



Project Profile: Control System

COMPANY

Louisville Water Company
550 S. Third St
Louisville, KY 40202

PROJECT TITLE

Control Systems Upgrade Project

SERVICES PROVIDED

- Receipt of all control system hardware
- Hardware and software configuration and assembly
- Software design
- Programming
- Start up.

HARDWARE

- Five Compaq Servers, ten workstations, thirty-three AB ControlLogix PLCs with an additional twenty-five remote I/O racks, and thirty-three MicroLogix PLCs.

SOFTWARE

- AB Rockwell RSLogix5000, RSNetWorx, RSLogix500, RSLinx, Intellution iFix 2.6 and OPC driver, Windows 2000 Server and Workstation, Microsoft Office, Crystal Reports, Win 911 Alarm Annunciation.

OBJECTIVES

- To replace the existing SCADA system with a new one.
- To ensure that the Louisville Water Company's more than 260,000 customer accounts are delivered improved service at their current consumption costs
- Provide for future easy expansion of the water distribution system.
- Fulfill existing statutory reporting and easily facilitate any future requirements.
- To be able to control the system from either of two places: the Crescent Hill Water Treatment Plant main control room and/or the B. E. Payne Water Treatment Plant main control room.
- To develop a better understanding of the water treatment process through the comprehensive gathering and real time interpretation of data.
- To be able to easily introduce future process improvements that will reduce costs.

PROJECT DESCRIPTION

Upgrade and replacement all of the process control systems used to operate Louisville Water Company's two water treatment plants, two principal pump stations and twenty one distributed water pumping stations. Changes in demographics in Jefferson County and the surrounding area over the last decade necessitated that the new system not only solve existing problems but also provide for ease of future expansion.

TECHNICAL DETAILS

The cornerstone of the system design is the use of networks to connect all PLCs, Servers and Workstations. By designing the system around networks, rather than other traditional communication methods such as radio or dedicated point to point telephone circuits, Pfeiffer Engineering provided a control system that offers redundancy, expandability, and simplified maintenance. Over two hundred HMI screens were developed for GUI, trends, loop controllers, alarms and equipment control. ControlLogix PLCs are integrated into the Water Treatment plants and Boost Pump Stations' equipment control systems. Thirty-three elevated tanks, standpipes and master meters are monitored by MicroLogix PLCs. At Zorn Avenue and Crescent Hill principal Pump Stations a ControlLogix PLC interfaces with seven SLC5 PLCs that each control a large (over 2000 hp) pump. To maximize reliability, both Crescent Hill and B. E. Payne Water Treatment plants employ a SCADA software pair of Windows 2000 Servers. The Servers are configured such that if one were to fail, the other would continue to operate the system. The system is designed so that it can be operated entirely by one server only.