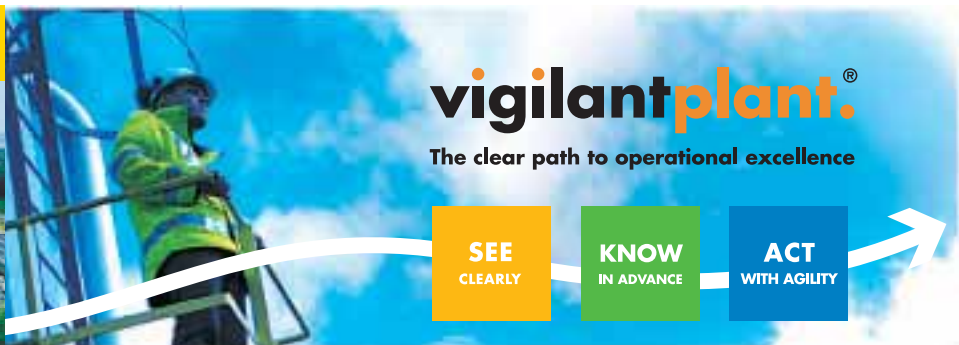
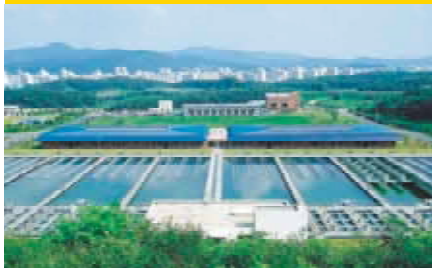


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STARDOM's OPC Communication with HMI/SCADA Water-K & Total Process Control of Water Treatment Plant

Location: Siheung, Korea
Order Date: December 2005
Completion: December 2006
Industry: Water Treatment



Korea Water Resources Corporation

Executive Summary

Korean Water Resources Corporation (K-water) had an aging ABB DCS system that had been implemented in 1993 and included a Fisher & Porter DCS. By changing over to a STARDOM system, K-water achieved the following:

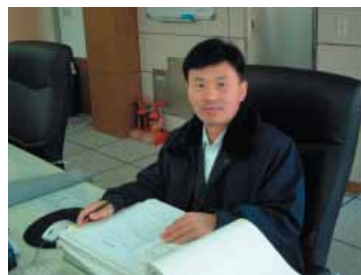
- Control of all processes of water utility facilities in Siheung
- Integration of all the systems located at water treatment plants and water intake stations in the metropolitan area
- Adoption of IEC61131-3 international PLC standard programming language and communication with HMI/SCADA Water-K software via STARDOM's OPC gateway
- Replacement of aging DCS controllers with 5 sets of field control node (FCN) controllers while maintaining Modbus communication with more than 20 sets of PLC systems

Customer Satisfaction

"It was a risk to choose STARDOM as we were the first water treatment plant operator in Korea to install this system, but we trusted it because it was a Yokogawa product. We could not give Yokogawa enough information about the existing system's software because the facilities were very old and there wasn't much documentation or data on the Siheung water treatment plant. We were especially worried about the communication between the HMI/SCADA Water-K software and STARDOM as the former had been developed recently and had not been verified yet. But the redundant design for the CPU, power supply, and control network as well as the OPC gateway function and the powerful Modbus communication function put us at ease about the product's safety. We'd like to thank the Yokogawa engineers for their efforts to replace the old plant under such challenging circumstances."



Mr. Geunhong Son, Team Leader



Mr. Euiha Jeong, Operator

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The Challenges and the Solutions

STARDOM Technical Assistant (STA) ensures the success of the first STARDOM project in Korea

It was not easy to totally change over from the aging DCS system to STARDOM and to control all the processes in the Siheung water treatment plant. But thanks to the system's reliability and capability, and the support of the STA, the project was both a success and a first for STARDOM in Korea. The introduction of STARDOM by a Korean public utility gives this project great significance.



Control Room

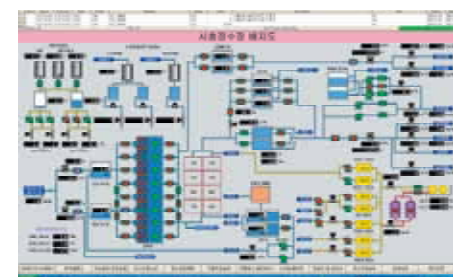
System integration through a common SCADA platform

K-water plans over the next few years to integrate all the systems at its water treatment plants and water intake stations in the metropolitan area. K-water will complete a detailed integration of these systems and establish a waterworks information control system which handles all information at every step of the water supply process, from the water intake station to the consumer's water tap. To achieve this, K-water has developed the HMI/SCADA Water-K software. With the successful completion of the Siheung water treatment plant project, it is drawing closer to this goal.



FCN Controller & Panel

The HMI/SCADA Water-K software is based on the iFIX HMI. While Yokogawa had obtained a communication test certificate for STARDOM-iFIX OPC connectivity, at that time nobody had actual job experience with this type of communication. After several tests were conducted and training was given on iFix and STARDOM, STARDOM controller data could be displayed in iFix windows.



HMI/SCADA Water-K

Strong Modbus communications feature covers a variety of instruments

Many subsystems are controlled by PLCs in Siheung, and STARDOM has to communicate with them as well as with flowmeters. To make this possible, Yokogawa supplied over 30 Modbus communication modules, including spare modules. With STARDOM's powerful Modbus communication function, communication between PLCs, flowmeters, and STARDOM is working perfectly.



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About K-water

K-water, previously KOWACO, is one of the major water treatment companies and one of the government enterprises in Korea. Since its establishment in 1967, K-water has been implementing national water resources management policies regarding multi purpose dams, water supply dams and regional water supply systems. It is also making a great contribution toward the development of the national economy and improving the quality of life for local people.

K-water has the daily capacity to supply 16.63 million m³, or 51% of the nation's tap water (as of 2004), and regularly supplies 2,881 million m³ of water to 1,474 customers including local governments and general users through integrated water supply systems in 12 areas, fulfilling its role as the pillar of waterworks industry.

Recently, K-water pursued its first overseas joint venture with the Yanbian Korean Autonomous Prefecture Hereung Dam Project, and also won a service contract for supervision and inspection of the Doyang Hydro Electric Project (India) in recognition of K-water's superior technology and operating methodologies, thus laying the foundation for development into a global engineering company. K-water also took on the Erbil Water Supply Project, opening the door for the post war restoration market in Iraq, and also participated in a drinking water development project in Mongolia.

About the Siheung Water Treatment Project

The Siheung water treatment plant's main control system was installed in 1993. The superannuated system suffered frequent breakdowns and problems with maintenance and the supply of spare parts. To improve the facility's efficiency and enable it to operate more economically, K-water decided to replace the aging ABB DCS system with an integrated control system which could control all water treatment process facilities, including facilities for water purification, transportation, and discharged water treatment.

The bidding for the Siheung project was open only to vendors who had experience installing or replacing a water treatment plant's DCS and instruments. The reason for this was that K-water wanted to obtain a reliable system from a company capable of safely replacing a running plant system that had a water supply capacity of 258,000 m³ per day. In addition, the system had to support OPC (OLE for Process Control) in order to secure compatibility with hardware and software from various companies, and it had to have an open architecture.

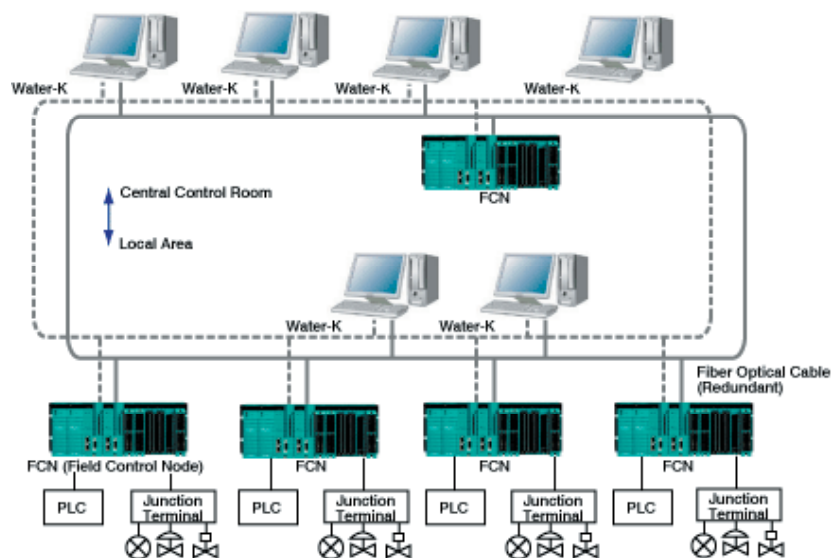
By choosing Yokogawa and STARDOM, K-water was able to promptly and efficiently meet its challenging requirements for an integrated system solution.

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System Configuration



<System Details>

STARDOM Autonomous Controller: 7 FCN control units with duplexed CPU modules, power supply modules, and SB bus + 2 extension units

Field Instruments: Magnetic flowmeter (AXF300W – 1 set), pH meter (PH400G – 1 set)