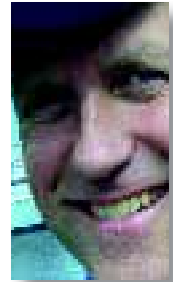


by Paul van der Werf

*"Discharge from the biofilter is directed to a 35 meter stack prior to discharge to the atmosphere."*



# Guelph 2.0

A look at the City of Guelph's new composting plant

The City of Guelph has had an "occupy" groove for as long as I can remember. During my evermore distant university days it was full of ardent lefties, some with good ideas about how to better take care our environment. The university's imprint looms large in this city and in my mind was a reason why in 1996 it was one of the first in Canada to collect and compost food wastes.

Guelph is a pioneer in Canadian composting.

Over time residents enthusiasm for the program continued to be strong but the ability to successfully manage the organic waste waned to the point where the facility had to be shut down and difficult choices needed to be made about what to do with the organic waste.

Mayor Karen Farbridge wrote in a recent blog posting that what went wrong had to do with facility design, asset management, technology and operational practices. In a nutshell what was state of the art 20 years ago is obsolete today. As well, the amount of facility upkeep was underfunded and facility operation was not always carried out to the highest level. This ultimately led to the poor management of odours and the demise of that facility.

Guelph got back into the compost processing game in late September when it opened its new composting plant.

The Phoenix of Greek mythology is the standard cliché invoked whenever something is said to be rising from the ashes. However, it does little justice to what has really happened in Guelph.

While I often think of All Treat Farms in Arthur as "ground zero" for large-scale composting in Canada, I think of places such as Guelph as being the industry's philosophical (and without getting too flaky) its spiritual heart. When Guelph's plant closed its doors it was more than just a facility closing.

### The process

The new facility, which cost about \$33 million to construct, is built over top of the same footprint as the previous one. Where composting channels once stood, the Netherland's Christiaens Group B.V. composting tunnels are now filled with Guelph's food wastes. The old curing hall has been retrofitted and retains its old use. This approach mimics the industry trend to move away from moving-part-intensive composting



Organic material being tipped onto the floor on the opening day of the new compost facility.

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## ORGANIC MATTERS

technologies to what I describe to the uninitiated as large transport-trailer-sized concrete tunnels.

The organic waste is processed for a total of six weeks and focuses, as Henk Roeven (a Technical Director at Christiaens) points out, “to result in better quality decomposition by maintaining optimal composting parameters.” This includes Phase 1 and 2 composting tunnels, with Phase 3 occurring in the aforementioned curing hall.

“Our technology is designed to compost wastes at 55°C plus for three days and then reduce it to 45°C for the remaining time,” says Roeven. “This allows both thermophilic and mesophilic microorganisms to decompose the waste. The bonus is that the lower temperatures result in reduced ammonia production.”

The new facility was designed first and foremost to manage the odours produced by the composting process — to provide neighbours with appropriate and tangible comfort that the facility would not result in odours reaching their door step and to meet the Ministry of the Environment’s strict and difficult (some say impossible) to attain 1 odour unit at the property line. The focus of the design is to manage the amount of odorous gases produced and then deal with these gases using technologically sophisticated equipment.

The odorous off-gases are directed to a biofiltration system that uses artificial media and manufactured by Guelph’s own Biorem.

A key design feature to ensure that the composting off-gases enter the biofilter at less than 40°C (i.e., the biofilter’s upper tolerance). This is challenging in the summer time and so the facility is designed with a composting off-gas bypass that’s directed to a heat exchanger and cooling tower.

“A key operating advantage to using Biorem’s synthetic media,” says Roeven, “is that it has no background odours, unlike wood biofilter media.” It’s estimated that these types of biofilter media result in a discharge of less than 50 per cent of those using wooden biofilter media.

Finally the discharge from the biofilter is directed to a 35 meter stack prior to discharge to the atmosphere.

This facility can be characterized as a fourth generation facility (i.e.,



The compost process can be controlled via computer and operators can access the system remotely.

1. open windrow, 2. channel systems, 3. tunnel systems, 4. tunnel systems with stack) and represents the state of the art.

It’s being operated by Aim Environmental Group out of Stoney Creek that also manages the 90,000 tonne per year composting facility (using the same technology) in Hamilton, Ontario.

So once again Guelph finds itself atop the composting pile with the bruises from lessons learned hopefully incorporating advancements that will make its plant Canada’s most technologically sophisticated composting facility. It can take great pride in its resilience in the face of a long period of adversity and challenges to once again manage organic wastes at its own facility.

**Editor’s note:** This magazine will track the performance of the plant and report back to readers in future editions. ♻️

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