

Complex Discharge Line Bypass at National Brewery Keeps Operations Online

Xylem team addresses high-pH and high temperature bypass fluids for discharge and sewer pipe replacement

A national beer brewery in Georgia needed to address deterioration and replacement of some of the drain pipes running from their fermentation tanks. For this to be classified as a successful repair and replacement effort, it needed to be achieved while keeping 25,000 barrels of beer a day flowing and simultaneously maximizing plant uptime and profitability.

The huge 35-year-old facility produces up to 10 million barrels of beer annually under a number of different beer labels. The plant is a complex maze of pipes and processing equipment that winds through the facility to perform a number of needed tasks - from intake of raw materials to final product packaging.

One of the last steps in the plant's beer-processing operation is the discharge of by-product and waste streams from the fermentation tanks to the onsite wastewater treatment plant (WWTP). The flow travels through header pipes, into an interior trunk line, and then finally into the exterior plant sewer line that connects to the WWTP.

Several times a day, to accommodate the cleaning and prepping of the tanks for the next batch of beer, the header pipes are subjected to powerful bursts of very hot and high-pH discharge. It's a taxing-but-necessary process, and decades of wear and tear on the pipes had caused some of the lines to weaken and deteriorate. With that discovery, Popham Mechanical Contractors, Inc. was brought into oversee the replacement project.

Solution

In order to access and ultimately repair/replace the header pipes without disrupting the brewing process, the Popham team needed to implement a bypass pumping operation. They didn't want to worry about shutting down the plant if the bypass failed, so they contacted Xylem, the local experts for the pump rental and bypass operations.

Xylem Branch Manager, Jay Andrade and Xylem engineers designed a bypass for each of the five header pipes, and each bypass needed to handle upwards of 1.2 million gallons per day. The solution consisted of two Godwin diesel-driven CD225M stainless steel pumps - one



Inside the facility, the tight spaces were a challenge for running hose and for suction-point access.

CUSTOMER: Popham Mechanical Contractors

CHALLENGE: Assist a major brewery in replacing brewing process and septic discharge pipes - while enabling the plant to maintain productivity, working in tight quarters, creating strong suction lift, and dealing with high-pH and high-temperature discharge fluids.

PRODUCTS:

- 12 Godwin diesel-driven CD225M stainless steel pumps
- 600 feet of 12-inch HDPE pipe
- 300 feet of 6-inch chemical hose

RESULTS: Xylem engineers designed and installed two bypasses that allowed Popham Mechanical to focus on the replacement and repair of the brewery and septic discharge pipes, while maintaining brewery production and operations throughout the four-month process.

primary pump and one redundant back-up pump - per header pipe. The pumps' stainless steel material was chosen to tolerate the high pH of the intake stream.

To optimize pumping efficiency, each pump was fitted with auto-start controls that not only started the pumps with the rush of the cleaning discharge, but also maintained appropriate pump speed depending on flow rates. The pumps were also outfitted with Godwin auto-dialers, which are designed to alert the customer via cellphone if the pump operating functions approached dangerous levels.

Due to space constraints inside the facility, all 10 Godwin CD225M pumps were installed outside the plant walls. As a result, 300 feet of six-inch-diameter chemical hose had to run from the tanks inside to the pumps outside, winding carefully between process and plant equipment so as not to disrupt plant operations. In addition, the system cleaning fluid running through the header pipe bypass hit the pumps at over 120 degrees. This high temperature impacted the suction lift of the diesel pumps, so cold water bursts were introduced to the intake line before the hot fluid was pumped, further improving pump efficiency.

As an added part of the project, the brewery decided to inspect the sewer line running from the plant to the onsite WWTP to see if it, too, was in need of possible repair or replacement. The Xylem engineers assessed the situation and designed a second bypass that - like the internal one - would minimize downtime. In order to handle upwards of 1,500 gallons per minute (GPM) of flow through the sewer line, they installed two Godwin diesel-driven CD225M stainless steel pumps and 600 feet of 12-inch high-density polyethylene (HDPE) pipe. Since the bypass was above ground and ran through the plant property, the team also installed a number of road ramps over the pipe to keep vehicular traffic moving around the plant.

Results

By addressing the complexities of the bypass, from the very limited space inside the plant to the high pH and high temperatures of the discharge fluids, the Xylem team ensured that Popham Mechanical and its team of contractors could focus on the pipe repair and replacement. And the plant employees, over 500 strong, could continue to focus on what they do best - produce quality beer, keep the barrels moving, and keep the plant online.

"Jay and the Xylem team came in, made an assessment, recommended the right rental pump for the job, and provided the right equipment for both the inside and outside bypass projects," says Jeff Lewis, President of Popham Mechanical Contractors, Inc. "Their expertise allowed us to focus on getting the repair and replacement projects done, and provided the plant workforce with peace of mind about their daily plant operations. They could be up and running throughout the entire four-month project, and that kept everybody happy."

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Two of the 10 Godwin diesel-driven CD225M stainless steel pumps, ready for installation for the internal bypass.



Two Godwin diesel-driven CD225M stainless steel pumps in place for the external, sewer line bypass.

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