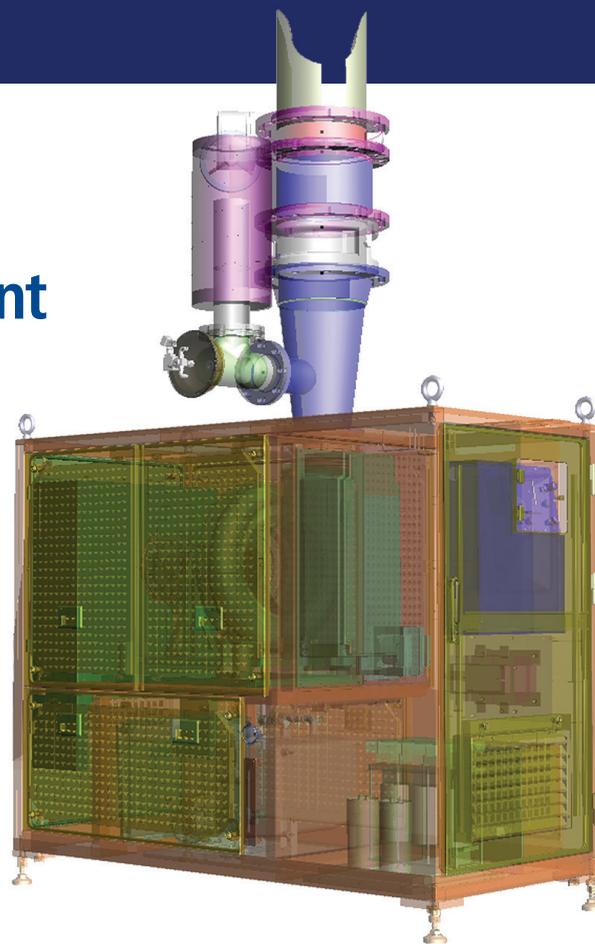


OCWA Innovation: Extending wastewater treatment capacity while reducing energy costs by up to 75%



The opportunity

Wastewater treatment plant capacity is typically constrained by the supply of oxygen to microorganisms that metabolize organic and inorganic substances present in wastewater. And traditional aeration pumps are big energy consumers. OCWA's goal: Deliver more dissolved oxygen to its clients' treatment facilities while using less energy.

How OCWA did it

After identifying oxygen supply as the biggest improvement opportunity, OCWA's design team looked at all aspects of aeration in the biological treatment process.

- ◆ The decades-old blower pumps used to supply air were energy inefficient and required frequent maintenance. OCWA considered six replacement technologies before selecting turbo blowers from Quebec-based APG Neuros Inc.
- ◆ Older systems typically use coarse bubble diffusers to deliver air to aeration cells—but smaller bubbles offer more surface area for oxygen transfer to the microorganisms. For this reason, OCWA selected fine bubble replacements for existing diffusers.
- ◆ Traditional blowers operated 24/7. But microorganisms only consume 2-3 milligrams of dissolved oxygen per litre; higher concentrations create unnecessary system wear and waste energy. OCWA used dissolved oxygen probes in the aeration cells to control the turbo blowers, matching air volume delivered to the demand for oxygen.
- ◆ OCWA logged energy consumption at all sites after completing the system upgrades.

Installation of more efficient technology and process controls resulted in maintenance and energy savings. *See detailed results on page 2.* New upgrades are ongoing at OCWA-managed sites.

HIGHLIGHTS

CLIENTS:

Various—see table on page 2

ISSUE:

Wastewater capacity and costs

APPROACH:

Complete aeration upgrade

RESULTS:

23-75% energy savings

PAYBACK

3.6-7 years

The results

Based on OCWA's energy consumption logging, installed sites showed the following results:

Site	Start-up	Energy savings (%)	Payback (years)*
Black River-Matheson	Mar-11	70-75%	3.6
Carleton Place	Nov-10	35-40%	4-7
Orangeville	Feb-08	>30%	4-7
Port Elgin	Dec-11	>23%	4-7
West Perth	Dec-11	36%	4-7
Kingston	Apr-10	>40%	4-7

* Not including maintenance savings

These aeration upgrades will continue to produce energy and maintenance savings for OCWA's clients long after the investments are amortized. And the clients can be confident that, as new technologies appear, OCWA will be among the first to prove and recommend them in situations where they will improve and extend capacity and lower costs.

OCWA Fast Facts

- ◆ Established in 1993
- ◆ Canada's largest O&M provider (820 water and wastewater facilities)
- ◆ Over \$5 billion in client assets under management
- ◆ 7.8 million population served
- ◆ Litres treated/day: Water—800M, Wastewater—1,100M
- ◆ 535 operators, 270 centralized support and training staff
- ◆ Compliance, process engineering and energy optimization consulting
- ◆ Construction support and integration for new facilities and upgrades
- ◆ Pilot project sponsor for water and wastewater innovations
- ◆ Unmatched community emergency response capabilities
- ◆ 98% client contract renewal rate

**If your business is water,
you need to know OCWA.**

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OCWA's engineering group supports O&M operations at 820 managed facilities across Ontario.

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 "We're delighted with the OCWA relationship and results. It's great to work with a vendor who is proactive about helping us save money."

Dave Young,
 Director of Public Works,
 Carleton Place

