

Flygt Helps Town Go from Rags to Riches

The hassles of pump ragging lead a South Carolina Public Service District to change out problematic pumps for Flygt N3171 submersibles.

The Town of James Island is a beautiful, unique island in South Carolina that is nestled amongst the waters of the Charleston Harbor and the meandering Stono and Folly rivers. Once covered in farmland, James Island is now primarily a residential community that has protected the small-town, rural feel its residents and visitors know and enjoy. In this bucolic location, the James Island Public Service District (JIPSD) provides town services for fire protection, wastewater collection, solid waste collection, and street name signs to its 24,000 residents.

The JIPSD Wastewater Department is responsible for maintaining the public wastewater collection system, which also serves about 13,000 retail customers and one wholesale customer, although the developmental growth on James Island continues to increase the service area. The wastewater collection system consists of gravity pipelines, lift stations, and force mains conveying wastewater to Charleston Water System's Plum Island Treatment Plant. JIPSD's Wastewater Department maintains 61 pump stations and seven pump stations for the City of Folly Beach, which are part of a system that provides collection services to all wastewater areas of the island, including the Town of James Island, the City of Charleston, and the City of Folly Beach residents.

In 2011, JIPSD commissioned the construction of a wastewater pump station equipped with a pair of submersible pumps powered by drives on a programmable logic controller. It is not uncommon for wastewater pumps to collect fibrous materials that subsequently cause blockages. This phenomenon is known as "ragging," and it can occur several times a day, requiring a cleaning that is as unpleasant as it is expensive.

Scope

After going online, the new JIPSD submersibles almost immediately began to rag up at night during low-speed, low-flow runtimes. The JIPSD spent some time optimizing the drives by using flying starts to minimize ragging, but they were unable to completely solve the problem. Recognizing that the original pumps were insufficient, JIPSD scheduled the first replacement in 2015.



Xylem and James Island PSD work together to solve ragging issues at PS11.

Customer: James Island Public Service District (JIPSD)

Challenge: Old pumps causing expensive blockage

Products: Flygt N3171 Submersible Pump



The customer had become used to visiting the station at all hours to de-rag the original pumps.

Due to the project funding regulations, JIPSD required two bidders, Flygt (Xylem) and the manufacturer of the original pump. Flygt actually lost the original project in 2011 due to pricing, but JIPSD had already been building a case internally to include replacement pumps for this station in their 2015 budget because of the clogging. JIPSD prefers Flygt; they use Flygt's repair services and even require a Flygt discharge in all new construction, regardless of manufacturer.

Fortunately, Flygt just happened to have a 35-horsepower N3171 submersible pump in their central distribution center, which was immediately shipped to JIPSD. The Flygt N3171 is a self-cleaning pump that uses Xylem's N-pump technology to keep the impellers free of debris. Also, by keeping the pump impellers clean of debris, N-pumps utilize less energy. N-pumps feature Class H induction motors designed to deliver outstanding performance and superior heat transfer, long-life seals, and low shaft deflection.

The N-design excels in applications where a programmable logic controller drive scenario is used to match diurnal flow with a low speed/long runtime or fewest starts program.

Solution

In April 2015, JIPSD installed the N3171 in position one at the pump station. About two weeks later they had to remove the original pump from position two for cleaning. The pump in position two had apparently already been ragged up when the first Flygt pump was installed. Since the N3171 was put in place, they have had no callouts to that station for low flow or ragging. JIPSD is already quite impressed with the Flygt pump, which cleans the sump so well that the neighboring submersible pump no longer suffers from ragging issues. Regardless, JIPSD intends to order a second N3171.

Results

This application not only highlights the N-pump's clog-free design and Flygt's ability to deliver, but also that the N-design excels in applications where a programmable logic controlled drive is used to match diurnal flow with low pump speeds/long pump runtimes.

Flygt welcomes the challenge of a troublesome pump station that confounds competitor's pumps. Try and Buy options are always available when a challenging application opportunity exists. Let Flygt prove the effectiveness of their design before you are asked to pay for anything.

Although funding regulations require two bidders, the James Island Public Service District prefers Flygt.



The station was equipped with a 35HP VFD Control.



Interior of 35HP VFD Control.



Interior of Sump showing floating solids prior to N-pump being installed.

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