

Beijing's Local Waste-water Treatment Plant's Data Acquisition and Control System

With the help of ADAM-5510 PC-based Programmable Controller, Beijing 's Waste-water treatment plant has successfully built a easy to install, easy to program, highly reliable waste water process control system. This has provided them a saving over using traditional PLC solution.

Chen-Hua
Application Engineer
Advantech, Beijing
People Republic of China

INTRODUCTION

Beijing, the capital city of China, has attracted a huge workforce and immigrants from other provinces. This has increased the demand of its outlying areas for improvements to the local waste-water treatment plant. In the past, due to plentiful of labor force and relaxed environmental restrictions, the quality of waste-water treatment and the output of clear water was not closely monitored. The local government is now requiring the plant manager to solve the problems and reduce the staffs at the same time.

SYSTEM REQUIREMENTS

The process of waste-water treatment involved here has three steps. First filter



out the particulates in the waste-water pumping room and de-sanding pool. Second add chemical to the water in the 4 CAS (Carbon Absorption System) pools. Finally drain the intermediate water into the purification pool for the final refining process.

THE KEY REQUIREMENTS

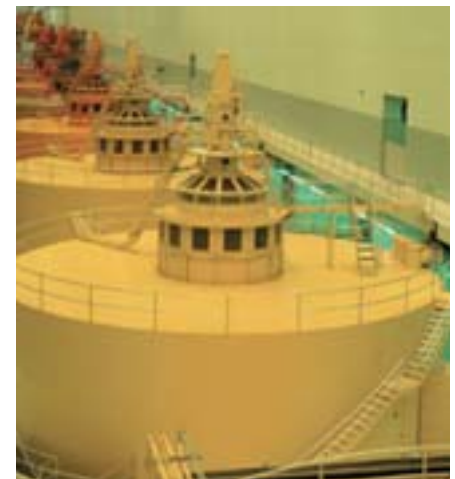
1. Integrating widespread data from the different pools and responding to control center reliably and quickly. In the past, this monitoring process required many on-site workers traveling in the plant and reporting the field status.
2. Collecting and processing the data in

a timing and correct manner. The current system is not reliable enough to handle the demand in the different stages.

SYSTEM DESCRIPTION

Advantech Beijing has developed a PC-based process control system using ADAM-5510 controllers to solve the plant's need. There are six PC-based Programmable Controllers-ADAM-5510 installed at the CAS pools, de-sanding pools and purification pools. The ADAM-5510 monitors and controls the field devices. The plant are displayed on a field display and feedback to the control center through an RS-485 network simultaneously. The system also uses ADAM-5060 6-ch Relay output modules, ADAM-5051 16-ch DI modules for facility's monitoring and

ADAM-5017 8-ch AI module for flow speed and volume monitoring.





At the de-sanding pool, ADAM-5510 handles the pump's on/off control, gate's open/close control, and it monitors input-flow speed, water-level and related facility equipment's on/off and alarm output.

In the CAS pools, ADAM-5510 responds to the commands from field

stations or the control center to control the 4 sub-steps in each CAS reaction. One important function for ADAM-5510 is to detect fully automatic or semi-automatic signals and respond promptly with control logic.

At the Purification Pool, ten purified instruments are monitored and

controlled by ADAM-5510. The control processes are similar to those used in the CAS pools and also feature automatic & semi - automatic alternatives.

The benefits that ADAM-5510 provides in this data acquisition and control system are:

1. Flexibility of COM ports (COM1 for field monitor, COM2 for RS-485)
2. Rich memory space (256K F. ROM and 256K SRAM to program and store data)
3. Easy programming with C language (difficult control logic and can be developed easily)
4. Distributed data acquisition system architecture

CONCLUSION

Following the installation, the plant manager showed great appreciation to Advantech Beijing's engineers. The new system not only saves on tremendous labor cost but also improves the quality of purified water and increases the total clear water throughput. ■

