago. Owing to the sound expertise and good experiences with the City Business Concept, Siemens is looking forward to making its contribution to the success of the Olympic Games.

For a better environment

Shaoxing’s new wastewater treatment plant uses Simatic PCS 7

As part of the project, SIAS has not just configured and commissioned the entire control system including hardware and software, but it also took on the responsibility for the customer staff training. Moreover, the SIAS team won the contract for the construction of a communication network to acquire data from the high-voltage power distribution system as well.

In total, three PCS 7 automation stations and one AS 417H redundant system control all processes within the plant. The operating and engineering personnel have an excellent overview of all events via four operator stations and one engineering station. A dedicated controller drives the large mimic display in the central control room. This controller is also linked to the distributed control system. A redundant optical Fast Ether-

Not Ring connects all systems at control and HMI levels. The field signals are collected by the Simatic ET 200M distributed systems, which are linked to the control level via redundant Profibus-DP cabling. More than 300 intelligent field devices record the process parameters and transmit them via Profibus-PA to the control system.

The first of many successful projects

The new automation system was being installed and commissioned this year and is working to the full satisfaction of the customer. When the entire project is completed, it will demonstrate the excellent expertise of Siemens in the field of environmental protection.

Yang Xuwei, China

Nothing is wasted

In Ningbo, PCS 7 is creating energy from garbage

Modern garbage incineration plants help easing two problems at the same time: On the one hand, they reduce the volume of garbage to be deposited in landfills, on the other hand, they generate power and heat and are thus helping to save fossil fuels. In Ningbo in the Chinese province of Zhejiang, a garbage incineration plant was automated with a Simatic PCS 7 system in order to guarantee a smooth and stable combustion process.

Ningbo is not only the second largest city but also one of the industrial centers in the Chinese province of Zhejiang. A new garbage incineration plant was recently commissioned to help dispose of the garbage produced by the city’s approximately 250,000 inhabitants and its many industries. The plant is equipped with three efficient combustion furnaces and will incinerate around 350 tons of garbage every day, generating up to 12,000 kilowatts of power. This is the first time Simatic PCS 7 is used as a process control system in a garbage incineration plant in China.

A completely redundant PCS 7 system provides a solid and continuous control of the 2,500 decentralized I/Os and field devices and ensures that the complex combustion process takes place within clearly defined limits. The supply of air and fuel is controlled by the Simatic S7-410H furnace controller, which is seamlessly integrated into the process control systems. Both Simatic PCS 7 and the Simatic S7-400H furnace controller are part of the Siemens automation concept of Totally Integrated Automation.

Three redundant PCS 7 AS 417H systems are connected via redundant Profibus-DP field bus systems to the Simatic ET 200M distributed devices, which record the signals of the field level on site. This means that the costs for cabling and installation are considerably reduced. The field devices in the plant communicate with the control system via Profibus-PA. Two operator stations and a large mimic screen in the control room ensure that the operators have a constant overview of all processes in the plant. A redundant optical Fast Ethernet Ring connects the operator stations with the redundant automation systems. Simatic PCS 7 gave an excellent performance at its premiere in Ningbo. Since numerous garbage incineration plants will be built in China in the next few years, this project also makes an excellent reference for future tasks in this field.

Shao Hairong, China

Sometimes, the sort of rapid economic development the city of Shaoxing in the Chinese province of Zhejiang has experienced also has its drawbacks. In the last few years, the nearby rivers had become heavily polluted by industrial wastewater, primarily from textile and paper industries. With a new treatment plant and the Simatic PCS 7 process control system, the city council is taking action to clear the situation.

After it has fully gone on-line, the new plant will treat around 500,000 cubic meters of industrial wastewater per day, making it one of the largest plants for processing industrial sewage in Asia. The first phase of the project is to set up a treatment plant with a capacity of 300,000 cubic meters.

Totally Integrated Automation as the deciding factor

After a difficult bidding situation, Siemens Industrial Automation Ltd. (SIAS) won the contract for the automation of the new plant in the face of extremely tough competition. The main arguments leading to the decision in favor of Siemens and PCS 7 were the integration in the Totally Integrated Automation concept and the outstanding expertise of the SIAS team in the field of water and wastewater treatment.

A concept for China’s cities

This is why, two years ago, Siemens Automation and Drives in China has put forward the City Business Concept, offering modular and standardized solutions for all these tasks. As the problems are very similar in almost every city, one successful implementation can be adopted anywhere in China with just a few minor modifications.

The City Business Concept has enabled Siemens to make a substantial contribution to industrial development in numerous projects in recent years. In fact, over 1,000 successful projects in the water and wastewater sector, 100 garbage disposal or dressing plants and around 80 district heating projects are impressive testament to the capability and flexibility of the concept.

Fit for the Olympics

These excellent references also make Siemens a promising candidate for another demanding project. In the summer of 2008, Beijing will host the Olympic Summer Games. Before then, the city does not just need to extend its airport and the public transport network, but also relocate industries from the city, modernize its garbage and sewage treatment facilities as well as implement stricter emission guidelines.

In order to be able to provide China and Beijing with optimum support in this ambitious projects, Siemens set up an Olympics Project Board a few months ago. Owing to the sound expertise and good experiences with the City Business Concept, Siemens is looking forward to making its contribution to the success of the Olympic Games.

For a better environment

Shaoxing’s new wastewater treatment plant uses Simatic PCS 7

As part of the project, SIAS has not just configured and commissioned the entire control system including hardware and software, but it also took on the responsibility for the customer staff training. Moreover, the SIAS team won the contract for the construction of a communication network to acquire data from the high-voltage power distribution system as well.

In total, three PCS 7 automation stations and one AS 417H redundant system control all processes within the plant. The operating and engineering personnel have an excellent overview of all events via four operator stations and one engineering station. A dedicated controller drives the large mimic display in the central control room. This controller is also linked to the distributed control system. A redundant optical Fast Ether-

Not Ring connects all systems at control and HMI levels. The field signals are collected by the Simatic ET 200M distributed systems, which are linked to the control level via redundant Profibus-DP cabling. More than 300 intelligent field devices record the process parameters and transmit them via Profibus-PA to the control system.

The first of many successful projects

The new automation system was being installed and commissioned this year and is working to the full satisfaction of the customer. When the entire project is completed, it will demonstrate the excellent expertise of Siemens in the field of environmental protection.

Yang Xuwei, China

Nothing is wasted

In Ningbo, PCS 7 is creating energy from garbage

Modern garbage incineration plants help easing two problems at the same time: On the one hand, they reduce the volume of garbage to be deposited in landfills, on the other hand, they generate power and heat and are thus helping to save fossil fuels. In Ningbo in the Chinese province of Zhejiang, a garbage incineration plant was automated with a Simatic PCS 7 system in order to guarantee a smooth and stable combustion process.

Ningbo is not only the second largest city but also one of the industrial centers in the Chinese province of Zhejiang. A new garbage incineration plant was recently commissioned to help dispose of the garbage produced by the city’s approximately 250,000 inhabitants and its many industries. The plant is equipped with three efficient combustion furnaces and will incinerate around 350 tons of garbage every day, generating up to 12,000 kilowatts of power. This is the first time Simatic PCS 7 is used as a process control system in a garbage incineration plant in China.

A completely redundant PCS 7 system provides a solid and continuous control of the 2,500 decentralized I/Os and field devices and ensures that the complex combustion process takes place within clearly defined limits. The supply of air and fuel is controlled by the Simatic S7-410H furnace controller, which is seamlessly integrated into the process control systems. Both Simatic PCS 7 and the Simatic S7-400H furnace controller are part of the Siemens automation concept of Totally Integrated Automation.

Three redundant PCS 7 AS 417H systems are connected via redundant Profibus-DP field bus systems to the Simatic ET 200M distributed devices, which record the signals of the field level on site. This means that the costs for cabling and installation are considerably reduced. The field devices in the plant communicate with the control system via Profibus-PA. Two operator stations and a large mimic screen in the control room ensure that the operators have a constant overview of all processes in the plant. A redundant optical Fast Ethernet Ring connects the operator stations with the redundant automation systems. Simatic PCS 7 gave an excellent performance at its premiere in Ningbo. Since numerous garbage incineration plants will be built in China in the next few years, this project also makes an excellent reference for future tasks in this field.

Shao Hairong, China

Sometimes, the sort of rapid economic development the city of Shaoxing in the Chinese province of Zhejiang has experienced also has its drawbacks. In the last few years, the nearby rivers had become heavily polluted by industrial wastewater, primarily from textile and paper industries. With a new treatment plant and the Simatic PCS 7 process control system, the city council is taking action to clear the situation.

After it has fully gone on-line, the new plant will treat around 500,000 cubic meters of industrial wastewater per day, making it one of the largest plants for processing industrial sewage in Asia. The first phase of the project is to set up a treatment plant with a capacity of 300,000 cubic meters.

Totally Integrated Automation as the deciding factor

After a difficult bidding situation, Siemens Industrial Automation Ltd. (SIAS) won the contract for the automation of the new plant in the face of extremely tough competition. The main arguments leading to the decision in favor of Siemens and PCS 7 were the integration in the Totally Integrated Automation concept and the outstanding expertise of the SIAS team in the field of water and wastewater treatment.
Increased efficiency from the start

Simatic PCS 7 engineering process control system Simatic PCS 7.

Competition within the process industry is getting harsher and harsher. This means that modern plants must be operated exactly at their optimum. Moreover, plants must be planned and commissioned faster and more efficiently to secure market shares in time or to protect technological processes by patent. It is therefore of crucial importance that technical and human errors are identified and eliminated early in the design process. Using the Simatic simulation tool, this can now be carried out in the engineering environment of the process control system Simatic PCS 7.

The Simatic simulation platform is now integrated into the Simatic PCS 7 engineering environment. This facilitates fine-grained solutions for testing the system software, from simple automation system signal testing or testing of the drive-level (including field devices, actuator-sensor level) to reproducibility of the process behavior for the entire system test or operator training.

Program and system tests made easy

For the program test, the Simatic program is first created in the Simatic PCS7 engineering system and then loaded in the PLCsim simulation software. The sim tool provides the simulated I/O signals or the relevant instrumentation. The interface configuration takes place automatically. A dedicated library offers simulation modules to imitate the Profinet devices from Siemens, additional manual simulation modules for external devices can easily be created if required. The PCS7-operator station is connected to the PLCsim software via MPI. Therefore, all functions – from the sensor through the automation system to the visualization system and back to the actuators – can already be tested on the engineering PC.

If the import/export assistant (IEA) was being used in the PCS 7 engineering process, Simatic can automatically generate the relevant test environment. When the entire system is to be tested, the Simatic program runs on the real Simatic 57-400. The I/O signals and the instrumentation are simulated with Simatic, which communicates with the Profinet DP connection of the automation system via the Simatic IM module in the engineering PC. The interfaces are automatically configured from the engineering database just as in the program test application.

Also ideal as a training simulator

Together with the PCS 7 operator station and the PLCsim software, Simatic can also be used to train the system operators. For example, it is possible to simulate faulty critical system states with a realistic representation of the system. The operator can practice handling potentially dangerous situations without a risk. The system offers special features, such as the loading of a scenario or the deliberate activation of error functions in the model, to allow comprehensive training.

Additional dedicated or special-purpose simulation software (e.g. AspenTech or Hyprotech) can be connected to Simatic via an OPC interface. In combination with the modular design of the simulation environment, the user receives a platform that meets all its needs.

Faster, more flexible and economical

With the Simatic simulation platform expanding the possibilities of Simatic PCS 7 it is possible to save substantial amounts of time and money by facilitating the configuration and planning of the system and by avoiding operator-induced or technical system faults. This increases the quality and reliability of the automation software. Moreover, it helps saving time during the commissioning time of the plant.

Definitely the right choice

Oxymat 6F EX in PVC production

Polyvinyl chloride, PVC for short, is one of the most versatile plastics. This jack-of-all-trades can be found in the construction industry and the packaging industry, the automotive sector and also in many consumer goods. This diverse range of different types of PVC is produced from vinyl chloride.

At SOLVIN in Ludwigsafen, vinyl chloride is commercially produced in two stages via the addition of dichloroethene. The second of these two stages is the oxychlorination in the presence of oxygen. The oxygen contains to be continually added to ensure that this reaction gives high-quality product and the base materials are converted as efficiently as possible. Moreover, ethene and oxygen can form highly flammable mixtures, so the concentration of oxygen must always be kept within the prescribed limit values. SOLVIN uses the Oxymat 6F-EX gas analyzer for this task.

Gas-proof seals separate the Oxymat 6F-EX as an analytical and electronic part from the ventilation system. Four freely parameterizable measuring ranges are available to the user; the six binary inputs and relay outputs can also be freely configured – for example for changing measuring range, limit value alarms or maintenance requirements. The measuring device has a short response time adaptable to the particular requirements of the application, and the menu-controlled operation permits easy operation of the device.

Certified safety

Oxymat 6F EX certification now permits operation with any ATEX-certified EEx p monitoring systems, provided the system also holds an ATEX certificate and is constructed and installed in accordance with the relevant regulations. Furthermore, the Oxymat also features a high level of operational safety and long operation time, with an assurance of high quality, high-purity and a strictly linear parametric measuring principle. These criteria were additional arguments for SOLVIN in choosing the Oxymat.

The new devices are being used in Ludwigshafen for the modernization or retrofittting of existing plants. BASF is already confident that SIPART PS2 will also completely fulfill all expectations; this time, for SIPART PS2 can also be used in harsh and hazardous production areas. It can be simply connected to the main control system via the integrated mA-, HART- or Profinet-PA-interface.

Thans to the on-site operation and a functional display, handling is simple for everyone. Moreover, SIPART PS2 is providing a number of control parameters on board, so that the actuator can be quickly and simply interfaced to the basic device and guarantees operational reliability, even in process-critical fittings.

The integrated position feedback signal is electrically independent of the basic device and guarantees operational reliability, even in process-critical fittings. Additionally, the low electrical power consumption of the digital SIPART PS2 means that the power supply components do not have to be modified when the conventional electro pneumatic positioners are being replaced.
At their production site in Bradford, Princes Soft Drinks has implemented one of the first Simatic IT Framework systems to directly link the production shop floor with the business system. In this project, Siemens was able to show how to achieve successful integration from field level to ERP (Enterprise Resource Planning) level, improve plant production performance and visibility of production processes while reducing waste, time and production costs.

Princes Group is one of the UK’s Top 20 suppliers to the retail and food service industries, with a range of more than 400 product lines. Princes Soft Drinks, a division of Princes, produces and distributes both retailer brands and branded soft drinks in various categories from its four sites throughout the United Kingdom. When Princes Group decided to implement a new integrated plant management system for one of their main manufacturing facilities located in Bradford, UK, they required an open Integrated Plant System that was flexible, highly configurable and adaptable to accommodate the dynamic nature of the food and beverage industry. “We wanted to achieve improved plant production performance and data integrity throughout the process for the early detection and removal of possible production obstacles and offer a reliable and user-friendly interface for plant operators. Moreover, it was to provide an open Integrated Plant System solution able to control and improve the plant’s production performance, allow full integration of all existing systems from PLCs to SAP/R3 and improve data integrity across the enterprise.” To achieve this impressive set of goals, Princes chose a Simatic IT Framework solution. It offers a complete product suite for the synchronization and coordination of production Management, Process Management and Process Control in a single, consistent Plant System architecture. “Among the key reasons for Princes’ decision to adopt the Siemens Simatic IT Framework approach were the commitment to customer satisfaction, world-class products using state-of-the-art technology and the people who understood our manufacturing environment”, states Neil Crew.

The heart of the project is Simatic IT Production Modeler, a business object-oriented tool for modeling the physical and logical process flow of work for a specific site. Coordinating the components in order to manage the plant’s manufacturing business processes, Production Modeler is spending successful implementation and serves as the underpinning business intelligence framework for a complete Integrated Plant System. With Simatic IT open architecture, not only can the process control and automation systems be integrated with the existing ERP system but it is also possible to access this information from anywhere in the world.

A whole set of improvements

Through the integration with SAP, the visibility of the production process has been improved and information from controllers can be used for daily analysis and reporting. Operating costs have been reduced and electronic recording of all batch information permits the generation of complete batch reports and reduces the incidence of operator errors. The new system is providing Princes with an accurate raw materials inventory, resulting in a reduction in warehouse stock and improving production planning.

Finally, Simatic IT Framework allows the electronic control of the PLC and reading of gathered data, providing also the possibility for further factory automation. The project at Bradford has been completed on time and Princes Soft Drinks is on course to achieve the goals of improved plant production performance, integration with ERP system and reduced operating costs.

The missing link

Simatic IT Framework connects shop floor level to business system

Integration is the key

The tasks for the new system were quite demanding. It should reliably report manufacturing progress, provide sufficient maintenance and reporting data throughout the process for the early detection and removal of possible production obstacles and offer a reliable and user-friendly interface for plant operators. Moreover, it was to provide an open Integrated Plant System solution able to control and improve the plant’s production performance, allow full integration of all existing systems from PLCs to SAP/R3 and improve data integrity across the enterprise.

To achieve this impressive set of goals, Princes chose a Simatic IT Framework solution. It offers a complete product suite for the synchronization and coordination of production Management, Process Management and Process Control in a single, consistent Plant System architecture. “Among the key reasons for Princes’ decision to adopt the Siemens Simatic IT Framework approach were the commitment to customer satisfaction, world-class products using state-of-the-art technology and the people who understood our manufacturing environment”, states Neil Crew.

On the road to success

Siemens is expanding its chromatography business in Italy

Convincing references

In Kuwait in the United Arab Emirates, Bournor is currently building one of the largest polyethylene plants in the Middle East. In 1999, the Italian EPC company Tecnimont SpA and its system integrator ECIS awarded Siemens a contract for the delivery of 20 gas chromatographs for process and quality control, to be used in the expansion of the plant.

The process gas chromatographs from the Advance Maxum are well suited for being integrated into the plant’s field level. They feature an innovative device platform allowing for easy networking and simple interfacing with the process control systems. They provide users with completely new prospects due to their modular applications and parallel chromatographs. The new chromatographs, produced together with its separation systems and valve-free live switching guarantee the ideal separation of the very complex blends and a reliable subsequent detection.

Complete system solution

As an addition and expansion to its product business, Siemens also markets complete system solutions. In September 2000, Siemens was chosen to supply ENICHEM Pto. Torres on Sardinia with the analysis technology for a phenol plant. The analytic system will monitor both the purity of the phenol produced and the compliance with the emission limits. The project included the delivery of two analysis systems, each with a PGC302 chromatograph, sample preparation, heated sample supply lines, sampling probes and data transfer facilities. The commissioning of the plant and training of the staff took place in July 2000.

November 1999, Snamprogetti chose Siemens to supply ENICHEM Pto. Torres on Sardinia with the analysis technology for a phenol plant. The analytic system will monitor both the purity of the phenol produced and the compliance with the emission limits. The project included the delivery of two analysis systems, each with a PGC302 chromatograph, sample preparation, heated sample supply lines, sampling probes and data transfer facilities. The commissioning of the plant and training of the staff took place in July 2000.
Automating for Cost Savings

EnviroRanger ERS 300 automates pumping station

The Town of Cobourg, located near Toronto, Canada, has reduced operating cost at its wastewater pumping station by 30% after an upgrade to the plant’s monitoring and control equipment. The wastewater treatment system features two pollution control plants with a designed treatment capacity of 3.58 million gallons per day (MGD) at plant 1 and 2.58 MGD at plant 2, plus five sewage pumping stations. The McGill Street pumping station is the largest with a capacity of 4.6 MGD. It is equipped with three constant speed pumps and a magnetic flowmeter.

Before the plant upgrade, the McGill station used a manual float system to control the pumps. It required daily servicing of floats, manual inspection, and operation logging. A technician had to drive to the station, manually check the float operation, select the lead pump, change the chart recorder paper, log the pumped hours and the daily volume pumped as measured by a magnetic flowmeter, and then bring the log back to the office. The technician performed these tasks every day.

Automation of routine tasks

Robert Landry, Plant Superintendent, spearheaded the introduction of a remote monitoring system for the McGill station. He chose Milltronics, a leading brand of level measurement and process instruments. Automating the routine tasks proved a successful strategy for improving efficiency and reducing costs.

The EnviroRanger ERS 500, a new state-of-the-art monitoring and control system, was installed. Connected to a Milltronics Echomax XRS-5 transducer, the EnviroRanger panel mount control unit provides accurate and reliable level measurement. It is also connected to the flowmeter to monitor flow.

The installation eliminated the need for daily on-site servicing. It automated the information gathering and all pump control routines and sequencing setups. EnviroRanger provides pump control, data-logging, and communications functions. It is integrated into the existing SCADA system running Modbus RTU through a telephone modem. From the comfort of the office at the main treatment plant, the operator can now remotely track pump run-time, pump faults, number of pump starts, instantaneous flow rate from the magnetic flowmeter, and totalized pumped volume.

Saving up to 30 percent

“The EnviroRanger improved efficiency, lowered the cost of operation, and it keeps me informed,” said Robert Landry, Plant Superintendent. The immediate benefit was time savings. It eliminated the need for daily manual inspections, manual pump control settings, and data collection. This frees a technician and equipment for other important projects. It improved plant operation and quality control by making more data available for decision-making.

The EnviroRanger ERS 500 provides instantaneous monitoring of pump station liquid level, pump status and pump duty cycle. It also records pump start time, pump run times, alarm history, and total pumped volume. The new system permits continuous monitoring of level liquid – a major improvement over the previous point level float system. The investment in automation has proven beneficial to the bottom line. The financial savings were considerable, with operating cost reduced by 30%.

The city of Orillia, located north of Toronto, Canada, has found a reliable level measurement system for the two anaerobic digesters at its wastewater treatment center. This facility features five primary and five secondary clarifiers, as well as six aeration basins, serving a flow of six million gallons a day via 21 pumping stations.

The unique floating waveguide antenna on the Milltronics IQ Radar 160 lets you raise the device for installation or inspection without releasing methane gas into the atmosphere.

IQ Radar 160 Solves Digester Level Monitoring Dilemma

The conditions in a digester make level measurement particularly challenging. If the top foam level gets too high, it can enter the gas collection pipeline and lead to costly maintenance. In extreme cases, pressure can lift the roof off the vessel. Gas can escape, harming staff and the environment. Releasing carbon dioxide and methane gas into the environment requires notification paperwork and has potentially negative effects on a community blessed with clean lakes and rivers.

The conditions in a digester make level measurement particularly challenging. Bubblers are prone to maintenance problems. Traditional ultrasonic level monitoring systems are adversely affected by sound absorption caused by the combination of carbon dioxide and methane gases above the foamy level surface, a condition aggravated by the steamy environment.

Innovative technology

Radar technology is not affected by these conditions; however, if a radar device is simply installed above the valve, excessive signal noise leads to faulty signals and unreliable readings. This application required a reliable level measurement device to accommodate the existing rotary valve used for instrument isolation. It also needed to be inspected and serviced without discharging any digester gas into the environment.

Eldon Wallis, Chief Plant Operator for the Orillia plant, found an effective solution with the Milltronics IQ Radar 160 level measurement device fitted with a built-in sliding waveguide antenna. The sliding waveguide is a unique feature available with the Milltronics radar unit. The waveguide pipe carries the radar signal from the instrument to the horn antenna, bypassing the spool and valve components. The pipe has a clamping seal on the top of the mounting flange which seals the low pressure digester gas after installation.

The system was installed and commissioned quickly. After bolting the flange on the spool section, the valve was opened and the radar instrument was lowered and clamped into place. Set-up was easy, with only six parameter entries required for operation.

Safe and simple service

The Milltronics IQ Radar 160 instrument is providing reliable level measurement on this difficult challenge. The sliding waveguide configuration eliminates valve signal noise. The sliding waveguide, using the rotary valve between the radar unit and the digester vessel, has also eliminated the related environmental safety issues. The instrument can be raised, inspected or removed at any time without releasing methane gas into the environment. Previously, the plant needed permission from the Ministry of the Environment to open the tank to install or remove an instrument because the gases in the digester tank would then be released into the environment.

Now level measurement for the digesters is reliable and safe. “Once again, Milltronics has provided a reliable solution to a difficult challenge,” states Eldon Wallis.

Janet Wile, Canada

Janet Wile, Canada
Whiter than white

Titanium dioxide production at Cinkarna Celje with Simatic PCS 7

The production of titanium dioxide is a complex process. Numerous production steps, high plant throughput and an enormous amount of data ask a lot from production control and monitoring. The established plant at Cinkarna Celje, Slovenia was no longer able to keep up with the growing demands of the customers and so the whole production line is now being modernized with the Simatic PCS 7 process control system.

In 1998, Cinkarna Celje decided to modernize the plant. Some of the basic requirements for the new technology were assuring an absolutely constant pigment quality, greater flexibility in the manufacturing of different titanium dioxide products and shorter delivery times. Following extensive price-performance comparisons, Cinkarna finally chose the Simatic PCS 7 process control system. In Cinkarna’s opinion, the modern design and architecture, seamless integration of all production phases, modular construction of the system and the option for later smooth integration in the company-wide information network were among the main arguments in favor of PCS 7. Through and competent consulting from Siemens in Ljubljana and good experience with other Siemens products also played a major role in the decision.

When it came to implementing a new process control system in the sulfates department at Cinkarna Celje in Ham, Belgium, the engineers defined an impressive set of requirements focusing on product quality, environmental benefits and a graphical visualization system. Simatic PCS 7 convinced Cinkarndo with its flexibility and functionality that it is the right system for these tasks.

In Ham, the Cinkarna Celje group, a world leader in several specific fields of chemistry, produces sulfuric acid, sulfates, phosphates and hydrochloric acid. Customers use these raw materials in particular for the production of fertilizers and cattle feed, sweeteners, the treatment of drinking water and even for billiard ball plastics. A considerable proportion of the “end product” is used directly within the group itself.

Rene De Kesel, head of the electric power and instrumentation section, explains the task in just a few words. “For some years now, we have been developing a three-year plan for supervising the entire sulfates department using a central display and monitoring system. Previously, we had a traditional software package and a few Simatic S5 controllers, scattered through local control rooms. As a result of ever more stringent quality requirements and the need for closer monitoring and greater knowledge, we naturally had to consider the option of centralizing data. Our requirements were extensive: enhancing product quality, anticipating any environmental problems and integrating the current possibilities for trend curves.” Simatic PCS 7 can solve these tasks easily.

The very first plans were produced in 1998. Analyzing the old installations systematically, it was found that everything could be radically rationalized and automated to a higher degree. Excellent cooperation between Cinkarna Celje and Siemens and the outstanding flexibility and performance of Simatic PCS 7 were decisive factors for the successful implementation of the new system.

Much functionality of the existing S5 controllers could be easily handed over to the new automation system. Ergonomic aspects played an important role in the configuration of the system. The central console is more comfortable for the operators than the screens, PCs and racks positioned more or less at random. The company Ethernet links five operator stations and an engineering station. One of the five stations is still under local or decentralized control. The OS and ES stations are linked via Profibus to the S7-400 (AS 416-2) systems, while the old S5 program controllers are now used partially as decentralized peripherals. The existing cabling was re-used as far as possible. The network connecting the controllers to the PCs uses optical fibers and includes redundancy.

Switching over was easy

Cinkarna Celje is already making detailed plans for the next modernization steps. These will include upgrading of the process control system with the latest release, integration of all the remaining processes and linking to the world of IT. With PCS 7 Cinkarna Celje will be able to control their processes optimally and flexibly in the further phases of the project.

Gradual modernization

The plant will be modernized in several steps within the scope of a development and research project over a period of about three years. In a first phase, the entire network infrastructure has already been implemented based on Industrial Ethernet. Three Engineering Stations, two Operator Stations and two AS 416 Automation Systems are in operation at the moment. The Simatic ET 200M distributed systems collect the signals at field level and send transmit to the process control system via Profibus-DP.

Batch control made easy

One of the two servers is solely responsible for running the applications of the Batch Flexible Version V4.02 package, enabling Cinkarna Celje to control the complex tasks of batch operation comfortably. Cinkarna Celje can now produce various types of titanium dioxide in different batches and rearrange the sequence of the individual technological processes as is required by the product profile.

Based on the good experience, Cinkarna Celje is already making detailed plans for the next modernization steps. These will include upgrading of the process control system with the latest release, integration of all the remaining processes and linking to the world of IT. With PCS 7 Cinkarna Celje will be able to control their processes optimally and flexibly in the further phases of the project.
Analysis systems for crematoria

In Germany, as in many other European countries, cremation is becoming more and more popular. An increasing number of people are choosing this type of funeral. Since several years, a special ordinance is regulating the amounts of dust and pollutants being emitted into the atmosphere. This means that all crematoria in Germany must be equipped with suitable analysis systems.

For this purpose, Siemens has developed a system comprising an analysis cabinet with sample preparation, one or more Ultramat 23 analyzers and an evaluation unit. The Ultramat 23 can be operated for a year without maintenance since it is automatically calibrated with the ambient air. This makes the system particularly suitable for use in crematoria.

Currently, 22 complete analysis systems have been supplied to several crematoria. Other manufacturers of analysis systems for crematoria have also recognized the advantages of the Ultramat 23, which has led to an additional 25 individual Ultramat 23 devices being supplied to system manufacturers.

Hartmut Oesten, Hannover

Working for Thailand’s future

A whole range of innovative processes and applications are being studied in the Royal Chitralada Projects to reduce both high energy costs and pollution in Thailand. His Majesty King Bhumipol has allocated an area within the compound of his residence Chitralada Palace for use in agricultural purposes.

In the summer of 2001 the plant was handed over to operation by Her Royal Highness Princess Maha Chakri Sirirat. If the experimental project is successful, about 100 commercial plants applying the same principle will be built in Thailand. In this case Siemens has good chances to be awarded the contract for supplying the analytical and automation equipment.

Moiz Parekh, Siemens Thailand

New on the Web

Five new websites provide information on different topics concerning process automation from and by Siemens.

At www.siemens.com/pcs7 on new products, application stories, order information and numerous add-ons for the Simatic PCS 7 process control system.

The www.fielddevices.com site is dedicated to the comprehensive topic of field instrumentation, introducing innovative field devices from Siemens.

Three industry-specific sites illustrate how tailor-made solutions for a certain type of application automation can be assembled with systems and field devices from Siemens. Companies in the glass, chemicals and pharmaceutical industries place very specific requirements on the automation of their systems. Owing to innovative products, automation expertise and industry knowledge, Siemens is in a position to put together the ideal solution. At www.siemens.com/chemicals, www.siemens.com/glassware and www.siemens.com/pharmaceuticals, visitors can find out what services Siemens offers that specifically suit their purposes.

Hannover, Germany
April 15 to 20, 2002
Salon d’Analyse Industrielle

Why not just take a look!

www.siemens.com/pcs7
www.fielddevices.com
www.siemens.com/chemicals
www.siemens.com/glassindustry
www.siemens.com/pharmaceuticals

HANNOVER FAIR
Fair for Industry, Automation and Innovation

Hannover, Germany
April 15 to 20, 2002

Siemens receives supplier award

At a core supplier conference in September 2001, KoSa, one of the world’s leading manufacturers of polyester, announced supplier awards in the fields of capital equipment, electrical & instrumentation and mechanics. KoSa used this award to honor suppliers who have convinced them with their excellent product ranges, innovative ideas and good cooperation.

Siemens is proud to have won this year’s award in the electrical & instrumentation sector. KoSa based its decision on the successful long-term cooperation in the field of process automation, particularly at the Gersthofen production site. KoSa also stressed the great expertise of Siemens in new business fields such as e-business and emphasized the importance of a working international account management. Siemens is providing such an account management, and one benefit of this is that the supplier’s potential could be optimally used in the cooperation between Siemens, Siemens-Astra and the KoSa locations in Charlotte and Houston in the USA.

Siemens is quite rightly very proud to have received this award and sees the supplier award as additional incentive to continue this good cooperation in coming years.

Dr. Otto Graf, Frankfurt