

# Wide Area Water Distribution Case Study



## Introduction

The Taiwan Water Corporation is responsible for the distribution and management of the water resources in the Republic of China (Taiwan). The Kaohsiung Area Water Distribution Automation (KAWDA) project encompasses six different area network systems in the Kaohsiung area of southern Taiwan. The Kaohsiung Water Distribution Center (KDC) is connected to each of the six Area Control Centers (ACCs) and is responsible for the monitoring, distribution, control and management of the whole system.



## Problem

The Taiwan Water Corporation is responsible for gathering water, pumping it to treatment plants and then distributing the purified water to its customers. To monitor and control this critical system, the Taiwan Water Corporation required a new state-of-the-art Supervisory Control and Data Acquisition (SCADA) system for the six separate area control centers and one main master control system organized in a pyramid structure.

Multiple levels of redundancy were required so that if any one computer fails at an ACC site or the main KDC site, the system continues to operate without interruption. The system is to interface to the existing Programmable Logic Controllers (PLC) and to the new Remote Terminal Units (RTU). Large historical database storage, easy to use control interfaces and sophisticated reporting, trending and alarming applications are required. Advanced modeling and simulation software is to be used for

operation strategy forecasting and for training purposes.

## **Solution**

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In a competitive bid, Willowglen was selected to provide the new KDC and ACC master station SCADA system hardware and software, Front End Processors (FEP), and new RTUs. Water modeling and simulation software from 7T of Denmark was integrated with the SCADA system.

Willowglen's SCADACOM® 3.0 system provides high performance distributed processing power. The computing load at KDC is shared by two main servers, two operator workstations, one modeling workstation, one training workstation, and a separate workstation is used to drive a video projector in the demonstration center.

At each of the six Area Control Centers, a single server and two operator workstations communicate over an Ethernet Local Area Network (LAN) to a Willowglen FEP which has serial communication lines to the various RTUs. In addition, the processing power of the SCADA system is easily upgraded, both in terms of speed and capacity, by adding more workstations to the LAN and more CPU modules (up to a total of four) to the servers.

Willowglen's compact, dual processor based Model 1400 RTU was selected for installation at the treatment plants, pumping stations and monitoring stations. These powerful RTUs scan the data, time tag results, and use Report By Exception (RBE) techniques to communicate critical events to the master station.