

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

B158246374

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| FACILITY: SMITH CASTINGS LLC | | SRN / ID: B1582 |
| LOCATION: FORD PLT BLDG 1, KINGSFORD | | DISTRICT: Upper Peninsula |
| CITY: KINGSFORD | | COUNTY: DICKINSON |
| CONTACT: Tracy Michel , General Manager | | ACTIVITY DATE: 09/19/2018 |
| STAFF: Eric Grinstern | COMPLIANCE STATUS: Non Compliance | SOURCE CLASS: MINOR |
| SUBJECT: Unannounced Inspection | | |
| RESOLVED COMPLAINTS: | | |

SMITH CASTINGS, INC

FACILITY DESCRIPTION

Smith Castings (SC) is located in the City of Kingsford in Dickinson County. The facility is an iron and steel foundry. The major production operations are raw material handling, mold and core production, metal melting, pouring, cooling, shakeout and cast finishing.

Molten metal is produced in two electric induction furnaces that are controlled by a baghouse. The facility utilizes green sand, phenolic urethane no-bake and furan no-bake sand systems. Cores consist of furan no-bake, core-oil and shell. Finishing operations consist of a shotblast unit with baghouse control and several manual grinding/sanding/cutoff stations with baghouse control.

The facility currently operates from 05:00 to 13:30 and employs approximately 45 workers.

The facility recently replaced the duct work that connects the green sand system, furnaces and shakeout to the baghouse.

REGULATORY OVERVIEW

The facility is an area source subject to the federal Iron and Steel Foundry Area Source National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart ZZZZZ under the Clean Air Act. Based on the facility's annual metal melt production, they are considered an existing "small" foundry under the NESHAP. The facility's processes that are covered by new source review (NSR) permits include the finishing operations (66-78), green sand handling system (768-88), two electric induction furnaces (328-92), furan no bake sand reclamation (65-94) and core and bond making processes (326-92B).

COMPLIANCE EVALUATION

At the facility, Air Quality Division (AQD), Eric Grinstern (EG), met with Tracy Michel, General Manager, and John Ray, Production Manager.

Management of the facility has changed within the last year. The current management showed a desire to understand and comply with air quality requirements.

Scrap/Charge Material

The facility's charge materials consist of pig iron, clean scrap plate, and revert. The facility does not melt any shredded auto scrap. The charge material is subject to pollution prevention management requirements under Subpart ZZZZZ. Written scrap specifications that have been conveyed to their scrap providers, as determined during previous inspections and as required by Subpart ZZZZZ. The facility still receives scrap from the same source (Schneider's Iron Metal). While the purchased scrap had more dirt mixing in with it than previously observed, the scrap itself is clean, high quality charge material.

SAND OPERATIONS

The facility utilizes furan no-bake, phenolic urethane no-bake and green sand molds. Cores consist of core oil, furan no-bake binders and shell sand.

Green Sand Handling System

PTI No. 768-88 covers the green sand handling system which requires baghouse control. The green sand reclamation system is controlled by the main baghouse located at the west end of the facility. The same baghouse controls emission from shakeout and melt furnaces.

Emission/Material Limits

PTI No. 768-88 limits particulate matter to 0.01 pounds per 1,000 pounds of exhaust gas and opacity to 0%.

Compliance with the emission limits is demonstrated through control equipment (baghouse) monitoring to demonstrate proper operation.

Observation of the baghouse showed no emissions during the inspection. Observation of the magnehelic gauge showed a pressure drop of 7".

The PTI requires the baghouse to exhaust through a stack with a maximum diameter of 38 inches and a minimum height of 30 feet. Visual observation of the stack showed that it appeared to meet the permit requirements.

Furan No-Bake System

The furan no-bake system is permitted under PTI No. 326-92B. The permit was modified in 2013 to allow for increased resin usage. The no-bake mold and core making process consists of two sand silos, one for new sand and one for reclaimed sand, one mixer and one conveyor line. The permit states that the process is controlled by a small baghouse located at the southwest corner of the facility. It appears this could be referring to control for the silos, which are addressed under PTI No. 65-94.

Emission/Material Limits

PTI No. 326-92B restricts PM emissions to 1.7 lb/hr and resin usage to 50 tons/year.

Compliance with the emission limit is demonstrated through control equipment (baghouse) monitoring to demonstrate proper operation. Observation of the baghouse showed no emissions during the inspection. No magnehelic gauge was observed during the inspection.

The facility is limited to using 50 tons of resin per year based on a 12-month rolling time period. As required by the permit, the facility maintains records of resin usage. Review of the supplied records showed resin usage to be 10.17 tons in 2017. Which is comparable to the usage of slightly over 11 tons, based on a 12-month rolling time period, observed during the previous inspection in 2015.

Furan No-Bake Sand Reclamation

The furan no-bake sand reclamation system is permitted under PTI No. 65-94. The furan no-bake sand reclamation system is a small unit that is controlled by a baghouse located adjacent to the reclamation system inside the plant. Reclaimed sand is conveyed to the reclaim sand silo located in the southwest corner of the facility. The silo is controlled by the small baghouse located in the southwest corner of the facility, referenced previously regarding PTI No. 326-92B.

Emission/Material Limits

PTI No. 65-94 limits particulate matter to 0.01 pounds per 1,000 pounds of exhaust gas and opacity to 0%.

Compliance with the emission limits is demonstrated through control equipment ((2) baghouses) monitoring to demonstrate proper operation.

Observation of the baghouses showed no emissions during the inspection; however, the process was not operating at the time of the inspection. No magnehelic gauge was observed during the inspection.

Phenolic No-Bake System

The facility has a small phenolic no-bake core mold line. The process has one mixer and one silo. The process has historically been at the facility and appears that it may be addressed in PTI No. 326-92A, as part of the "core making". The permit does not appear to contain limits addressing the process.

Shell Core

The facility has two shell core machines that have been at the facility for 20-30 years. The facility uses a small number of shell cores. It appears possible that the machines were addressed via permitting under PTI No. 326-92A, as part of the "core making", but were not specifically listed in the final permit conditions due to minimal emissions. A previous evaluation determined that the shell machines do not have the capacity to exceed the monthly Rule 290 formaldehyde limit. During the previous inspection the facility's monthly resin usage was 9 pounds.

Oil Cores

The facility has a small oil core making process that includes two core ovens. The process has historically been at the facility and appears that it may be addressed in PTI No. 326-92A, as part of the "core making". The permit does not appear to contain limits addressing the process.

MELTING OPERATIONS

Metal melting operations are conducted in two (2) electric induction furnaces. The furnaces are of the following sizes: (1) 500 lb. capacity, (1) 1,000 capacity. The facility holds PTI No. 328-92 for a 300 lb. furnace and a 1,200 lb. furnace. It appears that the 1,000 lb. furnace currently in use is the 1,200 lb. unit permitted. The two furnaces currently in use are under the 1,000 lb. furnace exemption in Rule 282(a) (iv). PTI No. 328-92 requires baghouse control from the furnaces. The furnaces are controlled by the same baghouse as the greensand system and shakeout. The facility has a hood located over the 1,000 lb. furnace that ducts to baghouse control. The facility previously stated that emissions from both furnaces are drawn into the hood. Observation of the process showed what appeared to be improved capture associated with the replaced duct work. Emissions from poured molds, adjacent to the furnace, could be seen getting captured by the furnace hood.

The facility produces grey and ductile iron. Ductile inoculation is conducted in a pour ladle in front of the 1,000 lb. furnace, with emission being captured by the hood over the furnace. The facility stated that they generally pour steel four days a week and iron one day a week. Approximately 5 of the 10 iron heats are ductile iron.

Emission/Material Limits

PTI No. 328-92 limits particulate matter to 0.01 pounds per 1,000 pounds of exhaust gas and opacity to 5%.

Compliance with the emission limits are demonstrated through control equipment (baghouse) monitoring to demonstrate proper operation.

Observation of the baghouse showed no emissions during the inspection. Observation of the magnehelic gauge showed a pressure drop of 7”.

The PTI requires the baghouse to exhaust through a stack with a maximum diameter of 38 inches and a minimum height of 37 feet. Visual observation of the stack showed that it appeared to meet the permit requirements.

FINISHING OPERATIONS

Cast finishing operations consist one shot blast unit and several manual grinding, cut-off, etc. stations. All processes have baghouse control. Finishing operations are permitted under PTI No.66-78, which requires baghouse control and has a 0% opacity limit. There are two baghouse that control finishing operations, one that controls the shot blast unit and one manual finishing station, and one baghouse that controls emissions from the remaining manual finishing stations. The facility previously had two shot blast units, however, only one was observed during this inspection. Additionally, a small heat treat oven is located in the southeast cornering of the facility. The heat treat oven is exempt from permitting under Rule 282(2)(a)(i).

Emission/Material Limits

PTI No. 66-78 limits particulate matter to 0.01 pounds per 1,000 pounds of exhaust gas and opacity to 0%.

Compliance with the emission limits are demonstrated through control equipment (baghouses) monitoring to demonstrate proper operation.

During the inspection, observation of the baghouses showed that they appeared to be operating properly. No visible emissions were observed from either baghouse. The facility explained that the baghouse that controls all of the finishing operations, except the shotblast unit, is a four-chamber unit of which only two chambers are used. The baghouse has the capability to exhaust internally, which the facility stated is done in the winter months. Observation of the magnehelic gauge showed a pressure drop of 3". The shotblast baghouse is located on the east side of the facility. The other finishing baghouse is located on the southeast corner of the facility.

**AREA SOURCE IRON AND STEEL FOUNDRY NESHAP
SUBPART ZZZZZ**

The facility is considered an existing small area source since their metal melt production is below 20,000 tons on an annual basis. As an existing small area source the facility is subject to the pollution prevention management practices regarding metallic scrap and mercury switches, as well as notification and semi-annual certification reporting requirements. As detailed above, the facility's scrap pollution prevention plan was previously evaluated. It was recommended to the facility that they review the plan and assure that the scrap provider is aware of the requirements.

Review of MACES shows that the facility last submitted semi-annual certifications in 2016. The facility was informed of the failure to submit certifications and were provided the link to the forms.

CONCLUSION

Based on the information and observations made during this inspection, the facility is in compliance with applicable air quality rules and regulations, with the exception of failing to submit semi-annual certifications for 2017 through June 30, 2018. A VN will be issued addressing failure to submit the certifications.

NAME 

DATE 9/28/18

SUPERVISOR 

