

# Generation Compatibility Key to Savings for Dallas Water Utility

As the computer and process automation world continues to take giant leaps forward, suppliers are challenged to bring advanced functionality to market, support legacy products, and provide a cost effective and plausible transition path that requires minimal effort to commission. In 1999, the City of Dallas Central Wastewater Treatment Plant presented this problem to various SCADA suppliers. The plant is permitted for a peak 2-hour flow of 350MGD. It had a partially functioning, 11-year-old process control system. The original equipment included 49 RTU cabinets housing Emerson Process Management's Bristol® UCS3380 distributed controllers passing data throughout the plant on over 5 miles of coax cable to 6 redundant DEC MicroVAX II mini-computers with over 40 amplifying repeaters. This system was handling over 40,000 I/O points. Servicing the older equipment was proving to be too costly, or even impossible in some cases, as replacement parts simply were no longer available.

The Central Wastewater plant also had concerns about Year 2000 date compliances (Y2K). The UCS-3380's were Y2K compliant; however the MicroVAX II was not. All things considered, management decided that it was time to upgrade. They received pricing for completely new systems including hardware and PC based HMI systems ranging from \$5 to \$8 million. Emerson proposed an upgrade to the current version of the 3380, the 3335 DCS with a PC-based HMI for only \$1.8 million.

To facilitate this change and be cost effective as well as functional, Emerson Process Management designed and created mimic boards that connected

to, and emulated the old I/O termination boards and had mass termination ribbon connectors to the current Bristol® remote terminated I/O. This saved months of labor-hours rewiring the 40,000 I/O points in the plant. The application programs in the controllers were rebuilt in the newer program interface, AC-COL Workbench, and the I/O was remapped. This process took only days whereas new code would have taken months to write and then debug.

The next obstacle was the communication network. The project team replaced the existing proprietary network with a redundant star topology fiber optic 10 Mb Ethernet network. The new DPC3335 unit could interface to this Ethernet network as well as the new Bristol OpenEnterprise HMI PC-based host, from Emerson, that replaced the MicroVAX II system. Screens were created to mirror the older screens for operator ease of transition and newer screens were also created including screens for troubleshooting I/O points and cards, as well as communications. The OpenEnterprise system has a redundant Server and 9 workstations. From any workstation, an operator can log in and see the entire process and make operator changes. The HMI interfaces to a SQL Server Database that allows the plant to generate any needed reports and record all needed plant data.

This system was designed, installed and operational within 1 year at a savings of \$3 to \$5 million. Says Steven Plummer, Department Technology Analyst for the Dallas Water Utilities; "This experience taught us about the value of selecting a vendor with longevity in the marketplace and one who understands the need for generation compatibility."

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