

FACILITY FACT SHEET

Intermodal AD-25-2015-4 Microdigester

Facility Owner	Impact Bioenergy - Leased to Puget Sound Energy
Facility Contact	J. Allen
Facility Address	Bainbridge Island near Seattle, Washington
Telephone Number	206-250-3242
Digester Size	Intermodal, 8' x 20', 15,000 lbs. loaded weight
Annual Feedstock	Commercial Foodwaste, preconsumer and postconsumer
Annual Tons Recycled	25 tons per year with gas storage, gas lighting, and electric generator
Site History	Machine no. 4; resides on Bainbridge Island in Kitsap County.

Impact Bioenergy is leasing this machine to local food-service businesses to demonstrate community-scale bioenergy. Puget Sound Energy is sponsoring this initiative with a vision to scale up to serve the entire island of 23,000 people. The HORSE operated for a year at Harbour Public House, and is currently at Pleasant Beach Village, which includes The Manor House wedding venue. Probiotic Plant Food is returned to local farms that supply the food-service industry. The objective is to eliminate trucking and truck-associated air emissions on the island. This project demonstrates a circular economy - making this a hyperlocal community supported project.

Processing Equipment

Feedstock receiving and preparation tank that doses feedstock into the digester. Digester is heated and manually mixed using a hand operated mud pump with multiple suction and discharge locations. Digester chambers are partitioned to provide both CSTR and FFR digestion. Heating is automatic using a hydronic heating system. Gas is conditioned for moisture and sulfur removal and then stored in an unpressurized (0.15 psi) storage vessel. Gas is measured, pressure-regulated, and backflow prevented. A manifold is provided to a 5 KW generator inside the machine. Surplus gas burner with flame arrester and auto-igniter are integrated into the system. This system has been used to charge electric vehicles, charge rechargeable 120 volt portable power modules, and to barbeque food.

Process and Residence Time

Design is intended to optimize space efficiency and affordability, and to minimize moving parts (complexity and cost). Feedstock is blended, homogenized, and emulsified in a first stage metering tank. Light and heavy contaminants are removable. Dosing cycle and volume are adjustable. Digester hydraulic residence time is 30 days. Digestate discharge is automatic based on displacement method. There are two separate manifolds for gas and liquid. Sampling and condensate valves are provided in a number of locations. Maximum energy output is 15,000 BTU per hour. Maximum digestate production is 130 lbs. per day (16 gallons per day). Some of the digestate is sold as a liquid plant food and some is dried using a solar drying bed.

