



ORGANIC ENERGY

Since December 2013 Lethbridge Biogas LP has been operating their off-farm cogeneration facility, using thermal energy from the production of electricity to heat the entire biogas plant.

The idea for Lethbridge Biogas LP was sparked by Thane Hurlburt of ECB Enviro North America Inc. Hurlburt researched biogas designers-builders, ultimately choosing PlanET - the only biogas company in Canada with a number of success fully executed projects. ECB developed the project and prepared the land, readying the site for PlanET's construction team.

Additional funding was available to help turn Hurlburt's idea into reality. The entire project had a value of more than \$30M and received a non-repayable grant of \$8.2M from The Climate Change and Emissions Management Corporation (CCEMC). Further non-repayable grants totaling \$7.35M were received from the Government of Alberta, Department of Energy.

Given that the area around Lethbridge has the largest density of Intensive Livestock Operations (ILOs) in Canada, there are a wide variety of substrates available to feed into the Lethbridge Biogas plant. Currently the plant is processing dairy, hog & poultry manure, cheese whey, DAF/ peptone from hog and poultry processing,

AT A GLANCE

Operators: Lethbridge Biogas LP
Establishment: Lethbridge Biogas / Cogeneration Plant
Location: Lethbridge, AB

Why biogas?

Area around Lethbridge has the biggest density of intensive Live-stock Operations in Canada, presenting a need for sustainable manure management

Why PlanET?

PlanET is the only biogas company with a number of successfully realized projects executed in Canada

What use?

Processing of livestock manures and organic residues from food processing.

residues from the processing of potatoes and grain, as well as mixed organic food waste.

The plant uses much of PlanET's patented technology to process their substrates and achieve optimal biogas production.

Included in the design are 2 pre-storage tanks, 3 digester tanks and one end storage unit. PlanET Vario dry feeding technology is used, as well as PlanET's eco flow, PlanET's eco agitator and PlanET's eco cover plus. Two 1.425 MW capacity CHP's were manufactured by 2G, and one is equipped with Natural Gas and Biogas fuel-blending technology.

Of the electricity produced at Lethbridge Biogas, 5-10% is used for the parasitic load of the plant, with the balance feeding directly into the Alberta electrical grid.

In 2007, Alberta became the first jurisdiction in North America to pass climate change legislation requiring large emitters to reduce greenhouse gas (GHG)

emissions. The Alberta Offset System was created to allow projects that actually reduce GHG to actively market their carbon offsets to large emitters as a means to be in compliance with the climate change

legislation. The Lethbridge project is registered in the Alberta Offset System, and has the potential to reduce GHG emissions up to 225,000t of CO₂ by 2021.

Commissioning took place in late 2013 and the plant is already considering future expansions based upon the success of the initial phase. The facility is looking to expand by adding a thermal hydrolysis unit to allow for the safe processing of deadstock and other animal processing waste streams.

THE BIOGAS PLANT

Date of commissioning:

December 2013

- Substrates:**
- Dairy, hog & poultry manure,
 - cheese whey,
 - residues from potato,
 - mixed food waste

Solids charging system:

PlanET Vario, PlanET eco@flow

Pre-Storage Tanks:

Two 1,231 m³ pre-storage tanks

Digester:

Three digester tanks 3,927 m³ each

Wall and floor heating, submersible agitators, double membrane roof

Gas-tight effluent storage tank:

5,655 m³ gross volume, three submersible agitators, eco cover plus

CHP: Two 2G 1.425 MW engines



Front view of 2 x 1,426 kWel, 5 MVA transformers and a 5,000 A Switchgear (inside the building)

The ultimate build-out of this plant will include additional digesters, a fertilizer processing unit and an additional CHP.



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