

SUMMARY

Owner: Town of Trumbull, CT
Project: Beardsley Pump Station
Consultant: Arcadis
Contractor: Kovacs Construction

Pump Type:
 • Vertical Dry-Pit Submersible

Pump Model:
 • Two Xylem Flygt NT 3312 with 385hp motors
 • Two Xylem Flygt NT 3202 with 67hp motors

Results: Reliable equipment operation over an extremely wide range of demand resulting in significant cost savings.



Managing a Wide Range of Flows with Creative Teamwork and Xylem NT Pumps

The Town of Trumbull, CT was having operational issues with their Beardsley Pump Station due to aging equipment and their inability to handle the peaking factor between dry and wet weather flows. As the largest and most critical pump station in Trumbull, Beardsley provides two thirds of the Town’s flow to Bridgeport for treatment.

PROBLEM:

With such large varying flow swings, the pump station’s collection system had significant inflow and infiltration issues. The pump station required reliable operation over a very wide range of flows. With the current equipment, the pump station had limited flexibility to pump over the entire required range.

The existing pump station was equipped with two Xylem Flygt A-C pumps, which had been installed over 30 years ago. Although they served the town well, these pumps were reaching the end of their useful lives. Additionally, there were other flow conditions identified to be handled by the Pump Station that could not be accommodated by a single size pump option. The pump station needed an upgrade.

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Left: For 30 years Beardsley Pump Station had been equipped with Xylem Flygt A-C pumps, which could no longer keep up with demand.





Above: The consultant and contractor assist in the planning and installation of the new Flygt NT pumps.

Middle: The pumps overlap in their capability, but never exceed their acceptable ranges as stated in guidelines.

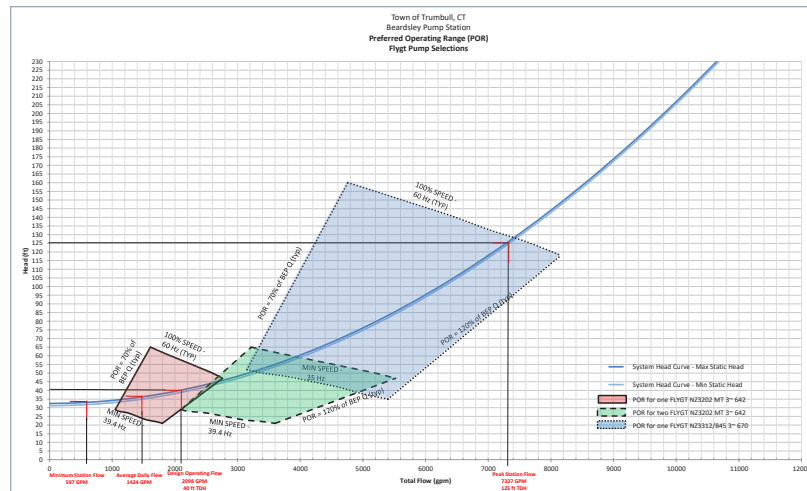
Below: The pillar construction was exceptionally strong to meet Flygt's strict guidelines.

SOLUTION:

A collaboration of consulting engineers and G.A. Fleet decided to use two different size pump models and VFDs to handle the flow swings. The consultants came up with an operating scheme that would save energy for the town by utilizing the jockey pumps 80% to 90% of the time on VFDs, and relying on a single large pump to handle peak flow events. The pumps were selected to have some overlap of flow capability, but the entire range is covered by pumps operating within acceptable limits according to Hydraulic Institute guidelines.

Both size pumps also featured the following options:

- Flygt N-impellers – the only known true non-clog impeller type in the wastewater industry for modern collection system trash, which includes rags, wipes, stringy material etc.
- Hard-Iron™ (high chrome) impellers, which typically have a life span about 10 times longer than standard cast iron impellers.
- Premium efficiency motors.
- Closed loop cooling systems utilizing an internal cycling of glycol/water mixture to cool off motors in a dry-pit configuration. No external water source or sewage circulation is required, resulting in extended motor life and less maintenance.



RESULTS:

The new pumps were started the week of March 6, 2020 with outstanding results. The most important part of installing vertical dry-pit pumps is making sure the concrete pillars below the pumps are exceedingly strong. Flygt has very strict guidelines on the pillar design and the contractor's final construction of the pillars and overall pump installation was perfect. These are the largest horsepower drypit submersible Flygt N impeller pumps in the state of Connecticut with 385hp motors.

The upgraded pump station utilizes a flowmeter to confirm pump output at varying VFD speeds. All the pumps are operating right on their promised flow rates and pressure points. Both the system and pump curves are very accurate to the theoretical calculations and factory testing. There are no vibration issues of any kind

Overall, the Town of Trumbull is ecstatic with the quality of the equipment and service provided. The Beardsley Pump Station is now more cost efficient and ready to handle the Town's needs for the next 30 years, or more.



RESOURCES:

