Water Treatment Plant
Xiangcheng, Suzhou, China

Securing the water supply in one of China’s largest water treatment plants with Totally Integrated Automation

The requirements
The city of Suzhou, located in the province of Jiangsu in Eastern China is a large city with a population of approx. 6 million citizens. The city's water treatment plant in the district Xiangcheng belongs to Suzhou Tap Water Company. It has a designed capacity of 700,000 m³/day (Phase I: 300,000 m³/day). It is the first highly automated water treatment plant to apply the leading water treatment technologies of ozone pre-oxidation and biological activated carbon treatment. This would require an efficient and reliable automation system which would be easy to use and maintain. As an expansion of the facility is planned in the next few years, the installed system has to be scalable, open and compatible for future system components.

The solution
Suzhou Tap Water Company chooses the system integrator Pacific Water Treatment Co., Ltd. and Shanghai Jin Kun Hao Fan Electric Co., Ltd. for engineering, which are both Siemens Automations Solution Partners. Central part of the plant - which has been implemented according to the Totally Integrated Automation (TIA) philosophy - is the distributed control system SIMATIC PCS 7. All key hardware components are redundant – both the OS Server and AS 414-4H. At field level, SITRANS products were applied for process instrumentation and energy efficient motors and Perfect Harmony frequency drives for drive systems. Field devices are connected to control level via distributed I/O modules ET200 with PROFIBUS DP connection.
The owner
Suzhou Tap Water Company with approx. 1,000 employees

The system integrators
Pacific Water Treatment Co., Ltd. (www.pwt.com.cn) and Shanghai Jin Kun Hao Fan Electric Co. (www.kinger.cn)
Both system integrators are Siemens Automation Solution Partners for SIMATIC, SIMATIC PCS 7 and SIMATIC HMI

The system in brief
One of the largest water treatment plants in China with a high degree of automation; first plant with application of new technologies (disinfection by ozone pre-oxidation and biological activated carbon treatment)
- Capacity: 300,000 m³/day (Phase I);
- expansion to 700,000 m³/day planned
- Start-up: March 2008

Products installed
- SIMATIC PCS 7 distributed control system with 3 AS414-3, 3 AS414-4-2H and redundant OS Server
- SIMATIC ET 200 distributed I/O devices (81x ET200M, 10x ET200S)
- 7x SIMATIC MP370 operating panels
- SITRANS process instrumentation (96 x SITRANS P, 56 x SITRANS Probe LU, 44x SITRANS F M MAG 3100)
- Bus systems PROFIBUS DP/PA, MODBUS
- SENTRON 3WL circuit breakers
- SIRIUS switchgears (3R, 3SB)
- SIVACON cabinets and motor control centers
- 3 x Robicon frequency converters (900 kW)
- 4 x H-compact medium voltage drives (900 kW)

Benefits at a glance
- Increase in operation safety through fully automated monitoring and control and redundant hardware.
- Cost reduction in engineering due to facility-wide application of TIA products and standard SIMATIC tools
- Risk minimization of errors due to centralized process monitoring and control and early warning of process changes.
- Ease of remote operation management through remote control system.
- Easy expansion of the facility due to openness and scalability of the automation system

Thanks to the uniformity of Totally Integrated Automation, all field devices can be configured in the central control room.
Power distribution is monitored and controlled via SIVACON electrical cabinets and motor control centers with SIMATIC HMI.

The benefits
Redundant system design – from field level to control level – ensures the greatest plant availability. The centralized process monitoring and control in the central control room with its very intuitive operator interface minimizes operator error. Data and process transparency makes it easy for the owner to reduce operating cost. The application of high-efficiency motors also helps in cost reduction. Uniform SIMATIC products and tools offers significant time and cost savings during engineering and commissioning. Through the open and scalable architecture of SIMATIC PCS 7 and the standardization of Totally Integrated Automation, future expansion will be problem free.