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Let's Solve Water

Case study
Sewage Bypass

Xylem Completes Large Pump Station Upgrade for City of Tampa

Local Xylem rental experts implement successful bypass at high-traffic city location

True leaders recognize problems before they become emergencies. A case in point is the Wastewater Department team in Tampa, Florida. As part of the city's proactive maintenance program, they determined that the Krause Pump Station – which was almost 40 years old – had exceeded its designed life expectancy and was in need of rehab. Before the aging station could break down, the Tampa team reached out to local contractor Vogel Brothers Building Company and the pump experts at Xylem to assess the project, design a robust bypass plan and implement the bypass while the station was being rebuilt.

Solution

To ensure that the bypass was robust and could handle any amount of anticipated flow rate, the specifications and design plan called for a system capable of handling a 100-year storm event, or 64 million gallons per day (MGD). The design incorporated the use of four manholes – two of them in the middle of downtown Tampa under the expressway, and two of them along the Hillsborough River. These locations had very little room for the bypass equipment. To complicate the project further, a request to the City for a complete road closure was denied because officials didn't want the pumps and bypass equipment to hinder traffic.

These tight quarters led to creative thinking. Typically a crane is used to move pumps and oversized equipment into place on a job site. But since the primary location was under the expressway and a crane couldn't fit in the workspace, Xylem used a rotator extender truck with a telescoping boom to place the equipment where it was needed on the site.

Since the site itself was also a busy traffic area, space optimization was essential. With the City not eager to close a busy road for an extended period of time, the plan called for using tapping saddles on the main trunk bypass line. This saved enough room to keep one lane of traffic open for the duration of the bypass project.

As primary equipment for the bypass, the plan called for seven Godwin electric driven Dri-Prime pumps: five CD400Ms, one

The bypass was under an expressway in downtown Tampa, which made maneuverability and equipment placement a challenge, with one lane open for traffic.

Customer: The Wastewater Department of the City of Tampa, Florida

Challenge: Design and implement a bypass capable of handling a 100-year storm event with redundancy in high-traffic areas within the city that could not shut down traffic.

Products:

- 5 Godwin electric driven CD400M Dri-Prime pumps
- 1 Godwin electric driven DPC300 Dri-Prime pumps
- 1 Godwin electric driven CD150M Dri-Prime pumps
- 5 Godwin diesel-driven, critically silenced CD400M Dri-Prime pumps
- 1 Godwin diesel-driven, critically silenced DPC300 Dri-Prime pump
- 1 Godwin diesel-driven, critically silenced CD150M Dri-Prime pump
- 7 Godwin VFDs for the electric pumps
- 1 CAT 1000-kW generator
- 7 550 gallon diesel fuel cubes

Results: Xylem completed a bypass project for the City of Tampa's Krause Pump Station upgrade on time and on budget, while addressing busy streets, tight quarters and providing 100-year storm, 64 MGD capability.

DPC300 and one CD150M. The primary pumps were all tied into a CAT 1000-kilowatt (kW) generator in case of a power outage. A bank of seven Godwin diesel-driven, critically silenced Dri-Prime pumps, equipped with 550 gallon diesel fuel cubes, was also put in place for complete redundancy of the bypass.

Once in place, each of the primary electric pumps was installed with a Godwin Variable Frequency Drive (VFD) to adjust pump speed for optimal efficiency and to save energy costs. The pumps were integrated to work sequentially, with each pump automatically activated only when levels in the wet well called for additional pump activity.

Results

The four-month bypass, designed and executed by Xylem, gave the City of Tampa the confidence and peace of mind they needed to properly shut down and rebuild the Krause Pump Station. The plan addressed the best way to work in tight quarters under overpasses in the midst of busy city streets, and the customer benefited from Xylem's expertise, breadth of reach and the right pumps for the job. Xylem developed a layout of all the equipment, and provided the customer with access to the work and storage yard throughout the bypass project. This helped to facilitate a smooth bypass that was executed without delay.

"The team at Xylem pulled together a terrific bypass solution. It was efficient, redundant, and they brought in the right rental pumps for the job," says Darren Vogel, PE, Project Manager at Vogel Brothers Building Co. "The City of Tampa was very happy with the outcome. The bypass put their mind at ease, and allowed them to focus on getting the Krause Pump Station rehab completed in a timely manner."

The fuel cubes, lower right and left, were used as part of the back-up redundancy of the system for the Godwin diesel-driven pumps.

Space was lmited under the expressway and along the river.

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