

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

B283861701

FACILITY: Vicinity Energy Grand Rapids, LLC		SRN / ID: B2838
LOCATION: 156 W Fulton Ave, GRAND RAPIDS		DISTRICT: Grand Rapids
CITY: GRAND RAPIDS		COUNTY: KENT
CONTACT: Larry Gephart , Plant Manager		ACTIVITY DATE: 01/12/2022
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: The purpose of the inspection was to determine compliance with Renewable Operating Permit MI-ROP-B2838-2020 and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On Wednesday January 12, 2022, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff Kaitlyn DeVries (KD) conducted an unannounced, scheduled inspection of Vicinity Energy Grand Rapids, LLC located at 156 W. Fulton Ave, Grand Rapids, Michigan. The purpose of the inspection was to determine compliance with Renewable Operating Permit MI-ROP-B2838-2020 and other applicable air quality rules and regulations.

KD arrived at the facility shortly after at 9:30 am and met with Mr. Larry Gephart, Plant Manager. Prior to entrance into the facility, KD observed the perimeter for excess odors and emissions. None were noted, other than the condensed water vapor coming from the stacks.

Facility Description

Vicinity Energy Grand Rapids, LLC (Vicinity) is a district heating and cooling facility that provides steam to meet the heating and cooling demands of a defined portion of downtown Grand Rapids, Michigan. The service area is expanding, but includes GVSU’s downtown campus, MSU’s Campus, and St. Mary’s Hospital. Vicinity has four (4) boilers that burn either natural gas or oil to produce the steam. Veolia took stringent fuel oil permit restrictions on the boilers, therefore defining them as natural gas only boilers as an area source under the National Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers, 40 CFR Part 63 Subpart JJJJ; thus, Vicinity is not subject to those provisions.

Regulatory Analysis

Vicinity is a major source, subject to the Title V program, and currently holds MI-ROP-B2838-2020. Vicinity is a major source of carbon monoxide (CO) and nitrogen oxides (NOx). Vicinity is not currently subject to the Prevention of Significant Deterioration (PSD) regulations of Part 18 since the process equipment was constructed prior to June 19, 1978. However, if there are modifications of the process equipment, the source may be subject to the PSD requirements. Vicinity also previously held Permit to Install (PTI) No. 189-20 for a temporary boiler due to outages in their boilers requiring extensive maintenance, and the pending winter months of 2021 which required steam generation to areas of Downtown Grand Rapids, including hospitals. While this PTI has now been voided, it will be discussed in the compliance evaluation portion of the report, since it was operational as part of the in 2021, which is part of this Full Compliance Evaluation (FCE).

Compliance Evaluation

FG-UNITS-01-04

This flexible group is comprised of four (4) natural gas/fuel oil-fired boilers. Units 1, 2, and 3, are 120 mmBTU/hr boilers capable of producing 100,000 pounds of steam per hour. Unit 4 is a 180 mmBTU/hr boiler capable of producing 150,000 pounds of steam per hour. Units 1, 2, and 3 were in operation at the time of the inspection, with unit 4 offline. The plant was running at a load of 97-100%, with a total steam flow of 131.1 KPPH.

According to Mr. Gephart, and the associated records, no fuel oil has been used in the boilers in the past year. Mr. Gephart ensured KD that in the event that Veolia needs to use fuel oil, he will contact AQD prior to use, but there is no intention to use any fuel oil. Since no fuel oil has been used, no sulfur content records, or associated fuel oil records will be evaluated.

Prior to going to the boilers, the process water used gets treated to remove any impurities. The treatment process includes going through a reverse osmosis (RO) system, and pH adjustment. The treatment of the process water is exempt from Rule 201 permitting under Rule 285(2)(m).

Vicinity properly tracks the monthly and 12-month rolling natural gas usage for each boiler, and records indicate that the 12-month rolling usage for all boilers combined was 1,937,967, 507 ft³, as of December 2021. Vicinity also tracks the corresponding natural gas BTU content from each bill received from the supplier. In conjunction with tracking the natural gas usage, Vicinity tracks emissions data for both natural gas, and if fuel oil were to be used, steam production, and the daily heat input. All records are kept on a daily basis. The emissions reported are consistent with what has been reported for the 2020 MAERS cycle. This data will be evaluated against the 2021 MAERS data, once submitted.

The boilers are tuned annually to achieve maximum operating capacity and efficiency. Unit 1 was tuned in the summer of 2021, with the other three boilers (Units 2, 3, and 4) tuned in the fall of 2021. Mr. Gephart also told KD that unit 4 had been rebuilt. KD inquired about the cost of the rebuild, as if the cost of the rebuild were to exceed 50% of the capital cost of a new unit, this would trigger reconstruction. Mr. Gephart went on to say that this was looked at, and a new unit would be over 2.5 million dollars, while this rebuild cost was less than 1 million.

Additionally, units 2, 3, and 4 are exhausted through an economizer, which increases the unit's efficiency. The economizer recovers the heat from the air, gets put into the water, which is then recirculated back through the system, thus allowing the overall system to be at least 10% more efficient. During 2021, the plant averaged a 90.6% efficiency. At the time of the inspection, the economizer inlet had a temperature of 275°F, and the outlet had a temperature of 113°F.

EU-UNIT-05

This emission unit is an EPA Certified Kohler Power Systems natural gas fired emergency generator that is used in the event of a power failure. This unit was not in operation at the time of the inspection.

The 184-kW emergency generator is exempt from Rule 201 permitting under Rule 285(2)(g). This unit is, however, subject to the provision of 40 CFR Part 60 Subpart JJJJ, the Standards of Performance for Reciprocating Internal Combustion Engines (RICE). Additionally, this engine is subject to the NESHAP for reciprocating internal combustion engines 40 CFR Part 63 Subpart ZZZZ.

Compliance with the provisions of Subpart JJJJ demonstrates compliance with the provisions of Subpart ZZZZ.

The certification ensures compliance with the emission limits of 2 g/hp-hr for NOx, 4 g-hp-hr for CO, and 1 g/hp-hr for VOC (excluding HCHO). A non-resettable hour meter is installed in the unit, and per the records, the unit runs very minimally having only ran for 2.6 hours in all of 2021, which is compliant with the operational restriction of no more than 100 hours per calendar year, 50 of which for non-emergency purposes.

Stack dimensions, while not explicitly measured, appeared to be correct.

EU-PARTSCLEANER

This emission unit has been incorporated into the ROP to allow for flexibility if the facility were to choose to install one of these units. However, presently there are not any emission units at the facility subject to these provisions.

As mentioned above, Vicinity had previously been issued PTI No. 189-20 for a temporary boiler. This temporary boiler was a 99.9 MMBTU/hr. (75,000 lbs./hr. of steam) natural gas fired boiler equipped with low NOx burners and flue gas recirculation for NOx control. The temporary boiler was only allowed to burn pipeline quality natural gas and was not permitted to operate simultaneously with EU-UNIT-04.

This unit had emission limits of 3.6 pph and 0.036 lbs./MMBTU for NOx.

The unit operated for eleven (11) days in February of 2021, consuming a total of 4,048 mcf of natural gas during those days. The permit was required to be voided on March 31, 2021; subsequently this PTI has been voided.

KD was able to see the location of where this boiler was installed and could see that it had been removed and was no longer on site. KD and Mr. Gephart discussed if there would be a need for something similar to this type of temporary boiler in the future, that Vicinity may need to look into permitting something more permanent, and it would require further evaluations during the permitting process.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, it appears as if Vicinity Energy Grand Rapids, LLC is in compliance with MI-ROP-B2838-2020.

NAME *Kathryn Dwin*

DATE 1/14/2022

SUPERVISOR *HH*