

Addition of Lystek THP Extends Storage and Reduces GHG Emissions

Town of St Marys, Ontario

Lystek
Nothing wasted.
Everything to gain.



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

ABOUT

St. Marys is a Town located about 40 kilometers north of London, Ontario in Perth County, with a population of approximately 7,200 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

SOLUTION

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

- Dramatic reduction in biosolids volumes and adherence to new regulatory guidelines for biosolids storage without adding new tanks



- Ability to develop an integrated sludge management plan, tying together biological nutrient removal (BNR), anaerobic digestion and Lystek THP to optimize nutrient recovery and reduce greenhouse gas (GHG) emissions
- Production of a Canadian Food Inspection Agency (CFIA, or Class A) regulated fertilizer 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%
- Optimized BNR process and anaerobic digestion, when operational
- Production of (Class A) biosolids fertilizer, even after removal of anaerobic digesters
- More than **15,000 tonnes** of fertilizer sold and applied to local farmland

KEY METRICS

Population Served: 7,200

WWTP Rating: 5,560 m³ / day (1.5 MGD)

Lystek THP Processing Footprint: 74 m² (800 ft²)

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

Feedstock: Municipal biosolids (aerobically digested)

In 1990, the St. Marys wastewater treatment plant (WWTP) began operating with primary and secondary conventional activated treatment followed by anaerobic digestion of sludge. Digested biosolids were applied as a soil amendment to surrounding agricultural land from April to November. This non-agricultural source material (NASM or Class B) was stored over the winter.

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 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 at the plant. 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.

The Lystek system 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 LysteMize and LysteCarb re-circulation options were implemented to enhance the BNR and

anaerobic digestion processes at the plant. Ultimately, the WWTP was able to increase the capacity of the existing storage tanks from 90 days to 300 days.

In 2015, the anaerobic digestion process was taken offline due to required infrastructure repairs. Lystek THP was able to continue processing biosolids at the WWTP that were not anaerobically digested and meet the same quality parameters for use as a fertilizer product (Class A biosolids). The Town elected to save cost on repairs to their digester, and continue operations without digestion, leaving Lystek THP as its primary biosolids process option.

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, life and optimizing various treatment processes, all while producing a saleable fertilizer (Class A biosolids) product. To date, the town has recycled more than 15,000m³ of LysteGro fertilizer produced from biosolids to local farmland.



About Lystek

Lystek is a leading provider of Thermal Hydrolysis solutions for the sustainable management of biosolids and organics. The multi-use, award-winning Lystek system reduces costs, volumes and GHG's by converting municipal and industrial wastewater treatment facilities into resource recovery centers. The technology transforms organic waste streams into value-added products and services, such as the patented LysteMize® process for optimizing digester performance, reducing volumes and increasing biogas production; LysteGro®, a high-value, nutrient-rich fertilizer and LysteCarb®, an alternative source of carbon for BNR systems.