DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

M414827332

FACILITY: DETROIT RENEWABLE POWER, LLC		SRN / ID: M4148
LOCATION: 5700 RUSSELL ST, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: William Alexander , Environmental Manager		ACTIVITY DATE: 09/22/2014
STAFF: Joyce Zhu	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: annual inspection		
RESOLVED COMPLAINTS:		

On 9/22/14, I conducted an annual inspection at Detroit Renewable Power (DRP). The facility is located on 5700 Russell St., Detroit. Mr. Jon Lamb & Samuel Liveson from Air Quality accompanied me during the inspection. I arrived at the site around 8:40 AM. We met with Mr. William Alexander, the facility Environmental Manager. I explained the purpose of the inspection. Mr. Alexander took us to see the facility.

Inspection:
The company processes municipal solid waste (MSW) into refuse-derived fuel (RDF), which is then burned to generate steam & electricity. They provide steam to downtown Detroit as well as GM Hamtramck Facility; & sell the electricity to Detroit Edison Corp. The company is permitted to receive up to 20,000 tons of MSW per week. Trucks hauling MSW are weighted at the scale-house before dumping wastes onto the tipping floor at the waste processing facility (WPF). Smaller trucks, such as packer trucks, dump the wastes at the upper tipping floor whereas large trucks, at the lower tipping floor. Bulky or noncombustible materials, such as gas tanks, etc., are identified through ocular inspection & removed by the loader operators. Those materials will be sent to landfill. There are three processing lines (Line #100. 200, & 300) for the MSW. Each line consists of two shredders (primary & secondary). Emissions from the primary shredder is controlled by a baghouse; & secondary shredder, by a cyclone followed by a baghouse. After the primary shredder, there is a large rotating electromagnet to remove the ferrous metal from the trash. Materials coming out of the secondary shredder are called refuse-derived fuel (RDF). RDF is sent to adjacent room for storage. In the storage room, there are two conveyors (line Nos. 501 & 502) which carry the RDF to the boilers. There're three boilers (Boiler Nos. 11, 12, & 13) on site; however, only two of the three are allowed to operate at a time according to the Renewable Operating Perrmit (ROP). The bottom ash from the boilers goes to the end of the grate where it falls into the water quench. There is another magnetic system which removes metals in the bottom ash. The emissions from each boiler are sent to a spray dryer absorber (SDA) followed by a baghouse. In the SDA, a cloud of finely atomized droplets of hydrated lime slurry reacts with the acid gases in the flue gas; as a result, the lime slurry removes acid gases, trace metals & organics. Unreacted lime reagent together with the flue gas enters the baghouse where particulate emission is further reduced. Because the lime reagent is embedded in the baghouse filter cake, it further removes the acid gas in the emission stream. Particulate (mainly fly ash) captured by the baghouse is transferred by an enclosed conveyor system to the ash discharger where the fly ash is wetted & mixed with the bottom ash. The mixture is stored in an enclosed building to be loaded into trucks for landfill. During the inspection, I didn't see any debris in the plant yard as well as at the property fence lines.

Permits: ROP# MI-ROP-M4148-2011
EUASH-HANDLING
This is the ash handling process. Grate sifting & bottom ash from each boiler are discharged to a quench through & submerged scraper conveyor. Fly ash from the tubular air heater hoppers, economizer hoppers, & the baghouse hoppers is transported via drag-flight conveyor to a surge bin & from there to a pugmill to be wetted. Afterwards, the wetted fly ash is discharged onto the bottom ash conveyors & transported to the ash / load-out storage building prior to off-site disposal. During the inspection, I didn't see any truck hauling the ash. According to the company, they inspect the roof filters monthly and the insertable dust filters in wall-mounted exhaust fan area bi-weekly. The filters are replaced on as needed basis. During the inspection, I didn't see any leak from the drag-flight fly ash conveyor system; nor did I see any from the bottom ash conveyor system. The company keeps records of daily Method 22 visible emission (VE) observation as well as bi-weekly inspection records for the roof vent filters, insertable dust filters, & wall mounted exhaust fans inspection. The daily VE observation on 9/19/14 showed no problem.

EULIME-FEEDSYS
This emission group includes a lime storage silo with a baghouse, two lime slackers which equipped with a grit screen, & a slurry tank connecting both lines. The lime slurry from the slurry tank is pumped into each boiler's slurry head tank where the slurry is fed by gravity into the SDA. During the inspection, I didn't observe any opacity from the process; nor did I see any spill near the storage area. The baghouse is located on the top of the storage silo. The dust collected by the baghouse during loading is send back to the silo. The company indicated that they inspected the baghouse on the top of the silo whenever the units are down. The grit screen & the bags inside the baghouse would be replaced as needed. The company keeps a record of the daily VE readings during unloading lime. The record includes the dates, name of the reader, & visual inspection of the baghouse during unloading. According to the company's record, there was no significant issue reported during the month of August.

EUSTORAGETANK
This emission unit covers the 500,000-gal fix roof storage tank for No. 2 fuel oil. The company keeps the following records on-site as required by the permit: a) true vapor pressure of the material stored; b) dimensions of the vessel; c) design capacity of the vessel.

FGMSWPROC-LINES
This relates to all activities of processing MSW in the facility; activities, such as weighing, unloading the MSW in the tipping area, MSW processing, RDF storage, RDF loading into two boiler-feed conveyor lines, & conveying RDF into the power Block Building, are covered by the flexible group. In addition to the cyclone & baghouse to control the particulate emission from the processing lines, the process building exhausts have been equipped with the vent filters. According to the company, the bags in the baghouses are replaced as needed but at least once a year. When lines are down, they will inspect the conditions of the baghouses as well as the cyclones. A level detector is installed at the air lock location which is at the end of the cyclone. The level detector will provide indications if the air-lock is jammed. Dust collected from the primary shredder baghouse, the cyclone as well as the baghouse for the secondary shredder will be sent to the RDF pit. Because the baghouses & the cyclone are located in the same area where they operate the heavy equipment, such as loaders, Bill did not feel safe to take us to see the controls. As a result, I didn't inspect the integrity of the controls. Each processing line can process 50 tons of MSW per hour. Normally, they process 2200 tons – 2400 tons of MSW per day. They receives the MSW from Monday to Friday & sometime on Saturday mornings; however, the boilers are expected to run seven days a week; as a result, they received MSW on weekdays more than they can processed on those days in order to have enough RDF for the boilers during the weekends. Normally, they'd like to have two day inventory onsite. The ROP requires the company to clean tipping floor on a daily basis; however, the tipping floor area has limited space. During weekdays, the floor is covered by MSW. It's impossible to clean the entire floor. By the end of Sunday, the tipping floor area as well as the RDF storage area is cleared. They normally clean those areas during weekends. They apply odor neutralizing agent in the tipping floor area during weekends. They clean the aisles, waste transfer point, & pit area on a daily basis. Whenever the processing equipment is down, they will clean it. Also, they clean the roadways & paved area multiple times a day. Weekly, they clean the surface around the infeed conveyors in MSW reception area as well as the infeed conveyors in RDF dispatch area; or when the areas are available, they will scrub the areas. In the waste processing section, at the areas of the entrance and the tipping floor, they apply odor neutralizing agent, an enzyme that reacts with the odor molecules. At the RDF area, the company used waterless vapor system with a material called Ecosorb 606 to control the odor. The wet odor neutralizing system for the MSW processing area & the waterless odor absorb system for the RDF area are operated primarily during mid of April through mid of October when odor problem becomes intensive. According to Bill, they typically use around 175 gallons to 200 gallons of Ecosorb 606 & 300 gallons of the odor neutralizing agent a year. This summer, AQD has received enormous amount of complaints about odor from the company's operation. The odor could attribute to the accumulation of either the MSW or RDF on site. If the process lines are down & they continue to receive waste, it could accumulate trash in the tipping area. As a result, waste will be piled up. As the pile builds up, so does the pressure inside the trash; the bottom of the trash will decompose & cause odor. Similarly, when boilers are taking off line, the RDF may be accumulating in the storage area. Odor will be generated due to decomposition. The company states not all alleged odor emanates from its operation; they believe that they get blamed because they are transparent & upfront with the public in the area. Although AQD found a couple of the complaints were questionable, AQD inspectors have verified that the strong odor on a number of occasions was indeed from the facility. In the inspectors' professional judgment, the odor has caused unreasonable interference with the comfortable

enjoyment of life of the nearby residents. AQD has communicated with the company about the odor issue. The company has stated repeatedly that they have done the best they could to resolve the problem. Further, the company argued that simply observing an odor at the complainants' area was insufficient to demonstrate an interference with the enjoyment of life and property. Nonetheless, the company has negotiated with the State regarding a plan and schedule for constructing and installing an odor control system that is expected to further reduce the odor emission substantially. During the inspection, they operated Line 100 & Line 200. The company keeps the following information: the daily pressure drop for the each baghouse of the three primary as well as the secondary shredders, the daily negative pressure reading from the solid waste reciving room by using velometers, monthly inspection records for roof exhaust filters, cyclones, & baghouses, daily description of the MSW, & the daily VE observations on all applicable emission points on FGMSWPROC-LINES. According to the company data, there was no visible emission from stacks of each process line on 9/22/14. The company calibrated the pressure drop gauges for the baghouses in July this year.

FGBOILERS011-013
This flexible group covers the power block operation which consists of three identical RDF fired spreader-stoker boilers. Each boiler is rated at 520 MMBTU per hour heat input, 390 pounds per hour steam at 900 psig & 825 °F. Power block operates an electric generator with name plate capacity of 68 MWe to convert unsold steam into electricity for internal use & for sale to the grid. The emissions from each boiler are controlled by a spray dryer absorber (SDA) followed by a baghouse. Each SDA is located on the top of the associated boiler. For startup, shutdown, & other conditions as necessary for the boilers, natural gas is used as the primary auxiliary fuel; & No. 2 fuel oil, as back-up. According to the company, they inspect the baghouses whenever they took the associated boilers off line. There are 10 compartments in each baghouse. Each compartment has 168 bags. The ROP requires the company to conduct stack test annually to verify compliance with regards to particulate matter, cadmium, hexavalent chromium, total chromium, lead, mercury, dioxin/furan, fluorides, hydrogen chloride, & volatile organic compounds. In addition, the company continuously monitors carbon monoxide, nitrogen oxides, & sulfur dioxide through continuous emissions monitoring system (CEMS); and opacity through a continuous opacity monitoring system (COMS). The company has scheduled the stack tests & the relative accuracy test audit (RATA) for the associate CEMS in December this year. The test performed in 2013 showed that the emissions complied with the corresponding limits. According to the last inspection, for the dry oxygen, the company utilizes an extractive gas monitoring system for oxygen analyzer, but in-situ system for the greenhouse gas (GHG). The QA manual for the CEMS is stored in the CEMS building. The quarterly report is generated at Bill's office. According to Bill, they check the transmitter & flow meter daily; they perform calibration check every morning. The check lasts about 15 minutes. Cylinder gas is used for the check. I checked the expiration date for one of the gas cylinder (CC160150). Bill provided me the certificate of an analysis. However, I couldn't find the expiration date for the cylindrical gas. In the afternoon, a person from Airgas (the company which supplied the certificate) showed up. He told me that normally the expiration date would be two years from the analysis date. On the certificate, the analysis date is June 27, 2014; therefore, the expiration date would be June 27, 2016. The delivery pressure of the cylinder was at 30 psi. The cylinder pressure was at 350 lbs. The daily calibration summary showed that the calibration drift (CD) for oxygen as well as for carbon dioxide at the exhaust was less than 0.5%. The control panel indicated that there were CEM problems with the gas for the economizer. Bill said that the CEM for the gas from the economizer only provided the reference for the company. The monitor point after the economizer is where the gas from the boiler before entering the SDA. The compliance emission monitoring is for the gas coming out after the baghouse of the boiler. For the COMS, a "filter drop" test using certified glass filters of varying optical density is performed quarterly. During the inspection, Boilers No. 11 & No. 13 were operating. I took some instantaneous readings at 8:48 AM. The combustion zone temperature of Boiler No. 11 was at 2217 °F; Boiler No.13, 2308 °F. There temperatures are above 1800 °F. The slurry flow rate was at 21.659 gallons per minute (gpm) for SDA-11; & 35.689 gallons per minute (gpm) for SDA-13. Please note that the SDA-13 slurry flow rate is slightly higher than the range established in the company's SSMA plan (between 3 gpm & 30 gpm); nevertheless, the instantaneous reading of SO2 was at 11 ppm only for Boiler No.13. The pressure drop across the baghouses for the Boiler No. 11 was at 7.07 inches of water; & for Boiler No. 13, 8.16 inches of water. During the same time, the inlet temperature for SDA-11 was at 440 °F; & for SDA-13, 470 °F. These temperatures were above 350 °F as required by the company's SSMA plan. The SDA-11 outlet was at 297 °F; & SDA-13, 332 °F. Please note that the SDA outlet temperature is the same as the baghouse inlet temperature. As can be seen, the inlet temperature was above 200 °F & below 400 °F. The steam load for Boiler No. 11 was at 326.237 klb/hr; & for Boiler No.13, 319.010 klb/hr. The flue gas oxygen content (wet) by volume was at 5.5% for Boiler No. 11; & 4.6% for Boiler No. 13.

Those indicators were within the range between 4% & 8.9% as required by the SSMA plan. The boiler operator, Mr. Rich Stanley assured me that the bypass dampers are closed & tagged. The company has kept a list of the people who have the current provisional operator certificate from ASME. All the operators completed EPA trainings for municipal waste combustor operators. According to Rich, they check the burners & valves of each boiler every shift. The company keeps following data:

1. COM data
2. CEMS data for SO2, NOx, & CO in 1-hr average concentration & 24-hr daily geometric average as well as the daily check zero & span calibration drifts of the CEMS
3. Quarterly accuracy determination test for SO2, NOx, & CO.
4. Steam flow calculated in 4-hour block arithmetic average on a monthly basis
5. 4-hour block arithmetic average combustor load level
6. Flue gas stream baghouse inlet temperatures for the corresponding boilers while operating
7. Flue gas stream temperature prior to the boiler bank inlet/after the superheater
8. Flue gas stream temperature at the combustion zones
9. Dates when any of the average emission concentration, % reductions, operating parameters recorded, or opacity exceeded the applicable limits, the reasons for the exceedances, & a description of corrective action taken.
10. Heat input rates in 12-month rolling time period for the auxiliary fuels for each boiler.
11. Hours of operation for each boiler each month
12. Atomizer unit replacement data, including dates, affected boiler emission unit, length of time of replacement, & emission rate during replacement
13. The maximum demonstrated combustor unit load during dioxin/furan performance test.
14. The maximum demonstrated PM (particulate matter) control device temperature for each baghouse
15. Records of the person who completed the EPA municipal waste combustor operator training course.
16. Startup, shutdown, & malfunction in the operation, control equipment, CEM, or COM.
17. Total number of days that the minimum number of hours of data for SO2, NOx, CO, unit load, & PM control device inlet temperature data were not obtained based on the data recorded.
18. Annual capacity factor for combined auxiliary fuel using for each boiler determined on a 12-month rolling average with a new capacity factor calculated at the end of each month.
19. Site-specific operating manual

The company records show that the annual capacity factor for combined auxiliary fuel using for the boilers has been less than 2%. The collected the records indicate that the company was in compliance with the ROP requirements during the reporting period.

FGCOLDCLEANERS

There are two cold cleaners onsite. One is located at the mechanical maintenance area; the other, mobile maintenance area. A written procedure for compliance with Rule 611 or Rule707 was posted on the unit. The air/vapor interface of the unit was less than 10 square feet.

FGRULE290

This flexible group covers any emission units that are exempted from the permit to install requirements per Rule 290. The company states that they do not have such unit on site.

In conclusion, the boiler operation appeared to be in compliance with the Air Quality Regulations & the ROP requirements; however, the odor problems resulted from the MSW processing operation have not yet been resolved.

NAME Joyce [signature] DATE 9/30 SUPERVISOR W. M