

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N821067490

FACILITY: Generate Fremont Digester, LLC		SRN / ID: N8210
LOCATION: 1634 LOCUST ST, FREMONT		DISTRICT: Grand Rapids
CITY: FREMONT		COUNTY: NEWAYGO
CONTACT: Leon Scott , Facility Manager		ACTIVITY DATE: 05/12/2023
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: On-site compliance inspection		
RESOLVED COMPLAINTS:		

Facility Description

Generate Fremont Digester (GFD) is a complete mix anaerobic digester facility located in the City of Fremont. The facility uses a variety of food waste materials as feed stock in the digesters to generate gas. The gas that is generated is combusted in the two (2) reciprocating internal combustion engines for electricity production. The facility has the capability to also combust the gas in a boiler as well.

Regulatory Analysis

GFD is currently operating under permit to install (PTI)I No. 378-08B. PTI 378-08B established synthetic minor limits for Carbon Monoxide (CO), Sulfur Dioxides (SO₂), and Nitrogen Oxides (NO_x). The engines are subject to the Standards of Performance (NSPS) 40 CFR Part 60 Subpart JJJJ for Spark Ignition Internal Combustion Engines and to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subpart ZZZZ. Compliance with Subpart ZZZZ is demonstrated via compliance with subpart JJJJ. The boiler is subject to the provisions of NSPS 40 CFR Part 60 Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units.

Compliance Evaluation

Below is an evaluation of compliance based on PTI No. 378-08B. The facility initially provided requested records on May 31, 2023. Review of the records showed exceedances of gas usage, which was determined to have been associated with a formulations error in the spreadsheet. A corrected spreadsheet was provided on July 27, 2023.

EUWASTETRANS

Waste transfer station with biofilter control. This transfer station is comprised of a building for receiving the trucks which pump or dump the waste feedstock into the digester receiving system. The building is operated under negative pressure during truck unloading operations and the evacuated air is to be routed through a biofilter.

EUWASTETRANS requires a PMP to be implemented and maintained. GFD was required to submit an updated plan within 90 days of issuance of the permit. GFD submitted an acceptable plan to the AQD on September 13, 2022.

In addition to the PMP, EUWASTETRANS also requires a plan for how odors will be minimized during all startups, shutdowns, and malfunctions. GFD submitted an acceptable plan to the AQD on September 13, 2022.

EUWASTETRANS requires that the biofilter be installed, maintained, and operated in a satisfactory manner. Part of the proper operation requires the biofilter be operated within specified operating parameters including temperature, humidity, pressure and/or oxygen levels. Per records, GFD is tracking the temperature and humidity, as required. For the records reviewed, the humidity and temperature readings were within the established acceptable ranges.

The facility is required to have all transfer operations, performed by a reliable person properly trained. During the inspection Mr. Scott discussed employee training used to assure proper operation at the facility.

Whenever possible, the facility is required to keep all doors on the EUWASTETRANS building closed while actively unloading feed stocks. During the inspection, staff observed the doors closed during unloading. Mr. Scott discussed the actions the facility takes to reduce odors by keeping the doors closed. No feedstock is accepted if the doors can not be shut during delivery.

GFD is also required to keep track of all odor complaints that are received as well as any actions taken as a result of the investigation into the odor complaints. While onsite, Mr. Scott summarized odor complaints recently received by the facility, as well as the actions taken by the facility in response to the complaints. The facility provided a log of odor complaints received from January 1, 2022, until the date of the inspection. The facility received eleven complaints during that timeframe, with the most recent complaint received on August 18, 2022. The facility documented that they did not detect any odors as part of their response to the complaints.

EUBOILER

This emission unit is for a dual-fuel boiler with a maximum design heat input of 11 MMBTU that can be fired on biogas or natural gas. This emission unit is also included in FGBIOGAS. The boiler is a Cleaver Brooks boiler that was manufactured in 2012. This emission unit was not in use at the time of the inspection, and per records, this emission unit has not been in use since issuance of the permit.

This emission unit was also required to have a PMP submitted to the AQD within 90 days of issuance of the permit, for which GFD submitted the plan.

Emission unit is subject to NSPS Dc. GFD submitted the required initial notification in accordance with 40 CFR 60.7 and 60.48c to the AQD on April 29, 2021.

FGBIOGAS

This flexible group consists of all emission units involved in producing or burning biogas including EUDIGESTER, EUBOILER, EUFLARE, EUCENGINE1 and EUCENGINE1. EUDIGESTER is an anaerobic digester system that is capable of converting organic waste products into biogas. Methane is the main component of this biogas. The produced biogas is processed in a biological scrubber desulfurization unit to remove H₂S. EUFLARE is a biogas-burning flare with a maximum capacity of 1,250 CFM.

Biogas being burned for the flex group is limited to 301,000 MMBTU per year, based upon a 12-month rolling time period. 12-month rolling time period records ending in May 2023 show a total of 23,846 MMBTU has been burned in the engines and the flare. No biogas has been burned in EUBOILER.

The H₂S concentration of the biogas combusted in any emission unit of FGBIOGAS shall not exceed 1,730 ppmv. GFD is required to verify the H₂S content of the biogas burned in FGBIOGAS no less than three (3) times per week on non-consecutive days by sampling the biogas. If the biogas concentration exceeds 1,400 ppm, then GFD is required to sample and record the H₂S concentration of the biogas one time per day, on each day that the facility is staffed, for seven (7) consecutive days. Review of the daily records for the previous 12-months showed no readings greater than 1,730 ppmv. The facility records show that they are recording the H₂S concentration on a daily basis, regardless of the concentration. The records show several days in the previous 12-month time period that the H₂S concentration exceeded 1,400 ppm. The highest recorded concentration was 1580 ppm.

GFD was required to submit a PM/MAP for EUFLARE, EUDIGESTER, and the desulfurization unit as well as a nuisance minimization plan for odors no later than 90 days after permit issuance. AQD received an updated, acceptable PM/MAP on September 13, 2022.

GFD has installed devices to monitor pressure and oxygen levels of the desulfurization equipment and has installed an alarm system. GFD is tracking these in the records that are submitted to the AQD on a monthly basis and notes any times the alarms were set off. GFD is also monitoring the gas flow rate to EUFLARE, EUBOILER, EUENGINE1 and EUENGINE2, as required.

GFD is also required to track and make note of any corrective actions that are taken as a result of odor complaints. The facility provided records of odor complaints and response.

The facility is required to calculate and maintain records of emissions of NO_x, CO, and SO₂ on a monthly and 12-month rolling time period basis. The facility provided records documenting compliance with the requirement.

FGCIENGINES

This flexible group covers two (2) spark ignition reciprocating internal combustion (RICE) engines rated at 1,966 bhp that were manufactured after 7/11/2010. Each RICE combusts biogas to drive an associated generator to produce approximately 1.5 MW gross electrical output, each. Each RICE is equipped with an air-to-fuel ratio controller. Both RICE are subject to the provisions of the National Emission Standards for Hazardous Air Pollutants promulgated in 40 CFR Part 63, Subpart ZZZZ and the New Source Performance Standards (NSPS) promulgated in 40 CFR Part 60 Subpart JJJJ. Compliance with Part 63 Subpart ZZZZ is demonstrated through Compliance with Part 30 Subpart JJJJ. Specifics for NSPS JJJJ are found in FGRICENSPS in this report.

Emissions from these each engine is limited to the emission limits outlined in Table 1, below. The actual emissions reported in Table 1 below are the emissions reported from the 2023 Stack Test, conducted on May 11-12, 2023, (received on June 28, 2023).

Table 1: FGCIENGINES Emission Limits

Engine Number	Pollutant	Emission Limit	Actual Emissions
Engine 1	NO_x	6.93 pph^A	3.40 pph
	CO	11.27 pph	2.65 pph
Engine 2	NO_x	6.93 pph^A	3.75 pph
	CO	11.27 pph	2.50 pph

^A pph – pounds per hour

Testing is required to verify emission rates for NO_x and CO from each engine in accordance with what is required in FGRICENSPS (see FGRICENSPS section of this report).

In addition to the emission limitations, the two (2) engines have a limit of 230,000 MMBTU biogas burned per 12-month rolling time period. Ending in May 2023, the amount of gas burned was 86,800 MMBTU of biogas.

GFD was required to submit a PM/MAP for these engines within 90 days of issuance of the permit. GFD successfully submitted the plan and is conducting routine maintenance.

FGRICENSPS

This flexible group covers the requirements for the non-emergency engines greater than 500 hp, fueled with digester gas (biogas) that are subject to the provisions of NSPS JJJJ. Both EUCENGINE1 and EUCENGINE2 are part of this flexible group and subject to the provisions of NSPS JJJJ.

Each engine has emission limits for Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Volatile Organic Compounds (VOCs). These emission limits, as well as the most recent stack test data (May 2023), are outlined in Table 2.

Table 2: Emission Limits for FGICENGINES

Engine Number	Pollutant	Emission Limit	Actual Emissions
Engine 1	CO	5.0 g/bhp-hr or 610 ppmvd at 15% O ₂	0.61 g/bhp-hr
	NOx	2.0 g/bhp-hr or 150 ppmvd at 15% O ₂	0.78 g/bhp-hr
	VOC	1.0 g/bhp-hr or 80 ppmvd at 15% O ₂	0.06 g/bhp-hr
Engine 2	CO	5.0 g/bhp-hr or 610 ppmvd at 15% O ₂	0.58 g/bhp-hr
	NOx	2.0 g/bhp-hr or 150 ppmvd at 15% O ₂	0.87 g/bhp-hr
	VOC	1.0 g/bhp-hr or 80 ppmvd at 15% O ₂	0.04 g/bhp-hr

The engines were most recently tested in May 2023. Testing to verify compliance with the emission limits is required every 8760 hours of operation, or every three (3) years, whichever comes first.

The engines are required to have an air/fuel ratio controller, and an hour meter for recording the number of hours the units have operated. The facility is required to keep track of the hours of operation for each engine, for which they are doing.

FGFACILITY

This flexible group applies source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment.

Emission limitations for the facility, all based upon a 12-month rolling time period are 60.7 tons per year (tpy) for NO_x, 98.7 tpy for CO, and 52.1 tpy for SO₂. As of April 2023, the facility wide emissions were 23.7 tons for NO_x, 13.8 tons for SO₂, and 44.3 tons for CO.

Miscellaneous equipment

GFD has one (1) 40 hp natural gas emergency generator. It was previously determined that the unit appears to be exempt from rule 201 permitting under Rule 282(2)(b)(i). This unit was manufactured in 2012 and would therefore be subject to the provisions of 40 CFR Part 60 Subpart JJJJ the New Source Performance Standards for Spark Ignition Internal Combustion Engines. This unit would also be subject to the Area Source Requirements of the National Emissions Standards for Hazardous Air Pollutants 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines (RICE). Compliance with Subpart ZZZZ is demonstrated via Compliance with Subpart JJJJ. However, per Mr. Scott, this unit is not currently able to run and the facility plans to remove the unit.

Compliance Determination

Based upon the observations made during the time of the inspection and a subsequent review of the records Generate Fremont Digester appears to be in compliance with the applicable air quality rules and regulations at this time.

NAME Eric Grinstern

DATE 7/28/2023

SUPERVISOR HH