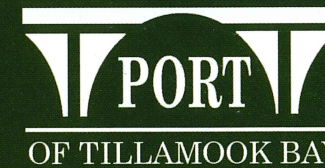


COW POWER



Port of Tillamook Bay Dairy Waste Digester

A decade ago, the Port of Tillamook Bay was on the cutting edge of green energy. With the establishment of the Darlene Hooley Digester in 2003, POTB turned the site of the historic blimp hangar that burned down in 1992 into a facility for converting manure from up to 4,000 dairy cows into electricity.

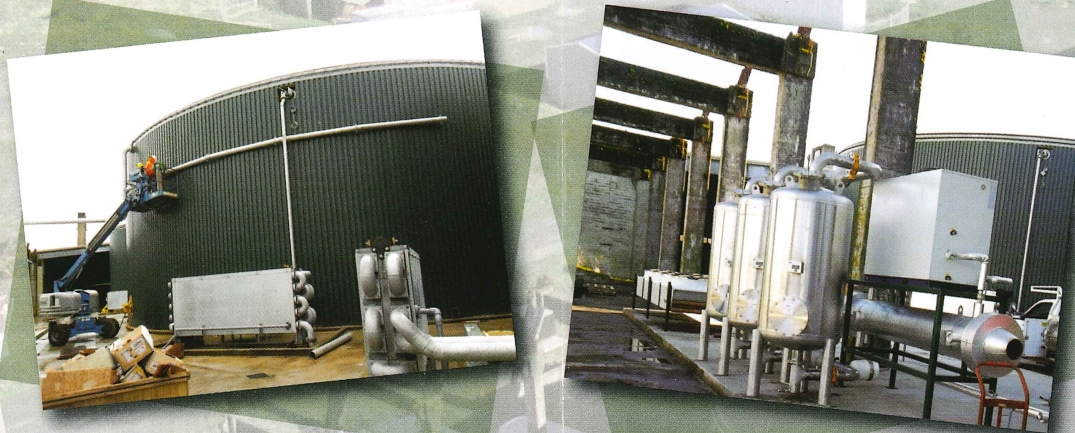
Since then, we have learned a lot about best practices in generating energy from dairy waste. Our new \$6 million digester, paid for by state dollars and funds awarded by the Federal Emergency Management Agency following the loss of our railroad in the storm of 2007, is once again on the cutting edge of digester technology.

Our new facility again places Tillamook County at the forefront of the green energy industry.

Our Beautiful GREEN Benefit

- ✓ The waste from a single cow yields 2.5 tons of Greenhouse Gas (GHG) each year.
- ✓ Our new digester plant will capture approximately 5,000 tons of GHG emissions per year, which is roughly equivalent to taking 1,000 passenger cars off the road over the same one-year period!

Turning greenhouse gases into sustainable green energy



Digester Specifications

- Anaerobic waste digester
- Two 200,000-gallon tanks, 36 feet in diameter and 28 feet tall for slurry processing
- Three fully covered 1-million-gallon digestion tanks, 84 feet in diameter and 28 feet tall
- One 2G Cenergy electricity generator
- A 4,320 sq.ft. building will be constructed where the separated solids will be dried, turned into usable fiber and bagged for sale and shipment
- Designed and built by DariTech of Lynden, Wash.
- The Port of Tillamook Bay is working with Tillamook Public Utility District, Bonneville Power Administration and Portland General Electric on electricity purchase agreements.

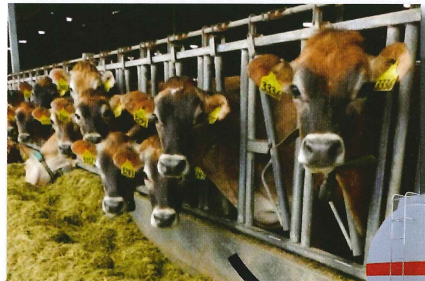
The New Facility Will:

- Receive raw manure from up to a dozen dairy farms or about 6,000 cows. The waste is delivered from the dairy to the digester in enclosed tanker trucks.
- Farms that adhere to processing requirements will pay no fee for using the facility. (Those using the old digester facility were required to pay a "tipping" fee.)
- Handle up to 140,000 gallons of dairy waste daily, compared to just 30,000 gallons per day at the old digester
- Generate 1 megawatt of electricity at full capacity, enough to support 1,000 homes
- Produce 120 cubic yards of dry fiber daily derived from the waste. This fiber can be used by commercial nurseries and bagged for sale to the public.
- Capture and consume tons of harmful greenhouse gases (methane) that otherwise would have gone into the atmosphere. Methane is over 20 times more potent than carbon dioxide as a greenhouse gas.

Benefits of the New Digester Facility

- Sequestration of harmful greenhouse gases
- Reduces or eliminates solid waste that must be stored on-site and applied to pastures by dairy operators, thereby reducing cost and environmental concerns
- Digester processing breaks down the heavy waste solids in the cow manure. The pathogen-free, nutrient-rich fluids that remain after processing can be trucked back to the dairy for application to pastures. This helps dairy farmers meet or exceed environmental rules regarding land application of dairy wastes. It also reduces odor and improves the efficiency of the fluids as a pasture fertilizer.
- The future fiber bagging facility could generate up to \$120,000/month in sales.
- The future fiber bagging facility may mix fiber with woody debris from local lumber mills to create a variety of other garden amendments.
- Biomass tax credits from the State of Oregon will reimburse the cost of hauling the waste to the digester.
- The sale of carbon credits to industries interested in lowering their own carbon footprint will help support digester operation.
- The sale of "green tags" to electricity providers who need them to meet green energy generation requirements will help support digester operation.
- The new facility and the future fiber operation will generate several new local jobs.

From Cow to Energy and Back Again



Step 1

Cow waste is collected in the dairy barn.



Step 2

Liquified waste is pumped into tanker trucks at the farm and transported to the digester.



Step 3

Liquid waste is pumped into the anaerobic digester tanks and processed to remove pathogens.



Methane gas is collected and converted to electricity to run the plant and to sell back into the energy grid.



Step 4

Sterilized processed liquid is pumped into trucks and returned to farms to fertilize pastureland.



Sterile waste fiber is dried for use as dairy cow bedding and nursery soil amendments.



PORT
OF TILLAMOOK BAY

**COW
POWER**

*Turning greenhouse
gases into sustainable
green energy*

www.POTB.org



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