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Pump Changeout Stops Fouling, Saves Energy

The pumps at the Stony Brook Lift Station used to clog so often that crews for Suffolk County (N.Y.) Department of Public Works (SCDPW) anticipated an event as part of their weekly routine, said Ron Warren, system director of the Division of Sanitation, Operations & Maintenance.

"The clogging became predictable," he said. "Every week to ten days we'd have to go out there and free an impeller that had become jammed with rags or some other debris."



This recently installed liquid level control panel is a conductivity probe-based system that is fully compatible with the lift station's new SCADA system. Plans are to network eight stations with the SCADA to achieve a continuously monitored system.

The 3-mgd facility was built to serve the State University of New York (SUNY) when the campus at Stony Brook was smaller and generated less flow. The station now serves a much larger university that includes a major center and three outlying areas. Although it would appear the station's three 60-hp pumps had ample capacity, the size of these units and their variable speed drives contributed to the clogging problem during low flow periods (most of the day).

The station was designed with a 1,500-gallon wet well and three 60-hp end-suction pumps mounted horizontally in the dry pit. Approximately two years ago, when the pumps clogged as often as twice a week, SCDPW requested G.A. Fleet Associates, Inc., to recommend a solution.

After a review of the original specifications and spending a few months monitoring the station's flow, G.A. Fleet recommended replacing all three units with ITT Flygt N-Pumps. The new type of pump has an impeller with a volute that incorporates a special relief groove that prevents rags, high-fibrous material, grease or solids from clogging the pump.

G.A. Fleet further recommended changing the sizes of the three pumps to a combination of two 60-hp Model NZ3300 pumps to handle peak flows and a 20-hp Model NZ3152 jockey pump to




This 60-hp pump handles peak flows along with another identical pump. During low-flow periods, a third 20-hp pump takes over to reduce the station's energy consumption.

handle low flow conditions and reduce energy consumption. The upgrades also included a MultiTrobe probe-based liquid level control system that was compatible with SCDPW's SCADA system.

The station recorded a fairly typical 2.1 mgd flow through the new system's first month. A reduction of energy consumption was immediately noticeable.

"For the first 24 days the station was online, the 20-hp jockey pump operated 533 hours, compared to 25 and 17 hours each for the 60-hp units," Warren said.

Equally important, he added, there were no incidents of clogging. That, alone, saved \$240 in labor costs each time a two-man crew would have been dispatched to free up the old impellers. 

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