Detroit Implements New Automation, Control System

The Detroit Water and Sewerage Department (DWSD) recently completed phase one of a multi-year program to modernize the control system for its vast water and wastewater treatment complexes. The new system will help DWSD improve operational efficiency, maintain of 710 million gallons of water per day. Its main Wastewater Treatment Plant (WWTP) – among the largest single-site WWTPs in the United States – collects and treats residential, commercial and industrial wastewater for 78 municipal communities.

The ICCS upgrade project covers more than 1,000 square miles and includes the WWTP, five water treatment plants, 23 treated water booster pump stations, five high-lift pump stations, 10 wastewater pump stations, three Combined Sewer Overflow (CSO) basins, and more than 170 remote radio telemetry sites monitoring level, pressure and discharge.

Emerson's integrated Ovation control and SCADA system included installation of a WWTP Plant Control Center (PCC) connected to six new Area Control Centers (ACC), as well as an overall System Control Center (SCC) that monitors and controls the entire water distribution system and wastewater collection system.

The SCC features a 43-foot-by-8-foot video display wall that provides geographic images of the entire service area, including all facilities, pump stations and critical sensors. For each facility and monitoring location, system information – including water pressure, valve positions, pump and equipment status, rain data, sewer levels and flows – is collected and broadcast over the network. All the information received or generated by the system is also stored in a historian database so that it can be used to plot trends, analyze events and project future operational requirements.

The Detroit Water and Sewerage Department's (DWSD) System Control Center (SCC) monitors and controls the entire water distribution system and wastewater collection system. Pictured above in the SCC is PJ Dada, assistant director of DWSD.

regulatory and environmental compliance, and accommodate future system expansion.

The project involved installation of Emerson Process Management's Ovation® control and SCADA system. With Phase One complete, Emerson has begun the seven-year systems maintenance portion (Phase Two) of the project.

The DWSD automation project is noteworthy for its scope, complexity and anticipated long-term positive impact on operations.

DWSD, a municipally owned utility, provides roughly 4 million residents in southeastern Michigan with an average

To enhance service, process and operational efficiency, and to meet the need for future expansion, DWSD initiated a multi-phase, multi-million-dollar upgrade program encompassing its water distribution system, wastewater collection system and WWTP. As part of this comprehensive program, Emerson was selected to design, assemble, test and implement a new department-wide Instrumentation, Control and Computer System (ICCS). The contract also called for the company to train more than 700 DWSD operators, maintenance technicians and engineers on the new ICCS, as well as maintain the system for a designated period of time.

In all, the network architecture features more than 40 integrated systems monitoring and controlling approximately 30,000 I/O points.

Replacing outdated controls with the state-of-the-art automation system offers DWSD a number of significant benefits, including better management of distributed systems and remote sites, streamlined environmental reporting, improved water/wastewater process control reliability, and reduced operations and maintenance costs. For example, because operators at the water distribution and wastewater collection systems now have

access to real-time data from throughout the system, they are able to more quickly detect and isolate system leaks as well as better react to rapidly changing conditions such as storm water inflow.

"The Ovation control system provides DWSD with a capability we did not have before – to access and analyze data on a department-wide basis," said PJ Dada, assistant director of DWSD. "The value of the information available to us … has streamlined our regulatory report-ing, made it easier to quickly respond to disruptions, and enables us to provide ac-curate and timely information to our cus-tomers – which translates into improved overall efficiency." **WW**

New System Designed to Improve Water Industry Cyber-Security

Municipalities are facing mounting pressure to step up their cyber-security to safeguard public health and the environment. Documented security breeches at water and wastewater facili-ties worldwide are among the factors spurring calls for increased cyber-secu-rity vigilance.

To help address the issue, Emer-son Process Management recently introduced its new Ovation® Security Center. Integrated into the company's Ovation control system, the Security Center is designed to make it easier for the company's customers in the water and wastewater industry to manage cyber security.

Other industries related to the nation's infrastructure have already adopted vigorous regulations pertain-ing to cyber security. Most notably, the North American Electric Reliability Council has specified Critical Infra-structure Protection (CIP) standards requiring the power industry to identify and protect critical cyber assets related to the reliable operation of bulk electric systems.

Already in use in the power industry, the Ovation Security Center's centrally located console can help water utilities streamline security event management; improve patch deployments and audits; provide malware prevention; manage event log storage and reporting, and provide vulnerability assessment and management.

The center's event management capability provides a centralized event collection, event correlation, and threat identification function for security-related events in an Ovation control system. Security events are collected from each network device including network intrusion detection systems, firewalls, routers, switches, servers, workstations, controllers, and Security Center application modules.

Periodic updates to patches, vulner-ability databases and security signatures are downloaded through Emerson's SureService® program, and standard security management reports are avail-able for operations management and regulatory compliance. As part of its SureService program, the company also offers security assessments and audits.

"Helping our customers operate their treatment plants, water distribu-tion and wastewater collection systems securely, reliably, safely and efficiently has always been – and will continue to be – a top priority for Emerson," said Bob Yeager, president of the Power & Water Solutions division of Emerson. "The integration of the Ovation Secu-rity Center within the Ovation control system is just the latest in our ongoing efforts aimed at ensuring that Emerson continues to be the secure choice in automation and control for water and wastewater operations."

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