

Xylem's Flygt N 3312 electric pump provides non-clog sewer bypass solution

Electric submersible pump is another game-changing rental solution

Located 45 miles south of Nashville, the city of Columbia, Tennessee, has a population of approximately 36,000 people and is the county seat of Maury County.

As part of its wastewater system, the city maintains 317 miles of gravity-enforced main sewer lines, 25 pump stations and a 14 million gallons per day (MGD) wastewater treatment plant. In recent years, Columbia has engaged in sewer rehabilitation projects to help reduce or eliminate system overflows, including renovating and replacing several existing pump stations.

Among the pump stations slated to undergo scheduled upgrades sometime in 2020 was the Santa Fe Pike pump station. But before those repairs could begin, the station experienced a major pump failure during the spring of 2020 that led to sewage overflows, spurring the city of Columbia to engage Xylem Rental Solutions for emergency pump rental. The local Nashville branch quickly dispatched a Godwin HL250 diesel pump for an emergency sewer bypass system.

The Challenge

Once the initial crisis was under control, the city of Columbia decided to move ahead with the \$1.2 million planned upgrades for the Santa Fe Pike facility. City officials hired W&O Construction as the contractor on the project.

To maintain treatment operations while the upgrades were completed, W&O Construction needed to set up a temporary sewer bypass system, and because rehabbing the pump station would take several months to complete, the Columbia Wastewater Department made the decision to switch to electric-drive pumps to improve pumping efficiency and reduce operating costs. For temporary bypass projects that last longer than three months, electric bypass pumps are a cost-effective option as they do not rely on expensive diesel fuel.

However, Xylem Rental Solutions hit a snag in the process – the only Godwin electric option in the local fleet (Godwin HL250 pump with a 450 hp motor) was too powerful for the site's 400 amp service.



The Xylem team used a horizontal, dry pump installation for the Flygt N 3312 pump.

CUSTOMER: Columbia Wastewater Department, Columbia, Tennessee

CHALLENGE: To select a suitable electric bypass pump for a long-term temporary sewer bypass project.

XYLEM SOLUTION: The Xylem Rental Solutions team engineered a custom temporary bypass system using the Flygt N 3312 electric pump as the primary pump.

RESULTS: The temporary bypass system has been running continuously for eight months without clogging. Using an electric bypass pump resulted in cost savings of nearly \$124,000.

“The local station didn’t have the correct electrical setup for the 450 hp pump,” explained Bill Beasley, regional sales manager, Xylem. “The pump our competitor recommended to W&O Construction as an alternative isn’t made to pump solids. We knew clogging would be an issue.”

Seeking to ensure the Columbia Wastewater Department had the right electric pump and equipment for its temporary bypass system, Xylem’s Nashville branch tapped the experience and expertise of its national Xylem Rental Solutions base to identify the best solution within its expansive rental fleet.

The Xylem Solution

Working with Ken Albaugh, director of sales, rental and equipment sales, Xylem, the Nashville team looked to Xylem’s Flygt pump line.

“It took Ken about 90 seconds to go through the Flygt options and identify a 3000 series Flygt pump with priming,” said Beasley.

For municipalities like the city of Columbia that need to engage in lift station repairs or plant upgrades, Flygt 3000 Series submersible pumps are a cost-effective and environmentally friendly rental alternative that provides a quiet, efficient and easy-to-install bypass solution for many applications.

Xylem offers a wide horsepower range of its versatile Flygt 3000 electric submersible pumps - from 2 to 470 hp - that can handle flow rates up to 16,000 GPM with heads up to 400 feet. The broad parameters of the Flygt 3000 series enabled Xylem to select the proper pump for this application. In particular, the Flygt 3000 Series pumps feature patented N-technology with innovative self-cleaning impellers, which are designed to prevent clogs and build ups. Made with robust, hard iron impellers that are corrosion and abrasion resistant, they also offer a long life span.

The Xylem team quickly identified the Flygt N 3312 submersible pump as the best model for the Santa Fe Pike pump station bypass. But while the Flygt N 3312 met the flow and head characteristics, it was too large to fit down the sewer manhole. To address this new challenge, the Xylem team used a horizontal, dry pump installation. The Flygt N 3312 pump was delivered to Xylem’s dewatering fabrication center in Carterville, Illinois, where a crew built stands for both the pump and priming system within one working day. By the end of the weekend, the custom-engineered pump and priming system were delivered to the temporary bypass site in Columbia, Tennessee, where the rental solution operated continuously for the duration of the bypass.



Flygt 3000 Series electric submersible pumps are a cost-effective and environmentally friendly rental alternative to diesel-driven pumps.



The custom-engineered pump and priming system operated at the temporary bypass site for eight months.

“We took the technology off the Godwin priming system and married it to the Flygt pump performance,” Beasley explained.

Results

With the Flygt N 3312 electric pump serving as the primary pump and the HL250 diesel pump still onsite as the backup pump, the temporary bypass system has been running continuously with no issues and no clogging. Additionally, the use of an electric bypass pump over a conventional diesel-powered pump has improved pump efficiency and reduced costs, resulting in savings of nearly \$124,000 to-date.

Going forward, Beasley said the custom electric bypass solution could be a game changer in the sewer bypass market.

Xylem Rental Solutions has deep professional expertise, a broad product fleet, advanced engineering processes and facilities, and the latest technologies to solve temporary bypass challenges like this one. The company’s technological authority enables it to customize and optimize its rental solutions to help customers solve complex water problems.

“This is the true power of Xylem when we all work together,” said Beasley.



Using the Flygt N 3312 pump improved pumping efficiency and reduced operating costs.