



# ITT

Water & Wastewater  
Case story | Wastewater treatment

## Variable-frequency drive and Flygt type N hydraulic impeller

Reduce incidence of unclogging requirements for the City of Lévis.



In the spring of 2004, the City of Lévis, Québec established a new residential development near the Breakeyville golf course. To provide service to the new area, designers had to plan and install a new pumping station for lifting domestic sewage and piping it to the main pumping station. The capacity of the new station was set at 7.5 l/s at 6.8 m head. The company ITT Water & Wastewater suggested and supplied Flygt CP 3085 MT, 2.2 HP pumps and no. 436 hydraulic impeller for the new pumping station, named Les Boisés.

With the continued expansion of this housing development, the wastewater volume passing through the new pumping station has increased gradually but steadily, and given relatively low infiltration and collection rates, the pumping station processes a significant quantity of solid matter. This has resulted in frequent clogging issues affecting both pumping units and requiring regular intervention by the City of Lévis operating staff. Consequences for the City arising from these frequent interventions have included a dramatic increase in operating costs and non-compliance with overflow environmental requirements at that pumping station. Needing to take action to resolve this most unusual situation, the City of Lévis moved to contact representatives of ITT Water & Wastewater to find a solution to the frequent clogging of the pumps at the new pumping station.

ITT Water & Wastewater suggested conducting a test to start by replacing the hydraulic impeller on one of the two pumping units with a Vortex impeller. The results were inconclusive in that the clogging incidents continued even with the new hydraulic impeller.



Next, the company suggested both replacing the Vortex hydraulic impeller with a type N hydraulic impeller and installing a Flygt ACS550 variable-frequency drive (VFD) equipped with cleaning sequence to control the other pumping unit. Testing was carried out for a 30-day period. In the end, equipping the pumping unit with the type N hydraulic impeller did not help to reduce unclogging to a satisfactory level for the operating staff. However, results for the pumping unit controlled using the VFD were conclusive: no unclogging by operating staff was required, and the VFD performed multiple cleaning cycles.

The cleaning cycle of the Flygt ACS550 VFD consists of completing up to 10 operating cycles within a period of a few seconds in normal and reverse rotation in the pumping unit in order to release any solid matter from



Flygt ACS550 Variable-frequency drive (VFD).

*Engineered for life*

the hydraulic impeller. This cleaning cycle is performed whenever the torque required by the pumping unit exceeds a limit programmed into the VFD.

Following 30 days of testing with this configuration, the City of Lévis opted to purchase and install a second VFD for its other pumping unit. With both VFDs in place, the City of Lévis and its operating staff have been very pleased with the results.

With the help of ITT Water & Wastewater, the City of Lévis was able to significantly reduce requirements for operating staff intervention and return to compliance with overflow environmental requirements at its new pumping station.

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#### **What can ITT Water & Wastewater do for you?**

Integrated solutions for fluid handling are offered by ITT Water & Wastewater as a world leader in transport and treatment of wastewater. We provide a complete range of water, wastewater and drainage pumps, equipment for monitoring and control, units for primary and secondary biological treatment, products for filtration and disinfection, and related services. ITT Water & Wastewater, headquartered in Sweden, operates in some 140 countries across the world, with own plants in Europe, China and North and South America. The company is wholly owned by the ITT Corporation of White Plains, New York, supplier of advanced technology products and services.

