Power Plant Upgrades Control System

MAVERICK designed, configured, installed and commissioned a new redundant control system in the demineralized water units of a power generating plant in the Houston area.

Main Objective
A Fortune 300 company selected MAVERICK to upgrade an existing Modicon 984 PLC control system used to manage the operation of the overall water demineralization process with a state of the art redundant Allen-Bradley ControlLogix micro-processor based control system.

Customer Results
The MAVERICK team provided a complete process unit control system including system design, cabinet design, PLC hardware, software and configuration; HMI design, hardware, software and configuration; network design, hardware and configuration; complete system testing; training for the operational personnel and start-up support.

Application Description
- The control system in the Demineralized Water Units of a power generating plant operates and monitors two ion exchange / regeneration trains consisting of the following equipment and processes:
  - Four potable water Birm filters
  - Three caustic injection pumps
  - Two acid injection pumps
  - Six ion exchange mix beds
  - Four forwarding pumps
  - Four degasifier blowers
- The control system is designed to operate in automatic with the option for manual operator control. Basic operating modes are service, regeneration, standby and shutdown.
- The control system is based on a redundant Allen-Bradley ControlLogix L62 PLC, configured with Rockwell Automation RSLogix 5000 programming software, managing approximately 350 analog and digital I/O.
- Also included in the scope was an upgrade of the existing Panelmate CRT HMI work stations with Dynics Flat Panel industrial touchscreen workstations, running Rockwell FactoryTalk Machine Edition HMI software.
- The human machine interface (HMI) is based on Rockwell Automation FactoryTalk Machine Edition software. Approximately twenty-five graphic screens were developed to visualize and control the process.
- Two Dynics flat panel industrial workstations equipped with Hope Industrial Systems keyboard and mouse were provided for HMI display and control.
- The overall system allows for setting the state of devices, monitoring real-time process values and providing alarm notification or control responses. Graphical displays on the HMI present the state and allow for operation of pumps and valves, while also providing means for monitoring process values and adjusting operating parameters as required. Alarm indications guide operators when the process conditions or equipment are out of specification.

The MAVERICK Difference
In addition to the original project scope, the MAVERICK project team assisted the customer with a Windows operating system upgrade in order for them to run the PLC and HMI configuration software on their maintenance laptop, and also assisted with the Windows screen lock security feature for their HMI workstations.