

Flygt N-Pump in Henderson, CO

Flygt N-pumps eliminate vibration and seal leaks at influent pump station

The influent pump station for the Williams-Monaco Wastewater Treatment Plant in Henderson, CO, receives an average flow of 3.5 million gallons per day (mgd), with spikes of 6 mgd on weekends. Operated by the South Adams County Water and Sanitation District (SACWSD), the plant serves more than 50,000 customers in a 65-square-mile service area north of Denver, with a collection system comprised of more than 250 miles of 8-inch to 30-inch lines.

In 2004, the Williams-Monaco WWTP underwent an expansion that increased plant capacity from 4.4 mgd to 8 mgd and enabled the facility to comply with more stringent regulations addressing nutrient, nitrogen, chlorine, and bacterial levels in the treated effluent discharged into the South Platte River. But these improvements coincided with the onset of recurring pump problems in the facility.

Scope

As part of the 2004 expansion, the SACWSD replaced a series of 1980s-vintage long-shaft pump motors with four 60-HP submersible pump motors, keeping the dry pit configuration of the old pumps in the basement of the three-level influent station. The pumps cycled in an alternating sequence, operating individually until demand called for the second pump, which is a common practice intended to equalize the wear on multiple pumps in a station.

Wear and age, coupled with vibration, air-locking, and inadequate cooling, contributed to the utility's growing maintenance issues. Foremost among the maintenance concerns was the erosion of the pumps' seal integrity, which resulted in leaks and accelerated bearing wear. Over time, a litany of other issues involving controls and communication problems, leaky seals, and inevitable breakdowns led the utility to purchase a fifth pump just to have a spare available at the plant whenever one of the four operating units had to be pulled and sent out for service.



South Adams County Water and Sanitation District (SACWSD) has experienced significant energy savings after replacing aging 60-HP long-shaft pumps with these Flygt 60-HP submersible pumps in a dry pit configuration.

END USER: Henderson, CO

CLIENT: Henderson, CO

ORDER DATE: 2013

COMPLETION: 2013

Repair costs had climbed from \$5,000 or \$6,000 per failure to as much as \$13,000 to repair a single pump, with maintenance costs for an eight- to nine-month period reaching 35 percent of the estimated pump replacement cost.

Solution

The Water Technology Group of Cogent, a Denver-based water and wastewater treatment and pumping systems specialist, recommended replacing the old 60-HP unit with a 60-HP Flygt N-pump.

Manufactured by Xylem, the high-performance Flygt pump delivers advancements absent in the older pumps, including a patented impeller known for its clog resistance, ability to handle modern trash, and energy-saving operation. The N-pump features double tungsten carbide seals designed to withstand thousands of hours of high-pressure operation under extreme conditions. A glycol-based, closed-loop motor cooling system provides more effective and efficient cooling than the plant water used to cool the old pumps. Engineered to reduce shaft deflection, Flygt N-pumps also greatly reduce the vibration at the root of many of the repairs needed by the old pumps.

Result

The high efficiency replacement pump's performance claims soon became evident through the monitoring provided by the utility's SCADA system.

The Flygt brand N-pump immediately reduced energy consumption, drawing 25 to 35 percent fewer amps as compared to the 60-HP unit it replaced.

The significant energy savings and improved operational performance led the SACWSD to replace the rest of the existing head works pumps over the course of three months with sustained high efficiency Flygt N-pumps.



View of the Control Bay at the Williams Monaco Wastewater Treatment Plant.



Influent bar screens complement the new influent station pumps, which improve solids handling and energy efficiency.

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