

Lystek



Addition of Lystek THP Extends Storage and Reduces GHG Emissions

ABOUT

St. Marys is a Town located about 40 kilometers northeast of London, Ontario in Perth County, with a population of nearly 8,000 residents. www.townofstmarys.com

CHALLENGES

- Regulatory guidelines increased to require additional on-site biosolids storage capacity (240 days) for wastewater treatment plants
- Increasing costs for biosolids management
- Desire to improve environmental performance of existing plant facilities

PROJECT DRIVERS

St. Marys WWTP selected Lystek THP as an advanced biosolids treatment technology, providing these benefits:

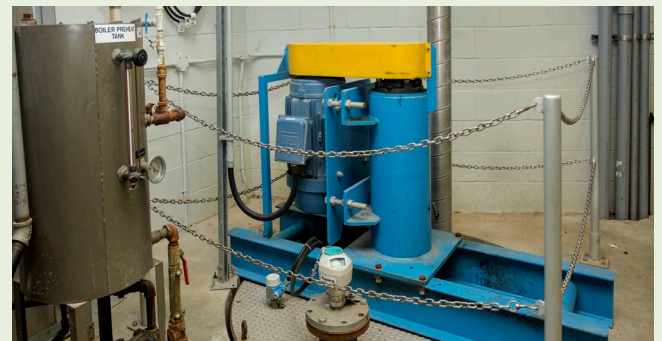
- Built upon the Town's existing low-solids liquid biosolids program by maintaining liquid product qualities
- Dramatic reduction in biosolids volumes and increase in biosolids storage capacity without adding new tanks
- Production of a Canadian Food Inspection Agency (CFIA) regulated fertilizer product (Class A quality) from biosolids for use on local farmland
- Flexibility in process – Lystek THP produces fertilizer from digested or undigested sludges

RESULT

- Reduced biosolids volumes by up to 75%
- Proven capabilities to optimized BNR processes and anaerobic digestion using LysteCarb and LysteMize respectively
- Production of Class A quality fertilizer, even after removal of anaerobic digesters due to aging infrastructure
- More than 15,000 tonnes of fertilizer sold and applied to local farmland

Town of St Marys, Ontario

St. Marys wanted to be at the forefront of wastewater treatment technology.



KEY METRICS

Population Served: 7,916

WWTP Rating: 5,560 m³ / day (1.5 MGD)

Lystek THP Processing Footprint: 74 m³ (800 ft²)

Lystek THP Module Size: 1 x LY3 (0.3 dry tons / hr)

Feedstock: Municipal biosolids (aerated)

Project Delivery Model: Technology & Equipment Supply

In 1990 the St. Marys wastewater treatment plant (WWTP) began anaerobic digestion of primary and secondary sludge. Digested biosolids were applied as a low solids liquid (3% total solids) soil amendment to surrounding agricultural land from April to November. This non-agricultural source material (NASM or Class B quality biosolids) was stored over the winter.

Liquid storage capacity at the WWTP became a concern when the Nutrient Management Act was amended in 2007, recommending 240 days of biosolids storage by 2009. With a maximum influent processing capacity of 5,560 m³ per day, the on-site storage capacity only provided about 90 days of storage.

In response to this regulatory change and increasing influent volumes at the plant, the Town of St. Marys retained their engineering firm, GHD (formerly Conestoga Rovers and Associates) to evaluate alternative sludge management strategies. Ultimately, GHD recommended the town implement a management strategy that integrated BNR, anaerobic digestion, and Lystek THP, ***“We believed this combination would provide the town with the most cost effective solution when both capital investment and lifecycle costs are considered,”*** confirmed Andrew Lugowski, P.Eng., Associate at GHD.



implemented to enhance the BNR (as an alternative carbon source) and anaerobic digestion (as an enhanced digestion feedstock) processes respectively using the hydrolyzed product. Ultimately, the WWTP was able to increase the capacity of the existing storage tanks from 90 days to 300 days and improve the quality and efficiency of the land application program.

The anaerobic digestion process was decommissioned in 2015 due to required infrastructure repairs. Lystek THP delivered operational security and savings to the Town with the ability for the WWTP to continue to produce a CFIA fertilizer quality product from the undigested feedstock. The Town elected to save cost on major repairs to their digester and continue operations without digestion.

Overall, implementation of Lystek THP at the St. Marys WWTP provided the Town with a stable and secure biosolids processing and management program. This technology extended capacity of existing storage and demonstrated ability to optimize WWTP operations, all while producing a saleable fertilizer (Class A biosolids) product. To date, the town has produced more than 15,000m³ of LysteGro fertilizer.

Lystek technologies offered multiple benefits to the Town's wastewater process and biosolids management, including:

- Reduced biosolids volumes by concentrating the solids (dewatering to produce a 10-15% liquid compared with previous 3% solids NASM)
- Optimization of both biological nutrient removal and anaerobic digestion processes through re-feeding of Lystek-processed product (LysteCarb & LysteMize), further reducing biosolids volumes and improving efficiencies
- Production of a CFIA regulated fertilizer product from biosolids, which is sold to local farmers

Lystek THP was implemented at the St. Marys WWTP in 2012. Both the LysteCarb and LysteMize processes were



About Lystek

Lystek International is the leading provider of advanced thermal hydrolysis solutions in North America, servicing over 60 utilities globally. Lystek offers turnkey solutions including technology supply, design-build and installation services, regional processing solutions, and comprehensive LysteGro sales and management. **Lystek THP[®]** is proven across a range of small, medium, and large communities. We work with public and private sector clients to enhance operations, reduce GHG emissions, and recover valuable nutrients and carbon from biosolids and organic feedstocks through the production of increased renewable biogas with **LysteMize[®]** and **LysteGro[®]** Class A quality biosolids fertilizers.