ALBERTA INNOVATES

ONE HEALTH

ENVIRONMENTAL INNOVATION

WATER INNOVATION

Field verification of a scalable and cost effective advanced electrochemical oxidation vortex system for water treatment and phosphorus removal

Alberta's water resources face increasing strain from growth, industry, and climate change, with excess phosphorus fueling harmful algae blooms. This pilot project tests Acti-Zyme's E.C.O. Vortex system—an electrochemical water treatment technology that reduces phosphorus and contaminants without chemicals. Water flows through a vortex tank and filtration stage, enabling efficient treatment. Pilots at both a wastewater and a drinking water plant will assess performance, energy use, and scalability. The project aims to validate regulatory compliance, support commercialization, and build trust in sustainable treatment solutions, positioning Alberta as a leader in clean water innovation and resilience.

Acti-Zyme Since 1954

FUNDING DETAILS

RECIPIENT:
ActiZyme Products Ltd.

PARTNERS:
Alberta municipalities

TOTAL BUDGET:
$668,945

AI FUNDING:
$249,000

PROJECT DATES:
SEP 2024 – MAY 2025

PROJECT TRL:
Start: 6
End: 8

APPLICATION

This project will pilot the E.C.O. Vortex system at two Alberta sites—a municipal wastewater treatment plant and a potable water facility—to validate real-world performance. Implementation partners will assist with system setup, operation, and integration, while coordinating with regulators and overseeing compliance. Weekly sampling and third-party lab analysis will confirm treatment outcomes. These demonstrations will showcase E.C.O Vortex's ability to remove phosphorus and other contaminants, providing data for broader adoption in municipal, industrial, and community water systems.

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PROJECT GOALS

- Validate the E.C.O. Vortex system under real-world conditions at both a municipal wastewater facility and a potable water treatment plant.
- Demonstrate E.C.O. Vortex's ability to remove phosphorus and other contaminants including phosphorus, CBOD, TSS, ammonia, and E. coli.
- Performance benchmarking against existing treatment practices, comparing costs for energy, chemicals, sludge handling, and labor. These two site evaluations will quantify both treatment improvements and cost savings, highlighting the ECO Vortex's value proposition.
- Inform best practices to support regulatory approval, commercial adoption, and long-term sustainability in Alberta's water and wastewater treatment sectors.

BENEFITS TO ALBERTA

- Reduced phosphorus and other contaminants without the use of water treatment chemicals, lowering treatment costs from ~$1.20/m³ to ~$0.45/m³ translating to savings for Alberta municipalities.
- Job creation in manufacturing, operations, and services, strengthening Alberta's clean-tech workforce.
- Reduced sludge production by up to 80%.
- Reduced nutrient pollution to waterways.
- Improved water security in small, rural, and Indigenous communities by offering compact, low-maintenance solutions.

6 Publications

3 New Products/Services

2 Field Pilots

25-30 Future Jobs

CURRENT STATUS

NOVEMBER 2025

Project recently kicked off.