Schneider Electric
"City of Palm Coast: Palm Coast, FL"
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Wastewater Treatment Facility Upgrade

by Grant Van Hemert, PE, automation and control applications engineer, Schneider Electric Water Wastewater Competency Center

The Plan: Expand and upgrade the existing wastewater treatment facility for the city of Palm Coast, Florida, to accommodate the municipality's rapid population growth. The heart of the project was an open solution utilizing Ethernet technology to protect the city's ability to competitively bid future projects and take advantage of tomorrow's technologies.

The upgrade included building a second treatment train that consisted of a new headworks building, oxidation ditch, two clarifiers, RAS/WAS pump station, chlorine contact chamber and discfilters.

The Solution: The city contracted CPH Engineers for design of the civil and process work, and Bailey Engineering for the design of the power and automation portion of the expansion and upgrade. Kruger Inc., a world leader in environmental treatment was chosen to provide the oxidation ditch and discfilters. Since the oxidation ditch was central to the project, the city saw value in asking Kruger to supply the automation system and motor control centers.

STEP 1: Network Design
Kruger worked with Bailey Engineering to develop an Ethernet-based process control system solution. The companies chose the open Modbus® TCP protocol so the city wouldn't be limited to proprietary hardware or a proprietary network for future upgrades.

STEP 2: System Components
Kruger and Bailey Engineering opted to use Square D® brand Model 6 Intelligent Motor Control Centers (iMCC) with embedded Ethernet to provide the city with advanced diagnostic capabilities.

The companies also chose an automation system that consists of two separate Telemecanique® brand Modicon® Quantum™ programmable automation controllers (PACs) from Schneider Electric. Each PAC communicates to a dedicated remote rack. The PACs gather flow, dissolved oxygen and run status information from each area of the plant. This information is then transmitted over the same Ethernet network that the iMCCs utilize. The PACs also use the Ethernet network to control the starters, variable frequency drives (VFDs) and soft starts embedded in the iMCCs.

STEP 3: Reaping the Benefits
Using Ethernet as the plant network allows the municipality to monitor an impressive amount of data, giving operators a full view of their operation with minimal installation costs.

According to Kruger, if this amount of data were gathered via traditional means, it would require multiple four-inch conduits with hundreds of wires being fed into extremely large wiring cabinets, making it cost prohibitive for the municipality. Using a network approach allows the city to benefit from an advanced diagnostic and troubleshooting tool, while minimizing installation costs.

Operators also can access the plant off-site via a dial-in connection and alarm dialer, minimizing the possibility of process upsets due to equipment failure during off-hours. Furthermore, the dial-in capability helps to eliminate the need to visit the plant to clear nuisance alarms.

“Utilizing Ethernet technology has ensured that the city of Palm Coast has the optimum capabilities to guarantee proper water treatment both now and in the future,” said Todd Casey, application engineer, Kruger.