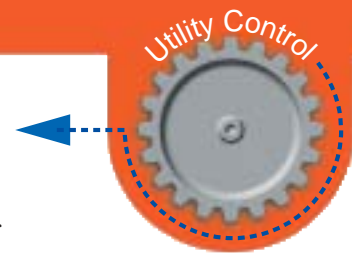


# Power Plant's Cooling Water Control System

Concerned with environmental issues and nuclear safety, YoungKwang choose ADAM-5000 series to monitor cooling water status around its reactors and enhance the quality of cooling effect.



Sanghoon Lee  
System Integrator  
Younghwa Co., Ltd.  
S. Korea

## INTRODUCTION

As the awareness of environmental issue and nuclear safety rose in the 90's, Korean Youngkwang Nuclear Power Station found itself under pressure to enhance the safety of its current on-duty reactors. This also involved many other aspects, such as the quality of cooling water. System integrator, Younghwa, managed to set up a monitoring system that enhanced water quality as well.

## SYSTEM REQUIREMENTS

The system was to automate the recording of data. Furthermore, it



would have to perform three functions. First, on-line monitoring of the cooling water quality was necessary. Second, the system had to be able to diagnose and analyze abnormal water conditions. The final function was remote communication. This was the hardest

part for Younghwa since it had to build system that would be able to link existing facilities, analog recorders and PLCs so that the water quality of two nuclear reactors could be monitored from remote locations..

## SYSTEM DESCRIPTION

To overcome the problem, ADAM-5000 distributed data acquisition system was applied to several locations including 3rd and 4th reactors, machine control room, etc. It easily handles conversion (4-20mA, 2-10V) and serial transmission of field sensor's signal. The RS-485 signal from ADAM-5000 is converted to a modem-readable RS-232 signal by ADAM-4520 converter. The network is linked by exclusive telephone lines. The upper part of the system uses Ethernet to store historical data in a file server. Younghwa provided Citect's Man-Machine-Interface software package to facilitate a user-friendly plant-monitoring screen.

Initially, Younghwa suggested a traditional industrial chassis with data acquisition cards. However, the customer later chose Advantech ADAM-5000 series and rejected the traditional one due its relatively higher integration costs and a limited I/O selection.

## CONCLUSION

Because of the ADAM system, the Youngkwang nuclear power plant has now automatic control over the cooling water quality and can easily take immediate actions in case of emergency. The system integrator Younghwa is currently planning to use Advantech's system in several future projects. ■

