

Water Treatment Plant Upgrade & Systems Integration

CLIENT / City of Laval, Quebec, Canada

DAILY CAPACITY / 110 000 m³ /day

VALUE / 9 million \$

To provide clean drinking water and meet the needs of a growing population, the City of Laval, Quebec upgraded its three water plants as part of a life cycle project. Improvements were made to the filtration and disinfection efficiency and to the pumping and automation systems to ensure greater control over the water treatment processes.



PROJECT Filtrum Construction was awarded the \$9 million contract for upgrades to one of the three facilities, the Sainte-Rose water treatment plant (110 000 m³ /day). As specialists in mechanical process, electricity and process control systems, Filtrum was tasked with the complex integration of systems over the 22-month project. One of the biggest challenges during the planning and execution was to keep the plant running, which was particularly crucial given that it supplies a local hospital.

SCOPE The scope of Filtrum's work was extensive and included: installation of an advanced ozone generator, a new electrical service entrance (4 000 amps), an upgrade to a more sophisticated SCADA system with a thin client architecture and reinforcing structures to house new equipment. Most of the mechanical engineering, automation and electrical work was completed by Filtrum's in-house staff of engineers, technicians, programmers, pipe fitters and electricians.



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Scope Details

MECHANICAL PROCESS

- Replaced a lime system, which involved installing a parallel temporary lime system with a capacity of 234 kg /hr
- Replaced the complete ozone generation system with a new 385kg /day unit
- Installed a new 30-inch flowmeter on the plant's main output pipe in a very short timeframe
- Added two new 300 HP motor pumps
- Replaced 12 filter valves
- Added a new polymer feed system

AUTOMATION

Replaced an existing 8 000 tags SCADA (Supervisory Control and Data Acquisition) Intellution FIX32 with a GE iFIX including:

- Historian
- Redundancy
- A thin client architecture

Implemented an ethernet communication network including:

- 90 IP addresses
- Redundancy
- Wifi
- Optical Fiber
- CAT 6 cable

Programmed a Schneider Quantum redundant PLC for the following processes:

- Filtration
- Distribution (High pressure pumps)
- Emergency mode (Entire plant start-up sequence after a power failure)
- Chemical dosage

ELECTRICITY

- Replaced a 4,000 amp electrical switchboard while keeping the plant running
- 1 000 KW generators and a 3 000 amp inverter
- Modified the building to accommodate new equipment