



## From Demo to Full-scale Operation

### ABOUT

The City of Guelph is a mid-sized urban centre located in Southwestern Ontario in Wellington County, along the Grand and Speed Rivers. [www.guelph.ca](http://www.guelph.ca)

### CHALLENGES

- Increasing quantity of biosolids due to population growth and rising costs of landfill disposal
- On-site biosolids composting operations failing to meet regulatory requirements and causing operational burden

### PROJECT DRIVERS

The City of Guelph participated in Lystek's first demonstration of the Lystek THP technology in 2003 with Guelph purchasing the technology and commercial operations handed over in 2008. Lystek THP provides the Guelph WWTP with numerous benefits:

- Lystek demonstration exceeded performance objectives
- Interest in a solids processing technology that augmented the dewatered biosolids program utilizing the existing belt filter presses on site
- Looking for a technology with a small footprint that could be accommodated within existing building space
- Commercial-scale implementation allows for on-site production of a fertilizer (Class A quality) product, regulated by the Canadian Food Inspection Agency (CFIA)

### RESULTS

- Diversification of biosolids management program
- Production of a saleable fertilizer from biosolids
- Program contributes to local circular economy with return of nutrients to local agricultural lands and reduces the City's carbon footprint

### Guelph Wastewater Treatment Plant Guelph, ON

*"The City of Guelph wanted a new biosolids processing technology that would take us well into the future"*

Kiran Suresh,  
Former Plant Manager of Wastewater Services



### KEY METRICS

Population Served: 152,963

WWTP Rating: 64,000 m<sup>3</sup> / day (16.9 MGD)

Lystek THP Processing Footprint: 74 m<sup>2</sup> (800 ft<sup>2</sup>)

Lystek THP Module Size: 2 x LY6 (1.2 dry tons / hr)

Feedstock: Municipal biosolids (anaerobically digested)

Project Delivery Model: Design-Build-Own-Operate-Transfer (pilot operations to commercial transfer)

Guelph is a mid-sized City in Southwestern Ontario that is rapidly growing as a result of its diversified economy and proximity to the Greater Toronto Area. The Guelph wastewater plant produces approximately 22,046 tons of biosolids (~20% solids) annually. As an innovative and leading “green” city, Guelph had invested early in composting technology for treatment of its biosolids at the WWTP. However, the composting program was unable to meet changing regulatory requirements for land application of biosolids in the early 1990s and was subsequently decommissioned.

In 1996, the City developed a new Biosolids Management Master Plan to develop a strategy that would be “economically viable, meet regulatory requirements, be able to be maintained in the long term, and that is supported and endorsed by stakeholders and, ultimately by City Council.” **“We wanted a new biosolids processing technology that would take us well into the future,”** says Kiran Suresh, former Plant Manager of Wastewater Services.

Around the same time, Lystek THP was in its infancy in a microbiology laboratory at the nearby University of Waterloo. In 2002, the City entered into an Agreement with Lystek to implement a demonstration project at the WWTP. One Lystek THP Module was installed at the end of the solids treatment train following the existing belt filter presses, treating a portion of the solids at the WWTP. The initial pilot project demonstrated the ability of Lystek

THP to transform dewatered biosolids into a fully pumpable 14-17% solids liquid product that meets the CFIA’s requirements for a fertilizer product (US EPA Class A biosolids equivalent).

As a result of the successful pilot project, the City approved an ownership and operating agreement in 2008, delivering Lystek its first commercial installation. At this time, a second Lystek THP Module was also installed to increase the City’s on-site biosolids processing capacity beyond the pilot scale.

Continued pilot work demonstrated that re-feeding Lystek-processed biosolids to the anaerobic digesters on site improved biogas yield by more than 40% and increased volatile solids reduction by more than 35%.



The City has leveraged Lystek THP to produce a CFIA regulated fertilizer from biosolids. **“The addition of the state-of-the-art Lystek solution to our wastewater treatment plant operations is playing a vital role in contributing to our goal of being a progressive industry leader in biosolids management,”** confirms Suresh.

While the City owns and operates the technology, Lystek has continued to provide fertilizer management and operations support services to the City since 2002. As WWTP flows increased, the City also began to utilize Lystek’s regional facility, the Southgate Organic Material Recovery Centre, as an off-site processing option. This ensures 100% of the City’s biosolids are beneficially used.



**“We liked the fact that Lystek is a standalone technology with a small footprint that does not interfere with the general plant processes,”**  
*Tim Robertson, Division Manager of Wastewater Services*

### 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.