

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

N622668666

<b>FACILITY:</b> Brembo North America, Inc.		<b>SRN / ID:</b> N6226
<b>LOCATION:</b> 29991 M 60 EAST, HOMER		<b>DISTRICT:</b> Kalamazoo
<b>CITY:</b> HOMER		<b>COUNTY:</b> CALHOUN
<b>CONTACT:</b> Harsha Saisantosh , EHS Manager		<b>ACTIVITY DATE:</b> 08/09/2023
<b>STAFF:</b> Amanda Cross	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b>		
<b>RESOLVED COMPLAINTS:</b>		

The Air Quality Divisions (AQD) Amanda Cross conducted an unannounced inspection of Brembo North America, Inc. located at 29991 M-60, Homer, Calhoun County, Michigan. The facility’s source registration number (SRN) is N6226. The purpose of the inspection was to determine compliance with the Federal Clean Air Act, Article II, Part 55, Air Pollution Control Rules, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended (Act 451); AQD administrative rules; Renewable Operating Permit (ROP) No. MI-ROP-N6226-2015a; and Permit to Install (PTI) No. 199-14D.

Brembo North America, Inc. (Brembo) operates an existing grey iron foundry in Homer, Michigan. The foundry currently operates under PTI No. 199-14D and during this ROP renewal process will be rolled into the existing ROP under Section 2. Brembo also operates an adjacent disc plant which is part of the same stationary source. The disc plant operates under ROP No. MI-ROP-N6226-2015a.

**Disc Plant Source Description**

This is an existing manufacturer of high-end brakes and other miscellaneous metal parts for the automotive braking system. The disc plant consists of machining operations to grind the brakes and drill holes in the parts. The machined parts are painted and then shipped out to the customers.

The disc plant is an existing PSD minor source, but a major source of hazardous air pollutants (HAPs) subject to NESHAP MMMM for Surface Coating of Miscellaneous Metal Parts and Products. Control devices used by the disc plant include:

- Multiple internally vented baghouses to control particulate emissions from the machining operations
- Fabric filters on all paint booths to control particulate emissions

**Disc Plant Inspection**

On July 21, 2023, staff arrived at the disc plant to complete the unannounced air quality inspection. I entered the reception area and told the receptionist I was there to complete an unannounced air quality inspection. I also requested to speak to Mr. Ryan Birch, HSE Manager. Ms. Emalee Bennett, HSE Coordinator met me in the reception area and took me back to Mr. Birch’s office. Mr. Rob Jenkins, Paint Engineer also joined us on the inspection.

The facility was issued a new permit, PTI No. 145-12C in March 2022. The new permit was to make modifications to five existing lines grouped into FG-C2: 01, 45, 58, 60, and 65 (Formerly identified in the permit as Zinc 01, Zinc 05, Zinc 02, Zinc 03, and Zinc 04). FG-BMG (EU-Line56, EU-Line61, EU-Line62, EU-Line63, EU-Line64, EU-Line66) and FG-GeoMet (EU-Line50 and EU-Line55) remained unaffected for the review. Missing FG-Rule 621 (EU-Line50 and EU-Line55) was created. Also, FG-MACT MMMM has been updated due to recent reporting language updates by the EPA.

The following is a summarization of the inspection and records review. All of the permitted and exempt lines were observed during the inspection though not all were running at the time. The layout of the report follows the permit and not the process the foundry takes to make the product.

**FG-BMG**

Six (6) automotive metal surface coating lines.

Emission Units: EU-Line56, EU-Line61, EU-Line62, EU-Line63, EU-Line64, EU-Line66

All lines, except EU-Line56 use Magni paint. Line EU-Line56 sprays only GeoMet1102 paint.

Pollutant	Limit and Time Period	Equipment	Records
VOC	6.0 tpy 12-month rolling	Each EU in FG-BMG	2.96 tpy May 2023 EU-Line62

Material Limit	Limit	Equipment	Records
VOCs	3.5 lb/gal minus water as applied	Each EU in FG-BMG	GeoMet 1102 – 3.0 lb/gal Magni – 3.00 lb/gal

The facility is tracking emissions from each line monthly and on a 12-month rolling basis. The records were reviewed and EU-Line62 had the highest emissions of all the lines in this flexible group.

Magni paint is the most used paint at the facility. The parts painted with Magni paint are heated with induction heating. The parts are set on a spindle sent through a paint booth where paint is applied using paint guns with HVLP applicators. The parts are then sent through an oven to cure. The facility has a number of paint lines that are considered spindleless lines. On these lines, a robot picks up the piece, and places it in front of a static paint gun. The robot moves the part around in front of the gun to coat the part. The transfer efficiency of these lines is over 90% since

it reduces the wobble of the spindles. The facility is also using Magni paint on a number of exempt coating lines, discussed below.

The facility does not generally do any modification to the paint they receive from the manufacturer before it is applied, on site. Very occasionally water is added to thin the paint, but this is done as needed. The paint that is applied on the lines is on a scale and weighed continuously. The weight is recorded once per day, if no paint is added to the container. If paint is added, the weight before the addition and after is recorded. This information is tracked, per line, and every line has an individual scale for tracking paint weight. The weight of paint used, per day, per line, is how the facility determines paint usage.

Waste coatings are stored in covered 55-gallon drums and sent to a landfill for disposal. Spent filters are stored in covered hoppers and picked up by Clean Harbors for disposal. Both the drums and hoppers were observed on site. Facility personnel noted that the filters on all the paint booths, except as noted, are changed once per shift. The filters were observed during the inspection and appeared to be in good condition with no gaps. The paint booths are equipped with magnihelic gauges, but the facility feels that these are not as accurate as they would like to determine the viability of the filters. They are working on equipping the booths with digital magnihelic gauges which will send notifications to the internal computer system to track filter condition. Until this program is running and as a precautionary measure, the facility changes the filters more frequently.

During the inspection, Mr. Jenkins completed a cap test on EU-Line62, which was not running at the time, to verify that the guns were HVLP. The atomizing pressure as read by the testing cap was 7psi where the paint is sprayed onto the parts.

The facility provided the most recent Method 24 testing results via email for the coatings used on FG-C2 lines. The facility hasn't completed Method 24 testing within the last year as the paint coating formulations have not changed since the last round was completed. We discussed the need to complete testing if they find out from the paint supplier that things have changed with the formulation.

Based on questions raised in the inspection, the previous permit application, 145-12B TAC emissions were pulled. It was verified that p-chlorobenzotriflouride in the Magni paint was analyzed during previous permit actions. Since FG-BMG wasn't changed in 145-12C, no additional analysis was completed, and the emission limits remained unchanged and the facility can run the Magni paint under the existing emission limits and conditions.

**FG-C2**

Five (5) automotive metal surface coating lines.

Emission Units: EU-Line01, EU-Line58, EU-Line60, EU-Line65, EU-Line45

All lines in this flexible group spray only Magni paint. EU-Line58 was decommissioned and removed from the facility about July 2022. The facility is currently installing a new Line 58 which will be running under exemption Rule 287(2)(c). The facility can provide an exemption demonstration for the new line.

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Pollutant	Limit and Time Period	Equipment	Records
VOC	6.0 tpy 12-month rolling	Each EU in FG-C2	2.14 tpy May 2023 EU-Line60
p-chlorobenzotrifluoride (CAS No. 98-56-6)	26.3 tpy 12-month rolling	FG-C2	17.4 tpy

Material Limit	Limit	Equipment	Records
VOCs	3.5 lb/gal minus water as applied	Each EU in FG-BMG	Magni – 3.00 lb/gal

The facility previously had LVHP or low volume, high pressure guns installed on EU-Line45 but at the end of 2020 replaced them with HVLP guns. The facility stores and disposes waste coatings and filters from these lines in the same way as discussed above. The facility also changes the filters on these lines one time per shift. The filters were observed during the inspection and appeared to be in good condition with no gaps.

The coating that is used in this flexible group is the same as the coating used in FG-BMG. In the most recent permit update, this flexible group, formerly known as FG-ZINC, was the flexible group that underwent the most changes. As a result, the tracking requirement for p-chlorobenzotrifluoride was added to PTI 145-12C.

The facility provided the most recent Method 24 testing results via email for the coatings used on FG-BMG lines as these lines spray the same coating as FG-C2 lines.

**FG-GeoMet**

Two (2) automotive metal surface coating lines.

Emission Units: EU-Line50, EU-Line55

The facility sprays a water based emulter and GeoMet360 on these lines. Line 55 was removed from the facility in June 2023. This should be removed from the permit during the next permit update.

Pollutant	Limit and Time Period	Equipment	Records
VOCs	2,000 lbs per month	Each EU in FG-GeoMet	310 lbs – Line 50 228 lbs – Line 55

VOCs	10.0 tpy 12-month rolling	Each EU in FG-GeoMet	0.58 tpy – Line 50 1.53 tpy – Line 55
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The facility uses HVLP guns on these lines, as they do throughout the facility. The filters on these paint booths are larger than the others and they are changed once per day or as needed compared to the other filters throughout the facility. The filters were observed during the inspection and appeared to be in good condition with no gaps. EU-Line50 was not running during the inspection, but a maintenance technician had pulled out a filter to access the spray guns. This allowed a clear view into the booth to view the condition of all the filters.

The facility provided the most recent Method 24 testing results via email for the coatings used on FG-GeoMet lines. These are the only lines in the facility that spray GeoMet360 paint. The VOC lb/gal as applied minus water is above the 3.5 lb/gal. Method 24 shows the paint is 4.0 lb VOC/gal minus exempt. This flexible group does not have a material limit for lb VOC/gal and therefore these lines are the only permitted lines in the facility that can run this type of paint.

**FG-RULE621**

All metal parts coating lines source-wide, including metal parts coating lines covered by other permits, which are exempted by R 336.1621(10)(b)

Emission Unit: EU-Line50, EU-Line55

This flexible group satisfies the requirement in Rule 336.1621 and applies only to EU-Line50 and EU-Line55. Emissions are a rolling total of these two lines, combined.

Pollutant	Limit and Time Period	Equipment	Records
VOC	30.0 tpy 12-month rolling	FG-RULE621	2.11 tpy May 2023

**FGMACT-MMMM**

Each existing affected source described in 40 CFR 63.3881(a)(1), including the subcategories listed in 40 CFR Part 63, Subpart MMMM, 40 CFR 63.3881(a)(2) through (6), meeting the applicability requirements of 40 CFR 63.3881(b), which is engaged in the surface coating of miscellaneous metal parts and products. The affected source includes the collection of all the items listed in 40 CFR 63.3882(b)(1) through (4). Surface coating is defined by 40 CFR 63.3881 as the application of coating to a substrate using, for example, spray guns or dip tanks. Surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage if they are directly related to the application of the coating. This includes equipment exempt from R 336.1201.

Emission Units: EU-Line50, EU-Line55, EU-Line56, EU-Line61, EU-Line62, EU-Line63, EU-Line64, EU-Line66, EU-Line01, EU-Line58, EU-Line60, EU-Line65, EU-Line45

These calculations include both permitted lines contained in the ROP as well as exempt lines throughout the facility.

Pollutant	Limit and Time Period	Equipment	Records
Organic HAP	2.6 lbs/gallon of coating solids	Existing – General Use Coating	Magni – 0.02 lb/gal of coating solids GeoMet – 2.13 lb/gal of coating solids 1102 – 2.55 lb/gal of coating solids Emulter – 0.08 lb/gal of coating solids

The facility uses the complaint materials option to show compliance with 40 CFR Part 63, Subpart M MMMM.

Material Limit	Limit	Equipment	Records
Each thinner and/or additive	No Organic HAPs	Each Coating Operation	Does not contain organic HAPs
Each cleaning material	No Organic HAPs	Each Coating Operation	Does not contain organic HAPs

The facility submits ROP semi-annual compliance reports to certify that the facility is meeting the requirements of 40 CFR Part 63 Subpart M MMMM. The most recent certification was received by EGLE on July 24, 2023. The facility uses all compliant materials and therefore continuously meets the organic HAP requirements on all the coating lines, both permitted and exempt, in the facility.

**FG-COLDCLEANERS**

Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h), or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

The facility has two cold cleaners on site, one located in the maintenance shop, and one located in the prototype area. The maintenance shop cold cleaner was observed during the inspection. The lid was closed and Mr. Birch opened the cleaner with a button as the lid is electric. The cold cleaner was not in use and no parts were soaking.

Label on the cleaner said the solvent was Safety Kleen premium solvent. This is 100% VOC by weight and approximately 6.4-6.7 lb/gal. Mr. Birch emailed over the SDS for the solvent following the inspection. SDS identified the solvent as Safety Kleen 105-Virgin. Safety Kleen maintains the cold cleaners on site for the facility. A note on the SDS identifies the Reid Vapor pressure as 0.02 psia.

**Exempt Equipment –****Machining Operations -**

The facility's machining operations are operating under Rule 285(2)(I)(VI)(B). The machining operations share approximately 20 baghouses throughout the facility. These baghouses are internally vented and collect any particulate generated during the machining process. The observed baghouses appeared clean around the base. Mr. Birch said the baghouses are regularly maintained by the maintenance department.

**Exempt Coating Lines -**

Line 29 is a combined machining and painting line. This line is operating under Rule 287(2)(c). Line 30 is a machining line only operating under Rule 285(2)(I)(VI)(B). Both changes were included in the Notification of Change 202200177 to the department. According to records, the highest paint usage month for Line 29 was 110.94 gallons of Magni paint in March 2023.

A Notification of Change No. 202300035 was submitted to the department for Line 13 and Line 59. Line 13 is a machining line only operating under Rule 285(2)(I)(VI)(B). Line 59 has been renamed to Line 58. This is not the same Line 58 that is included in FG-C2. To reduce confusion, the EU-Line58 should be removed from the permit. The new Line 58 is currently being installed and is not operational, so no records were provided. The new Line 58 will be running under Rule 287(2)(c).

EU-Magni06 (Line 57) runs under Rule 290. The facility submitted additional records via email showing that the contents of Magni C40 paint, as determined from the SDS which was also submitted, run on Magni06 meet the requirements of Rule290 as long as usage on the line remains under 384.6 gallons/month. The facility has documented that the Magni paint contains no TACs with an ITSL <2.0 micrograms/meter cubed.

The facility is also keeping usage records on EU-Magni-06. Records show the highest usage on EU-Magni06 was in June 2021 with 272.53 gallons. This is below the calculated 384.6 gallons used to remain under the noncarcinogenic volatile organic compounds or noncarcinogenic materials uncontrolled emission limit of 1000 pounds/month.

**Rust Inhibitor –**

The facility uses a rust inhibitor throughout the facility. An SDS was submitted via email. Purchase records were also submitted via email. The records show there was a purchase of 49 gallons within the last 12 months. While the records should be kept in usage amounts because the purchase amount is well below the allowed 200 gallons per month limit, the facility is in compliance with the Rule 287(2)(c) exemption.

**Emergency Diesel Fire Pump –**

The facility has a Cummins 6BTA5.9-F1 208 horsepower (HP) emergency diesel fire pump. This engine operates under Rule 285(2)(g) but is subject to 40 CFR Part 63 Subpart ZZZZ. During the renewal process, this engine should be included in ROP.

The current meter reading during the inspection was 454.1 hours. The pump is tested weekly for about 15 minutes and annual inspections are completed. The operational hours are tracked through the eMaintenance program. The facility submitted an example of a maintenance order from the facility via email.

#### **Foundry Source Description**

Brembo loads scrap metal and alloying materials into one of four electric induction furnaces within the foundry's "melt shop". Only certified clean scrap is melted, and no preheating is performed. After the scrap metal is melted, it is poured into various molds and then sent to a cooling house for cooling within the molds. A shakeout process removes the metal casting from the mold and core sand. Once the metal casting is removed, a grinding/cleaning process and subsequent finishing is performed so the castings can be shipped.

Brembo also develops cores that will be used to make sand molds for the molten metal. Core mixing involves mixing core sand with resins and other additives. The formed core is cured using a non-HAP amine catalyst. Sand handling processes include all green sand processing, such as mixing of ingredients, forming the mold, and subsequent handling of green sand after the iron casting has cooled. Sand handling includes four 150-ton "new sand" silos and three 200-ton return sand silos. The facility also houses various natural gas fired processes as well as five emergency engines. Control devices used in the foundry include:

- A baghouse for the melting process
- A baghouse and regenerative thermal oxidizer (RTO) for the pouring/cooling process
- A sand system baghouse for the shakeout and sand handling processes
- A baghouse for the finishing process
- An amine (acid) scrubber for the curing process while making cores.

The foundry is considered a "nested source" within the stationary source because it is one of the source categories with Prevention of Significant Deterioration (PSD) major source thresholds of 100 tpy. The foundry is a synthetic minor nested PSD source because it has taken restrictions to avoid major source thresholds.

The foundry has not yet been incorporated into the ROP. A modification to the existing ROP renewal application has been submitted to incorporate the foundry PTI into the ROP during this renewal period.

#### **Foundry Emission Units Subject to CAM:**

**FGMELTING - EUCHARGEHNDLG, EUINDUCTION1, EUINDUCTION2, EUINDUCTION3, EUINDUCTION4**

**FGPOURCOOL – EUPOURING, EUCOOLING**

**FGSANDHNDLG - EUSHAKEOUT, EUSANDHNDLG**

**EUFINISHING**



A CAM Flexible Group will be added to the ROP for the foundry, once the foundry is rolled into the permit. The facility submitted a CAM plan for the foundry as part of the amended application to include the foundry PTI into the ROP.

**Foundry Inspection**

On August 9, 2023, Amanda Cross and Jared Edgerton (AQD staff) arrived at the foundry to complete the unannounced air quality inspection. We entered the reception area and told the receptionist I was there to complete an unannounced air quality inspection. I also requested to speak to Dr. Madiraju (Harsha) Saisantosh, HSE Manager for the foundry. We watched a short safety video about the facility. Dr. Saisantosh joined us in the lobby, and we went to a small conference room to have a pre-inspection meeting and go over the basic operation of the foundry.

The facility was issued a new permit, PTI No. 199-14D in June 2023. This PTI application was submitted to modify the PM, PM10, and PM2.5 emission limits in EUFINISHING, FGMETLING, FGPOURCOOL, and FGSANDHNDLG, to address compliance issues based on their recent stack testing results. Additionally, Brembo requested to increase the amount of metal charged in FGMELTING from 755 tons per day to 833 tons per day. They have also requested to remove the sand handling process (EUSANDHNDLG) from FGMACTEEEEE, because the general sand handling process is not covered by the NESHAP.

The facility employes approximately 300 people. They operate 3 shifts. The disc lines, which produce the brakes run 24 hours a day, five day a week. The core making lines, which produce the cores in the molds run 24 hours a day 7 days a week. The facility typically observes a July and December shutdown. Large maintenance projects are typically done during this time as many of the lines employ interlock systems. The lines cannot operate if the pollution control devices are down for maintenance or malfunctioning.

The following is a summarization of the inspection and records review, which was completed virtually the next day, following the inspection, due to time constraints. All the permitted emission units and flexible groups were observed during the inspection. The layout of the report follows the permit and not the process the foundry takes to make the product.

**EUFINISHING**

The finishing line includes the grinding and shot blasting of cooled iron castings. The emissions from finishing are controlled by the Finishing Baghouse.

Pollutant	Limit	Time Period	Records
PM	1.59 tpy	12-month rolling	1.26 tpy in March 2023
PM10	1.33 tpy	12-month rolling	1.07 in March 2023
PM2.5	1.14 tpy	12-month rolling	0.88 in March 2023

Material	Limit	Time Period	Records
Metal shipped (Good Ton Sold)	160,000 tpy	12-month rolling	9,240 tons in March 2023 92,735 tpy in March 2023

The facility has prepared a Malfunction Abatement Plan (MAP) for all the baghouses at the facility. The plans were last updated in October in 2020. These should be reviewed and updated to address the changes in operation and emission limits within the most recent permit, based on the most recent stack testing results.

The finishing line was running during the inspection. During the inspection, we went to the roof to observe visible emissions from the stacks. It was cloudy and not ideal conditions for a Method 9 reading. However no visible emission were observed. The Bag Leak Detection (BLD) reading is the particulate concentration as determined by the CPM 750 system and it is recorded in the SCADA system on site. This was viewed during the inspection and recorded during the virtual records review.

BLD: 1.33%      Pressure Drop: 4.05" (Range: 3.5-9.0" H2O)      Fan Amp: 140 (Max 165)

Testing was performed throughout the facility to show compliance for the pounds per hour (pph) emission limits in the permit in 2022. These stack testing results are used to calculate the 12-month rolling PM, PM10, and PM2.5 emissions for EUFINISHING. Emissions are tracked by emission unit, monthly and on a 12-month rolling basis. During the records review, staff noticed that the emission limits the tracked numbers were being compared to were limits established under a previous PTI, 199-14C. Staff suggested that the recordkeeping document be updated to reflect the limits in PTI No. 199-14D to ensure no accidental exceedances occur. Brembo staff agreed and records will be updated.

As noted above, this permit was issued to address compliance issued based on stack testing failures on the EUFINISHING line during the most recent stack testing event. This line is required to be retested no later than December 31, 2024. A violation notice was issued for these stack test failures and the facility entered an ACO with EGLE. They have paid the fine and must continue to maintain compliance with these emission limits.

Maintenance records were emailed after the inspection and reviewed for the baghouses at the facility. Records are kept on the eMaintenance system. The facility completes daily, weekly, monthly, semiannual, and annual preventative maintenance on the baghouses at the facility. Twice a year, there are inspections completed by a third party. Microscopy is completed on a sampling of the bags to determine how much dust has penetrated the bags, to determine how much capture efficiency is left in the existing bags. All bags were replaced in the baghouses in the beginning of 2022. Staff discussed the possibility of starting visolite inspections on-site to locate and replace broken bags.

The facility submitted examples of the semi-annual baghouse maintenance performed onsite. This is done while the facility is experiencing a shutdown. The baghouse blowers are shut down and two bags are removed to conduct the microscopy sampling on the bags. The resulting lab report is referenced on the maintenance report. This is done for all the baghouses on site.

Records are kept the same way throughout the facility. Results from the most recent stack test are used to calculate monthly and 12-month rolling emissions from the applicable emission unit or flexible groups. For EUFINISHING, the facility keeps monthly and 12-month rolling totals of metal shipped, as required by the permit.

**EUNATGAS**

Natural gas is used throughout the facility in processes like building heat, and the operation of the RTO. The facility is required to track natural gas usage, facility wide.

Material	Limit	Time Period	Records
Natural Gas Usage	192 MMSCF	12-month rolling	106 MMSCF in December 2022

Records of natural gas usage are tracked monthly and on a 12-month rolling basis.

**EUCOREMIX**

The core production and storage area includes the mixing of core sand with resins and other additives. The emissions from EUCOREMIX are vented internally. Each of the three core machines has a dedicated resin area.

Pollutant	Limit	Time Period	Records
VOC	13 tpy	12-month rolling	6.1 tpy in December 2022

Material	Limit	Time Period	Records
Core Sand Usage	40,000 tpy	12-month rolling	18,882 tpy in April 2023

During the inspection, while walking on the roof, staff noticed three stacks with rain caps that belong to the three core machines. The permit notes that these machines vent internally. When the permit was first applied for, these were vented internally. However, with changes to operation, these machines, which run on natural gas, are vented outside.

In discussion with the facility and the consultant, it was disclosed that the natural gas emissions from the machines are included in the EUNATGAS emissions for the facility. The emissions from

the stacks are accounted for in the overall facility emissions. No other emissions should be emitting from these three stacks. In the next permit modification, these stacks should be added to one of the core area flexible groups, but the emissions are accounted for.

**EUCOREMAKING**

The core making includes curing the formed core sand mixture using dimethylisopropylamine (DMIPA), a non-HAP amine catalyst. There are three core making machines in EUCOREMAKING. The emissions from EUCOREMAKING are controlled by an acid scrubber. Emissions are also controlled by the finishing baghouse.

The formed cores are picked up by robots and dipped into coating and then placed onto a belt. This belt goes into an oven to quickly cure the cores. The cured cores are pulled off the belt and stacked by workers to be used in the mold pouring operations.

Material	Limit	Time Period	Records
Core Sand Usage	40,000 tpy	12-month rolling	18,882 tpy in April 2023
Catalyst Usage	22.2 tpy	12-month rolling	11.9 tpy in May 2023

There were discussions, prior to the inspection, about the facility possibly needing to change from DMIPA to dimethylpropylamine (DMPA) due to an impending shortage in DMIPA catalyst. The district suggested looking at Rule 285, meaningful change analysis, to make the change. This would include doing a full meaningful change analysis or completing a full toxics and permitting and analysis showing that the permit conditions they were issued for DMIPA would have been the same if they had asked to use DMPA during the permitting process. For the time being, the facility will use DMIPA and possibly look at adding DMPA in the future.

Core machines 1 and 2 were running during the inspection, and core machine 3 was running intermittently. The scrubber was observed during the inspection as well.

Probe 1 pH reading (below 4.0): 2.58 pH                      Probe 2 pH reading (below 4.0): 1.7 pH  
 Differential pressure (Max 5.08"): 3.5" H2O              System Pressure: 7.0" H2O  
 Pump flow rate (Max 350 GPM): 258.9 GPM              Reservoir Level (23-32 in H2O): 26 in H2O

An interlock system is installed on the scrubber, as required by the permit. This prevents the core machines from running if the scrubber isn't operating. The facility completes preventative maintenance on the scrubber daily, monthly, and semi-annually on the scrubber and records are kept on the eMaintenance system. The monthly calibrations are completed on the monthly PM for the scrubber, which was reviewed during the records review portion of the inspection.

Records are kept for the scrubber flow rate, pressure drop, and pH are recorded one time per minute on the internal AX system. The permit requires these be recorded no less than 2 times per 24 hours. Core sand usage is kept on a monthly and 12-month rolling basis. The DMIPA catalyst

usage is also kept on a monthly and 12-month rolling basis. These records were reviewed during the records review portion of the inspection.

**FGMELTING**

This flexible group includes scrap handling, pouring into molds, and 4 electric induction melting furnaces. The four melting furnaces are controlled by a common melt shop baghouse.

Emission Units: EUCHARGEHNDLG, EUINDUCTION1, EUINDUCTION2, EUINDUCTION3, EUINDUCTION4

Pollutant	Limit	Time Period	Records
PM	3.74 tpy	12-month rolling	2.95 tpy in March 2023
PM10	3.44 tpy	12-month rolling	2.70 tpy in March 2023
PM2.5	2.45 tpy	12-month rolling	1.95 tpy in March 2023

Material	Limit	Time Period	Records
Metal Charged	160,000 tpy	12-month rolling	125,735 tpy in March 2023
Metal Charged	833 tons per day	Daily	716 tpd 25 May 2023

The furnaces were in operation during the inspection. There is no scrap stored outside. Scrap is loaded into loading carts using a magnet. Once the scrap is loaded into the carts, it's brought forward and dumped into the furnaces to be melted. Staff observed tapping from one of the furnaces. A forklift transports the tapped metal to the deslagging area where the impurities in the metal are removed by skimming. The molten metal is then transported to the holding and pouring area.

Records were reviewed following the inspection. Emissions are calculated based on the most recently passed stack test results. PM, PM10, and PM2.5 emissions are tracked monthly and on a 12-month rolling basis. Metal charged is tracked on a daily basis. The sheet is designed to populate the total monthly metal charged and the highest day of the month at the bottom of the spreadsheet. The 12-month rolling Metal Charged limit is calculated from these daily and monthly totals.

Staff observed the meltshop baghouse, which was also in operation. All the pollution control equipment is interlocked with the equipment it controls on site. If the pollution control

equipment malfunctions, the associated equipment cannot run. The following information was recorded during the inspection.

Pressure Drop DC1 (Above 3.0"): 7.05" H2O      Pressure Drop DC2 (Above 3.0"): 4.45" H2O

Fan Amperage DC1: 220 Amps      Fan Amperage DC2: 205 Amps      BLD: 10.96%

While on the roof, staff observed the meltshop baghouse stack. There were no visible emission observed from the meltshop baghouse stack. The roof appeared to be mostly clear from sand debris. Brembo staff said the roof is inspected during the weekly PMs and cleaned, as needed, to prevent debris entering the roof drains.

**FGPOURCOOL**

This flexible group includes the pouring and cooling operations at the facility. The emission units in this flexible group are controlled by a common pouring and cooling baghouse and RTO.

Emission Units: EUPOURING, EUCOOLING

Pollutant	Limit	Time Period	Records
PM	1.10 tpy	12-month rolling	0.88 tpy in March 2023
PM10	1.10 tpy	12-month rolling	0.88 tpy in March 2023
PM2.5	1.10 tpy	12-month rolling	0.88 tpy in March 2023
CO	26.52 tpy	12-month rolling	20.87 tpy in March 2023
VOC	8.54 tpy	12-month rolling	6.73 tpy in March 2023

Molds for the parts are created by a machine which stamps patterns of the parts into compressed green sand blocks. Employees place the hardened sand cores into the middle of the molds, if needed. The molds are then conveyed along the process, and tops are flipped and placed onto the corresponding bottoms by robots. The molten is poured into the green sand molds using a robot to ensure worker safety.

The molds are sent through the cooling line to naturally cool before being sent through the shakeout line. Cooling can take about 2 hours and the parts are still hot to the touch. This area is controlled by a baghouse and RTO, which is equipped with a CEMs. The mold line, pouring area, and cooling line were running during the inspection. There were no visible emissions observed during the inspection.

BLD: 5.8% Pressure Drop (Above 3.0"): 5.91" H2O Fan Amperage (Max 340): 200 Amp

RTO Chamber Operating Temp: 1592 F Chamber A Temp: 1540 F Chamber B Temp: 1280 F

Stack Outlet Temp: 211 F      Stack Flow: 52.3 KSCFM

**CEMS**

Instantaneous: 4.94 ppm      1-Hour: 2.87 ppm      3-Hour: 3.52 ppm      24-Hour: 5.04 ppm

The facility is conducting annual RATA testing on the CEMs and the required quarterly CGA audits in quarters where the RATAs are not conducted. They are also submitting the required annual, semi-annual, and quarterly reports for the ROP including excess emissions and CEMs downtime reports. These are reviewed by EGLE staff. As a note, the facility has been doing this at the request of EGLE, even though the recently issued PTI was requested to be rolled into the existing ROP in August 2023.

The RTO combustion chamber temperature is recorded continuously, and records are kept on the internal data logging system. The facility emailed records of the most recent thermocouple replacement date following the inspection. The thermocouple is required to be replaced or calibrated annually. The facility submitted a declaration of conformity for the thermocouple dated 12/15/2022.

**FGSANDHNDLNG**

This flexible group includes the shakeout activities and the sand handling activities at the facility. The shakeout and sand handling activities are controlled by a common sand handling baghouse which controls EUSHAKEOUT and EUSANDHNDLG. EUSILOS is uncontrolled.

Emission Unit: EUSHAKEOUT, EUSANDHNDLG, EUSILOS

Pollutant	Limit	Time Period	Records
PM	13.67 tpy	12-month rolling	10.69 tpy in March 2023
PM10	10.18 tpy	12-month rolling	8.17 tpy in March 2023
PM2.5	7.32 tpy	12-month rolling	5.78 tpy in March 2023

Material	Limit	Time Period	Records
Mold and Core Sand Usage	1,440,000 tpy	12-month rolling	104,039 April 2023 1,014,605 tpy in April 2023

Sand for the molds is delivered via trucks to the sand silos. These sand silos are located inside the building and deliver white sand to the core machines and green sand to the mold area. Sand deliveries can happen multiple times a day.

Once the molds are cooled, they are sent down the shakeout line to remove the cooled castings from the sand molds. The sand is used in a closed-loop and reused until it is disposed of as waste. The castings and spurs are sent to be sorted through the finishing line. This operation was running during the inspection.

The sand handling baghouse was observed during the inspection. This room is very dusty but is separated from the rest of the building.

Pressure Drop DC1 (Above 3.0"): 6.92" H2O      Pressure Drop DC2 (Above 3.0"): 3.78" H2O

BLD: 4.91%      Stack Flow: 164.4 KSCFM

**CEMS**

Instantaneous: 2.17 ppm    1-Hour: 3.3 ppm    3-Hour: 4.96 ppm    24-Hour: 7.32 ppm

The facility is conducting annual RATA testing on the CEMs and the required quarterly CGA audits in quarters where the RATAs are not conducted. They are also submitting the required annual, semi-annual, and quarterly reports for the ROP including excess emissions and CEMs downtime reports. These are reviewed by EGLE staff. As a note, the facility has been doing this at the request of EGLE, even though the recently issued PTI was requested to be rolled into the existing ROP in August 2023.

Records were reviewed following the inspection. Emissions are calculated based on the most recently passed stack test results. PM, PM10, and PM2.5 emissions are tracked monthly and on a 12-month rolling basis. Mold and core sand usage is tracked monthly and on a 12-month rolling basis.

**FGMACTEEEE**

The affected source is a new or existing iron and steel foundry, that is (or is part of) a major source of hazardous air pollutant (HAP) emissions. A new affected source is a source that commences construction or reconstruction on or after December 23, 2002. The regulations cover emissions from metal melting furnaces, scrap preheaters, new pouring areas, pouring stations, new automated conveyor and new pallet cooling lines, new automated shakeout lines, and fugitive emissions from foundry operations.

Emission Unit: EUINDUCTION1, EUINDUCTION2, EUINDUCTION3, EUINDUCTION4, EUPOURING, EUCOOLING, EUSHAKEOUT

Pollutant	Limit	Equipment	Records
Opacity (fugitive)	20% 6-minute average		



		Each building or structure housing any iron foundry emission source	0% completed by a 3 <sup>rd</sup> party
PM -or- Total Metal HAP	0.001 gr/dscf -or- 0.00008 gr/dscf	New Electric Induction Melting Furnace	0.00023 gr/dscf 2022 stack testing
PM -or- Total Metal HAP	0.002 gr/dscf -or- 0.0002 gr/dscf	New Pouring Station or Area	0.0006 gr/dscf 2022 stack testing
VOHAP	20 ppmv	New Automated Conveyor and Pallet Cooling and Shakeout Lines	4.3 ppmv 3-hr avg FGPOURCOOL
			4.32 ppmv 3-hr avg FGSHAKEOUT

The facility has a third-party conduct opacity observations on fugitive emissions on each building or structure subject to 40 CFR Part 63 Subpart EEEEE, quarterly. The most recent opacity observations were reviewed during the records review portion of the inspection. All opacity observations were 0%.

As discussed above, the facility has CEMs installed on the automated conveyor and pallet cooling and shakeout lines. The system is maintained on-site by facility staff and as needed by Monitoring Solutions. CEMs data was viewed on site. The facility is maintaining the required 3-hour VOHAP average as required by 40 CFR Part 63 Subpart EEEEE.

Operation and Maintenance (O&M) Plans and Startup, Shutdown, and Malfunction (SSM) Plans have been submitted to the department for the pollution control devices, baghouses, RTO, and scrubber on site. Department staff recommended the facility review these plans and update them to reflect the most recent changes with both the newest permit limits and updated operational parameters for the pollution control equipment maintained during the most recently passed stack testing.

The facility is submitting annual, semi-annual, and quarterly reports to the department demonstrating continuous compliance with emission limits established under 40 CFR Part 63 Subpart EEEEE. Records reviewed during the inspection demonstrate compliance with these limits as well.

**FGENGINES**

Five Emergency Engines of various sizes for power generation and fire suppression.

**Emission Unit: EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4, EUENGINE5**

	<b>EUEINGINE1</b>	<b>EUENGINE2</b>	<b>EUENGINE3</b>	<b>EUENGINE4</b>	<b>EUENGINE5</b>
<b>Manufacturer</b>	Cummins	Clarke	Clarke	Clarke	Clarke
<b>kW Reading</b>	1,250 kW	55 kW	55 kW	177 kW	177 kW
<b>Hours Meter</b>	163.9 hours	278.8 hours	483.1 hours	492.4 hours	188.7 hours
<b>Date Of Last Inspection</b>	104.2 hours on 6/14/21	277.4 hours on 6/22/23	473.8 hours on 6/22/23	490.8 hours on 6/22/23	187.8 hours on 6/22/23
<b>Observations</b>	Emergency generator for office area	Diesel Fire Pump	Diesel Fire Pump	Diesel Fired Emergency Cooling Pump	Diesel Fired Emergency Cooling Pump

The five emergency engines on site are subject to 40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. All engines have an EPA sticker certifying the emissions were compliant with federal emission standards at the time of manufacture.

The emergency engines are tested once per week for about 30 minutes. The facility is tracking the hours for testing and emergency operation. This was provided after the inspections for review. Annual maintenance is performed, as required by Subpart IIII. The date of the last required inspection and maintenance was labeled on the oil filter along with the hours when the maintenance was completed. The engines only fire diesel fuel. Crystal Flash supplies the facility with ultra-low sulfur diesel fuel.

For EUENGINE1, the facility submitted information from Consumers Energy indicating there were planned outages on 11/25/22 and 12/24/22 for 12.5 hours each. Since the date of the last inspection, the facility has run EUENGINE1 59.7 hours. The facility also submitted an example weekly PM checklist. The facility should update their hourly tracking sheet to reflect the monthly and 12-month rolling hours of engine run time for both emergency and non-emergency usage.

**Exempt Equipment -**

The facility has two cold cleaners on site. They are identical Safety Kleen models with an automatic lid. The cold cleaner located in the melt area maintenance room was observed during the inspection.

The lid was closed and not in use at the time of the inspection. There was an AQD sticker about proper cold cleaner use on the device in a visible location. Safety Kleen is contracted to maintain the cleaners once every three months. This is exempt from permitting under Rule 281(2)(h).

At the time of the inspection, it appears that the facility is operating in compliance with the Federal Clean Air Act, Article II, Part 55, Air Pollution Control Rules, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended (Act 451); AQD administrative rules; Renewable Operating Permit (ROP) No. MI-ROP-N6226-2015a; and Permit to Install (PTI) No. 199-14D.

NAME Amanda Cross

DATE 8/18/23

SUPERVISOR 