Use of Hydrogen Peroxide to Reduce Aeration Energy Demand in Wastewater Treatment Plants

Grid Innovation Fund Project Details

Lead Proponent: University of Western Ontario

Partners: US Peroxide, MITACS, Municipality of Middlesex Centre

Strategic Area(s):	Enabling Non-Wires Alternatives, Electrification / Decarbonization
Project Total Cost:	$219,733
Year Contracted:	2020
Location:	London, Ontario
Economic Development:	N/A

Project Objectives

This project will explore the addition of hydrogen peroxide to biological wastewater treatment to reduce biological oxygen demand as well as provide dissolved oxygen. This approach aims to achieve up to a 30% reduction in aeration energy at municipal wastewater treatment plants.

The key objective of this project is the development of a hydrogen peroxide addition strategy to simultaneously reduce aeration energy requirements and chemically provide the required amount of dissolved air to biological wastewater treatment systems.

Expected Outcomes

If successful, this project will demonstrate the potential for significant energy savings in the wastewater treatment industry by adding hydrogen peroxide to biological wastewater treatment.

The major expected outcome is that the process-driven strategy, rather than aeration equipment-driven strategy, will result in reduced electrical power requirements and resulting electricity savings. It will also demonstrate that process changes can be combined with equipment modifications to achieve further savings. The project's expected outputs include:

- Proof-of-concept and validation at the pilot scale
- Optimized hydrogen peroxide dose and real-time control strategy
- Electricity savings