xylem
Let's Solve Water

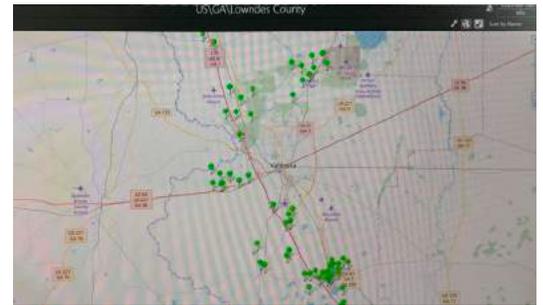Lowndes County Utility Dept. Case Study
Monitoring & Controls

Lowndes County Utility's Wastewater System

Working smarter, not harder: Simplifying controls and optimizing maintenance through smart data (IoT)

Background

What began in the 1970s as a small utility with just 200 connections, Lowndes County Utility Department in Valdosta, Georgia, has grown into a burgeoning operation with 178 miles of sewer lines. However, the expansion has not been without growing pains, which ultimately left the water utility working off antiquated monitoring and control systems for their water towers and wastewater collection pumps. Among those challenges was the monitoring and control system's inability to clearly identify the type and priority of an alarm, leading to frequent call-outs and false alarms.

"It was hard to identify the importance of the alarm because of the poor communication and lack of clear priority from the auto-dialer system," said Steve Stalvey, utilities director for Lowndes County.

The inability for Lowndes County Utility Department to remotely access its former SCADA network from mobile devices also contributed to more frequent call-outs, as employees had to travel to the physical location to identify and deactivate each false alarm. The former system often generated two false alarms per week. At a cost of $75 per hour to dispatch a technician to respond to the alarm and a minimum of two hours per call-out, the utility was incurring thousands of dollars each year in maintenance costs.

A Flygt Cloud SCADA map of all integrated lift stations, booster stations, drinking water treatment plants, etc., for Lowndes County.

Customer: Lowndes County Utility Department Georgia, USA

Challenge: Antiquated monitoring and control systems for the county's water towers and wastewater collection pumps, costing thousands of dollars per year in unnecessary labor costs for call-outs and false alarms, and pump repair and replacement costs as a result of an ineffective reventative maintenance program. Lowndes County needed to upgrade its monitoring and control systems for 56 lift stations and 18 water treatment components.

Xylem Solution: Lowndes County Utility Department partnered with Xylem to install MultiSmart Pump Station Managers (IPSM) to collect data and prioritize issues that require a technician call-out. Additionally, Xylem provided Flygt Cloud SCADA service to leverage the Internet of Things as a way for seamless communication between controllers and effective real-time reporting of system data.

Results: Xylem's MultiSmart IPSMs and Flygt Cloud SCADA systems helped Lowndes County avoid as much as $40,000 in pump replacement costs, and save nearly $15,000 per year in unnecessary labor costs. In addition, Xylem helped the county obtain financing that enabled immediate installation of the equipment with progressive payments over a three-year period, versus five years to purchase and commission the controls.

Benefit	Impact	
Capital avoidance for replacement pumps	Saved $40,000 per incident	
Reduced labor costs from fewer call-out's	Saved $15,000 per year	
Project financing allowed for immediate installation	Reduced implementation from 5 years down to 8 months	

Lowndes County Utility Department also lacked the ability to adapt the monitoring and control system in the field. To enable or update a control feature, the utility had to contact the supplier directly. Additionally, replacement parts had become increasingly difficult to find and much of the original system was obsolete.

Leadership with Lowndes County Utility Department recognized the need to modernize operations, update wastewater collections monitoring and control systems, and collect better data through the Internet of Things (IoT).

Scope

After visiting neighboring utilities to determine which wastewater collections monitoring and control system would be best suited for the tower and lift stations in their service area, Lowndes County Utility Department made the decision to install Xylem's MultiSmart Pump Station Managers (IPSM). The MultiSmart IPSMs provided a simple and compact technology that could collect data and alarm control systems from their units.

The MultiSmart IPSM with touch screen collects more than 400 sophisticated data points at each site for Lowndes County.

The second stage of the upgrade involved implementing Xylem's cellular-based Flygt Cloud SCADA service. The service was chosen due to its effective use of the data collected from each MultiSmart IPSM, as well as the seamless communication between those controllers. This relationship between the IoT and local equipment control is possible due to compatibility of the hardware at each level of control.

The total project consisted of 56 lift stations and 18 water treatment components. Each upgrade included a new pump panel equipped with a MultiSmart IPSM that communicates to the cellular based Flygt Cloud SCADA network.

The remote Flygt Cloud SCADA screen at the Kinderlou Lift Station saves Lowndes County time and money by providing them real-time data during a storm event, eliminating the need to send personnel to a site during a storm.

Another feature of the upgraded monitoring system that appealed to Lowndes County Utility Department is the ability to perform an insulation resistance test during installation to set the baseline for optimal performance. The MultiSmart IPSM then monitors the insulation resistance (I/R) condition of the pump motors. Real-time I/R readings provides Lowndes County Utility Department the granularity needed to compare the real-time data to the baseline to determine which pumps are wearing faster or slower, enabling the utility to determine the expected lifespan of each pump and design an effective preventative maintenance program.

The insulation resistance (I/R) test feature has already helped the utility identify potential problems that could have resulted in catastrophic pump failure. In one such situation, the I/R test feature helped identify an issue that would have allowed water into the conduit system. Had the problem not been detected and resolved, Stalvey said pump replacement costs could have cost the utility as much as $40,000.

"This project shows the utility's ability to optimize equipment maintenance while simplifying controls," said Steve Stalvey, Lowndes County Utility Department.

"The use of the collected data by the system is providing us with a better way to manage our labor and reduce the cost of maintenance and operations."

Financing the project

Before procuring and deploying the new systems, Lowndes County Utility Department was challenged with securing financing for the project. Xylem worked with the utility to obtain financing, enabling the utility to begin installation of the equipment immediately, while providing progressive payments on the equipment over a three-year period. This also meant the equipment could be commissioned in about eight months. Without financing, it would have taken Lowndes County Utility Department nearly five years to purchase and commission the controls for the entire system.

Results

Once the monitoring and control system was fully commissioned, Lowndes County Utility Department saw immediate results. The upgrades deliver more than 400 sophisticated data points from the MultiSmart IPSM. The data collected on the MultiSmart IPSM is then communicated throughout the entire system via the Flygt Cloud SCADA system. The primary goal of systems working smarter, not harder was achieved.

Additionally, the new system is prioritizing alarms appropriately and Lowndes County Utility Department is receiving significantly fewer call-outs, resulting in cost savings of nearly $15,000 per year in unnecessary labor costs. The modern technology also helps with preventative maintenance; reducing wear on the pumps and identifying what equipment needs priority upgrades or replacements.

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1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com

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