Success Story

SCADA System and Water Leakage Management Software for MCWD's Water Distribution Network Helps Reduce Non-revenue Water and Improve Stability of Water Supply

Metropolitan Cebu Water District

Location: **Cebu, the Philippines**
Order date: **February 2015**
Completion: **September 2016**
Industry: **Water & Wastewater**

Executive Summary

Metropolitan Cebu is the country's second largest urban area, and has been experiencing significant economic and population growth in recent years.

The Metropolitan Cebu Water District (MCWD), a government-owned and controlled corporation covering a very large water district in Cebu, needed to improve its water supply system to keep up with the growing demand. The water district serves the cities of Cebu, Talisay, Mandaue and Lapu-Lapu and the municipalities of Consolacion, Liloan, Compostela and Cordova in Cebu Province.

Because of the increasing number of customers, it was decided to construct a water supply monitoring system, which is now being carried out by MCWD as part of a water supply improvement project that has received funding in the form of a grant from the Japan International Cooperation Agency (JICA).

The project involved the installation of a Supervisory Control and Data Acquisition (SCADA) system that enabled MCWD operators in its main office to remotely monitor and control the status of water supply within its service area.

Yokogawa Solution Service Corporation was responsible for engineering the SCADA system, setting up a water leakage management system, and installing flowmeters and other types of field instruments at a total of 143 locations such as dams, reservoirs, pressure points, water pump stations, and district metered areas (DMA), throughout the MCWD's service area.

All monitoring points such as DMAs and pumping stations, as well as pressure points installed with remote terminal units (RTU) for collecting data on flow, pressure, and pump status, are equipped to transfer these data to the MCWD's main office.

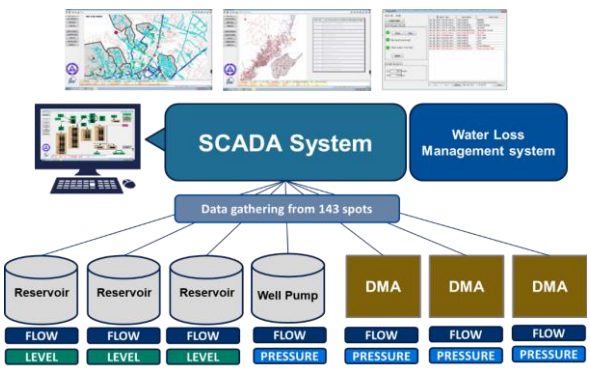
Monitoring box at pumping station

Yokogawa visualized the water distribution network from two points of view:

1) Real-time monitoring of operations of pumping stations to detect shutdown; and

2) Water leakage management by monitoring of historical flow and pressure data in each DMA to detect water leakage, analyze the actual pressure points and dispatch staff in order to reduce NRW.

One effective way to increase the water supply distributed in the area is to reduce the non-revenue water (NRW), which would also increase the revenue of MCWD. The combination of Yokogawa's SCADA system and water leakage management software helped improve the MCWD's water supply and increase its financial profit by minimizing water losses.



System overview

The Challenges and the Solutions

Prompt recovery of pump stations to improve the water supply of MCWD customers

Before the SCADA system was installed, the high demand for water as a result of rapid population growth often caused the pressure of the water distribution network to drop in some areas. Also, frequent electric power shutdowns caused unexpected failures of pumps.

MCWD could not detect these technical issues immediately as the pump data were not transferred to MCWD's main office. When MCWD operators found out that pumps were not functioning, it sometimes took them hours or even days to find the cause of the problem and repair it.

After the SCADA system was installed, MCWD operators were able to regularly monitor the pump status in real time, and easily locate abnormal pumps.

In short, the system enables the speedy recovery of pump stations and improves supply management.

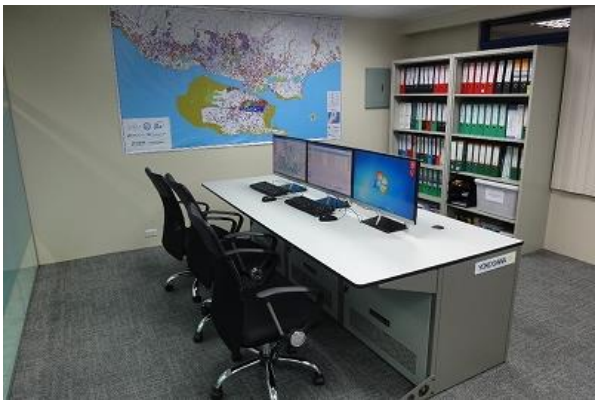
Water leakage management to reduce NRW

The SCADA system gathers all DMA flow and pressure data together once a day. Among the gathered data, the water leakage management software calculates the average flow every day at 2:00 am and 4:00 am which is considered the minimum flow (and is nearly equal to the water leakage amount). MCWD operators monitor and analyze these minimum flows with pressure data and the long-term trend, guided by the International Water Association (IWA) Standard. If the minimum flow suddenly or gradually increases or if the pressure falls, water leakage may have occurred in the DMA. Then MCWD investigates the DMA more precisely by using special tools to find the actual leakage points and repair them to reduce the NRW.

In addition, the water leakage management software can be used to simulate the appropriate pressure of the water network. Knowing the optimum pressure is helpful to avoid excessive pressure in the water network. Appropriate pressure management is also another key factor to reduce NRW.

Thus, MCWD has successfully reduced the NRW.

Yokogawa's SCADA system and water leakage management software has made it possible to stabilize the MCWD's water supply and has contributed to its financial health by visualizing its entire water network.



Main office

Customer Satisfaction

"With the installation of the SCADA system, all necessary information that is beneficial to the residents within MCWD's service area is monitored and processed. Technical issues are immediately addressed and recovered without having to dispatch MCWD personnel to the area. It is also important to note that complaints from MCWD customers have decreased dramatically."

"The system has helped MCWD become more efficient and effective in its day-to-day operations especially in handling NRW and enables it to respond to customer complaints faster."

— Mr. Stephen Yee, General Manager of MCWD

For more information and contact

FAST/TOOLS
STARDOM (Process Control PLC/RTU)
Water Industry

YOKOGAWA ELECTRIC CORPORATION
World Headquarters
9-32, Nakacho 2-chome, Musashino-shi, Tokyo
180-8750, Japan
www.yokogawa.com/

Yokogawa Solution Service Corporation
2-9-32 Nakacho, Musashino City, Tokyo, Japan
www.yokogawa.com/yjp/

Yokogawa Philippines Inc.
Topy Industries Building, No. 3 Economia Street, Bagumbayan, Libis, Quezon City, Philippines
www.yokogawa.com/ph/