

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

B283359400

FACILITY: MICHIGAN WHEEL CORP		SRN / ID: B2833
LOCATION: 1501 BUCHANAN SW, GRAND RAPIDS		DISTRICT: Grand Rapids
CITY: GRAND RAPIDS		COUNTY: KENT
CONTACT: Jason Clark , Vice President of Operations		ACTIVITY DATE: 08/19/2021
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced compliance inspection		
RESOLVED COMPLAINTS:		

Facility Description

Michigan Wheel manufactures bronze and Nibral marine propellers. The facility's primary operations consist of melting, pouring, machining and finishing processes.

Regulatory Overview

The facility holds the following active NSR permits.

PTI No. 414-91 – (2) 2,000 lb (capacity) electric induction furnaces

PTI No. 415-91 – (1) 2,000 lb (capacity) electric induction furnace

PTI No. 412-91 – Sand Reclaim System

PTI No. 17-14 - (1) 3,000 lb (capacity) electric induction furnace

The facility is currently not subject to Subpart ZZZZZZ, Non-ferrous foundry NESHAP, since the facility's metal throughput has not exceeded the threshold of 600 tpy. The facility provided melt throughput records for the past 5 years documenting throughput below the applicability threshold.

Compliance Evaluation

Prior to entering the facility, observations from the perimeter showed no odors or visible emissions.

At the facility staff met primarily with Jason Clark, VP of Operations, and Ron Braman, Maintenance Supervisor.

Sand System - Mold Making

The facility uses two types of sand binders, sodium silicate and green sand. The facility also purchases shell cores. A majority of molds are made from the sodium silicate system. The facility has two sodium silicate mixers, which along with the sand transport system are controlled by the facilities large baghouse. Shakeout/knockout is manually conducted on the floor. Spent sand is not recycled and is sent to the landfill for cover/roadways.

The facility has a manual mold operation that casts approximately 20-25 green sand molds a day. Shakeout/knockout is conducted manually on the floor. Spent green sand is processed through a reclaim system, which is permitted under PTI No. 412-91. Sand is reclaimed as follows: conveyor - rotary screen – silo – batch hopper – muller. The binder (clay) addition process is controlled by a Torit baghouse located next to the large melt system baghouse. The green sand reclaim system was not operating at the time of the inspection.

Requirements of PTI No. 412-91 - (Green sand reclamation system)

EMISSION LIMITS

The permit prohibits visible emissions from the sand renovation process.

RECORDKEEPING

The facility is required to maintain records of the hours operation on a weekly basis.

The facility provided requested records for the past month. The facility reported that they operate the sand reclaim system 50 hours per week (4:00 am - 2:00 pm)

Melting

The facility operates four (4) electric induction furnaces that are permitted under PTI Nos. 414-91, 415-91 and 17-14. The three furnaces permitted under PTI Nos. 414-91 and 415-91 are located adjacent to each other and have an overhead hood that captures emissions from all three furnaces. The newest furnace, permitted under PTI No. 17-14, is separated from the other three furnaces and has a separate hood for emission capture. The NSR permits require the furnaces to be controlled by a baghouse. The furnaces, are vented to the large melt baghouse. The facility currently casts approximately 90% Nibral and 10% bronze.

Requirements of PTI No. 414-91 (two furnaces, each with a melt rate of 2,500 lbs/hr / 2,000 pound capacity)

EMISSION LIMITS

The permit limits particulate emissions from the two furnaces to 0.01 pounds per 1,000 pounds of exhaust gases. Additionally VE is limited to not exceed 10% opacity.

Compliance with the emission limits is based on proper operation of the capture and control system. During the inspection, observation of the the capture hooding showed it to appear to be in good operating condition. While PTI No. 414-19 does not require the baghouse to be equipped with a pressure drop gage, the furnace permitted under PTI No. 17-14, which ducts to the same baghouse, does require the recording of daily pressure readings. The facility is maintaining pressure drop records.

The baghouse was not operating at the time of the inspection, since the facility was not melting/casting at the time.

RECORDKEEPING

The facility is required to maintain records of the hours operation on a weekly basis.

The facility provided requested records for the past month. The facility reported that they operate melting 50 hours per week (4:00 am - 2:00 pm)

PROCESS/OPERATIONAL RESTRICTIONS

Prohibits the facility from operating the furnaces, unless the baghouse is installed and operating properly.

At the time of the inspection, the baghouse was observed to be installed. The baghouse was not operating since melting/casting was done for the day.

Requirements of PTI No. 415-91 (one furnace, with a melt rate of 2,500 lbs/hr / 2,000 pound capacity)

EMISSION LIMITS

The permit limits particulate emissions from the furnace to 0.01 pounds per 1,000 pounds of exhaust gases. Additionally VE is limited to not exceed 10% opacity.

Compliance with the emission limits is based on proper operation of the capture and control. During the inspection, observation of the the capture hooding showed that it appeared to be in good operating condition. While PTI No. 415-19 does not require the baghouse to be equipped with a pressure drop gage, the furnace permitted under PTI No. 17-14, which ducts to the same baghouse, does require the recording of daily pressure readings. The facility is maintaining pressure drop records.

The baghouse was not operating at the time of the inspection, since the facility was not melting/casting at the time.

RECORDKEEPING

The facility is required to maintain records of the hours operation on a weekly basis.

The facility provided requested records for the past month. The facility reported that they operate melting 50 hours per week (4:00 am - 2:00 pm)

PROCESS/OPERATIONAL RESTRICTIONS

Prohibits the facility from operating the furnaces, unless the baghouse is installed and operating properly.

At the time of the inspection, the baghouse was observed to be installed. The baghouse was not operating since melting/casting was done for the day.

Requirements of PTI No. 17-14 (one furnace (EU-FURNACE4), with a melt rate of 3,000 pound capacity)

EMISSION LIMITS

The permit limits particulate emissions from the furnace to 0.01 pounds per 1,000 pounds of exhaust gases.

Compliance with the emission limits is based on proper operation of the capture and control. During the inspection, observation of the the capture hooding showed that it appeared to be in good operating condition. Proper operation of the baghouse is based on the requirement that the facility monitor and record the daily pressure drop readings. The facility is maintaining pressure drop records.

The baghouse was not operating at the time of the inspection, since the facility was not melting/casting at the time.

RECORDKEEPING

The facility is required to maintain records of the metal and flux throughput for each calendar month and 12-month rolling time period.

The facility provided total metal and flux throughput for all of the furnaces, as requested.

For the previous 12-months the facility had a total metal throughput of 526 tons. For the previous 12-months, the facility records showed a total flux use of 3,242 pounds.

The facility is required to monitor and records the fabric filter pressure drop on a daily basis during the operation of the furnace.

The facility provided pressure drop records, as requested, for the last three months. The records show the pressure drop was consistently between 3 and 4 inches.

PROCESS/OPERATIONAL RESTRICTIONS

Prohibits the facility from operating the furnaces, unless the baghouse is installed and operating properly.

At the time of the inspection, the baghouse was observed to be installed. The baghouse was not operating since melting/casting was done for the day.

STACK/VENT

The permit requires a stack from the baghouse that has a maximum diameter of 42 inches and an minimum height of 45 feet.

Observation of the stack during the inspection showed that it appeared to comply with the stack requirements.

Finishing

The facility has numerous finishing operations (buffing, grinding, polishing, CNC machining, etc.) that are exempt from NSR permitting under Rule 285(2)(I)(vi)(B)&(C). All of the processes vent internally, except for the large shot blast unit located near the ladle preheaters on the south side of the building. The shot blast is controlled by a baghouse that ducts to outside via discharging adjacent to a roof vent. Additionally, there is a plasma cutting booth that vents to the large baghouse (exempt under Rule 285(2)(I)(vi)(C)).

August 31, 2021 - Off Property Observations

On August 31, 2021, off property observations were made to evaluate the facility for visible emissions and odors during normal casting hours (04:00-14:00). Observations were made between 12:45 and 13:10. During this time no odors were detected from the facility. Additionally, no visible emissions were noted from the sand reclaim system baghouse. Intermittant visible emissions were observed from the large baghouse controlling the furnaces, sodium silicate mixers and plasma cutter. The visible emissions were grey in color and only lasted 5-10 seconds. Emissions were not in violation of the 10% opacity limit, based on a 6-minute average. EG contacted Jason Clark regarding the visible emissions. Mr. Clark stated that they completed maintenance on the baghouse 2 weeks ago. Mr. Clark went outside and observed the stack, but did not observe the emissions. Mr. Clark stated that they are going to conduct maintenance PM on the baghouse again to verify that the bags are in good working order. EG requested follow-up from the facility regarding the results of baghouse review.

Conclusion

Based on the information and observations made during this inspection, the facility appears to be in compliance with applicable air quality rules and regulations.

NAME Eric Grinstern

DATE 08/31/2021

SUPERVISOR HH