

Biodigester



Quick Overview

- The Township of Georgian Bluffs and Township of Chatsworth owns and operates the Derby biodigester facility.
- It is comprised of;
 - a hauled sewage receiving
 - a dewatering process
 - an anaerobic digester system
 - as well as a lagoon system
- The site receives sewage and organic waste such as vegetable waste, fats oils and greases (FOG), processing waste for supplements, hospital food waste and food waste from Base Borden.





Operations Department



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What is a biodigester?

- A biodigester is like a mechanical stomach. It is fed with organic material which is broken down (decomposed) by micro-organisms (bacteria) in an oxygen-free (anaerobic) environment to produce a renewable energy called biogas (methane and carbon dioxide) and other material that is mainly used as a fertilizer.



What materials can the biodigester process?

- Any organic material can be used to feed a biodigester, but some materials work better than others because they are easier for bacteria to digest.



What is the production capacity of this biodigester?

- The digester has been designed to produce about 3000 cubic metres per day of biogas (64% methane, 35% carbon dioxide), at full capacity with good organic material.
- The biogas produced over one week is the equivalent of 42,000 +/- kilowatts of electricity.
- In a typical day we do approx. 600 cubic metres per day which is approx. 1200 kilowatts of electricity per day.



How is the biogas used

- The renewable biogas is used to run the generator to produce the power back to the grid.
- The carbon dioxide (CO₂) produced is from a renewable resource, it is considered climate change neutral, as the amount of CO₂ entering the atmosphere isn't increasing.



How long does it take to process the material?

- The length of digestion depends on the amount of organic material fed to the biodigester. On average, the material spends 30 days in the digester.



Do biodigesters stink?

- However, biodigesters can produce hydrogen sulphide, which smells like rotten eggs. This biodigester has a filter that reduces the hydrogen sulphide from the gas.
- Unless the filling tank is opened to add manure or other biodigestable material or for repairs, there should be little odour associated with its operation.

What are the benefits of using a biodigester?

- A biodigester produces biogas, which is a renewable resource that can be used as a substitute or replacement for natural gas.
- Biogas can be used to reduce costs or to generate revenue streams by:
 - Powering an electrical generator to provide electricity back to the grid
 - Using the remaining product as organic fertilizer on agriculture lands
 - Cleaning gas and injecting into the natural gas grid



Are biodigesters affordable or economical for producers?

- There are different factors that determine if a biodigester operation is affordable or economical:
 - Amount of displaced methane from landfills
 - Price of bio-methane for the natural gas system
 - Feed electricity back into the power grid
 - Help reduce organic waste in landfills
 - The Ontario government is currently in the process to eliminate organic waste going into landfills

