

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

B430726604

FACILITY: SPECIALTY CASTINGS INC		SRN / ID: B4307
LOCATION: 211 MILL ST, SPRINGPORT		DISTRICT: Jackson
CITY: SPRINGPORT		COUNTY: JACKSON
CONTACT: John Drinkwater , Plant Manager		ACTIVITY DATE: 07/23/2014
STAFF: Sersena White	COMPLIANCE STATUS: Compliance	SOURCE CLASS:
SUBJECT: Unannounced targeted inspection to evaluate compliance with Permit to Install 223-09.		
RESOLVED COMPLAINTS:		

SRN: B4307

Company Name: JP Castings, Inc., dba Specialty Castings

Company Address: 211 Mill Street, Springport, MI 49284

Company Contacts: Mr. John Drinkwater- Plant Manager & Jesse Petrak – Management Assistant

Company Contact e-mail: john.drinkwater@specialtycasting.com & jesse.petrak@specialtycasting.com

Directions to the facility: I-94W to Springport- Exit No. 124, Right on Willow, Right on Mill Street

Purpose: The purpose of this unannounced targeted inspection is to determine compliance with the Federal and State Air regulations, namely, Permit to Install 223-09 which was issued on April 23, 2010. This permit is a consolidation of six existing permits 506-97, 507-97, 508-97, 509-97, 510-97 and 511-97 into one facility wide permit. The facility has elected to limit the amount of metal charged to the furnaces to 20,000 tons per year to meet the definition of a small iron foundry area source pertaining to the National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 63 Subpart ZZZZ – Iron and Steel Foundry Area Sources. This source does not have to report to the Michigan Air Emissions Reporting System because the calculated actual emissions are less than Op Memo 13 levels.

Introduction: Specialty Castings makes high quality gray and ductile iron castings to meet the specifications of their customers. They offer making prototypes to production. They have more than 25 years of experience producing castings from a few ounces to 250 pounds in low to medium volume runs. Specialty Castings has been producing gray and ductile iron castings for industries including automotive and truck, government, diesel, mining, power transmission, process machinery, agriculture, fluid handling and machine tool.

Required PPE: Safety shoes/boots, safety glasses with side shields, hearing protection and hard hat around the pouring deck due to the overhead crane operation.

I arrived at the facility at approximately 2:48 p.m. I introduced myself to the receptionist and explained that I was there to conduct an inspection based on the air permit. I mentioned that Mr. Drinkwater's name was on the last report and she phoned to let him know that I was there. We went to his office and I briefly explained the process for the inspection as I handed him the Environmental Inspection brochure and pointed to the survey link on the back.

Permit Review: We reviewed all of the recordkeeping and emission limit requirements of the permit. Jesse provided totals for the material usage limits by contacting the person in charge of purchasing. Mr. Drinkwater said that it was easier to track materials by purchasing rather than trying to capture the data from the process lines. I was provided detailed records for the material usage and the emissions tracking via e-mail after returning to the office.

Plant tour: Jesses showed me the processes covered in the permit. We started at the beginning of the process with the core making processes, the sand handling, the induction furnaces, the baghouses, the shot blasting, the grinding operations and finally the silos.

EUMIPCC: The iron melting, inoculating, pouring/casting, and cooling operations consisting of two electric induction furnaces, all controlled by one Dustar Reverse Air baghouse designated as Furnace Baghouse. The baghouse is equipped with a magnehelic to monitor the pressure drop across the baghouse. They are required to monitor and record the pressure drop daily and when the lines are purged and cleaned. The furnaces were not operating at the time of the inspection. The furnaces are lined with refractory and are water cooled using coils to maintain temperature. The water for the cooling process is circulated through a cooling tower and reused. The molten metal is manually poured into a pot by tilting the furnace. The pot is then used to manually fill the molds using an overhead crane. After the mold box is half filled a cover is placed over the mold box which is then mechanically shaken to distribute the sand throughout the mold. The final filling includes being shaken and pressed to squeeze the sand into the mold box. When both sides of the mold are shaped, they are aligned as one piece and kept in place with frames until they are dry and ready for the molten metal.

There is a scale under the raw material feed so they can determine the weight of the metal that will be melted. The raw materials are a combination of pig iron and steel and parts that did not meet quality requirements. These pig iron and steel have certified content and quality requirements by Specialty Castings from their supplier, Omnisource. The emissions from this process are particulate emission concentration that can only be verified by testing and opacity which the plant personnel evaluate when in operation.

EUSHELLCORE: The shell core making process consisting of two shell core machines with no emissions control. Resin coated sand is used in making the cores for this process. I did not observe this process in operation during the time of the inspection. This resin coated sand comes in 3,000 pound super sacks. The resin in the cores is heat activated for mold setting purposes. A small permanent die is used and the core box temperature is operated at 450 degrees Fahrenheit. The heat hardens the core shell. The shells are filled in with the sand and resin mixture using a spout over the mold. There are at least three mold filling stations where the top and the bottom of the mold (inside the mold box) are filled from an overhead hopper that senses when it needs to refill from the Mueller.

After the molds have the cavity filled, they are cooled with a weight on top to keep the mold and metal in place until completely cooled. After cooling the cast piece is removed from the mold and the spent sand is reclaimed on the sand handling line that uses magnetic conveyors and vibration to separate metal from sand and to break down the sand until it is useable again.

There is no emission limits associated with this process, only material limits in pounds of the Resin-coated sand used.

EUAIRSETCORE: The air set core making operations with no emissions control. A resin and a catalyst are used in making the hand packed air set cores. I did observe the air set core making during the inspection. These cores are air dried prior to being filled with molten metal. The Furan Resin and Furan Catalyst are delivered in 55 gallon drums and are mixed with a 2:1 ratio, respectively.

There is no emission limit associated with this process, only material limits in pounds for the Furan Resin and the Furan Catalyst.

EUOILCOREMAKING: The oil core making process consisting of one oil core machine and one natural gas fired oven for curing the molds, with no emissions control. I observed hand packing of the oil core mold making and the oven. This process uses oil as an additive to a cereal (true flour) binder made in a batch process. After the cores are formed, they are baked. There is an oil and sand drop for molds that are hand packed.

There is no emission limit associated with this process, only a material limit in gallons for the Core Oil usage volume.

EUGRINDING: Multiple grinding stations (snag grinders, double wheel grinders, grinding tables), all controlled by one Wheelabrator cartridge dust collector, designated as Wheelabrator Baghouse. The baghouse is equipped with a magnehelic to monitor the pressure drop across the baghouse. Records are kept of the daily readings and times when the lines are purged and cleaned.

I did observe some of the grinding operations during the inspection. All of these processes involve a person holding the part while it is being ground.

The emission limit for this process is a particulate matter concentration that can only be verified by testing and an opacity limit which is observed and recorded daily by plant personnel.

EUSHOTBLASTING: The shot blasting operation consisting of one Wheelabrator shot blast machine and one GOFF shot blast machine, both controlled by one Mold Line Wheelabrator Ultra-Jet baghouse designated as Main Baghouse. I did observe this process in operation at the time of the inspection. All of the cast parts are sandblasted using a steel shot to remove burrs from the molding process. This emission unit is part of FGFACILITY and FGSANDHANDLING, it does not have a unique section in the permit.

FGSANDHANDLING: The shot blasting operation identified above, and the sand handling process consisting of a shakeout table, conveyors, mold making equipment (three green sand mold making machines), screens, Muller, and silos, all controlled by one Mold Line Wheelabrator Ultra-Jet baghouse designated as Main Baghouse. I did observe this process operating at the time of the inspection. The Mueller and the sand cooler are automated to control the moisture in the sand.

The emission limits associated with this flexible group is a particulate matter concentration that can only be verified by testing and an opacity limit which is observed and recorded daily by plant personnel.

All of the baghouses are equipped with copper tubing for the magnehelic gauges according to the requirements of the permit. During the inspection all of the gauges read between 5 and 5.5 inches of water.

FGFACILITY: Source-wide

There are emission limits for particulate matter, particulate matter 10 microns in size, volatile organic compounds, individual hazardous air pollutants and total hazardous air pollutants.

There is an annual metal melt production rate based upon the total amount of metal charged to all electric induction furnaces.

As mentioned earlier Specialty Castings is subject to the NESHAP for small foundries and has demonstrated compliance with the requirements of the regulation.

Records are kept to demonstrate compliance with the limits.

A Preventative Maintenance/Malfunction Abatement Program for the plant operations is on file.

There are two silos on site, one of them holds washed and screen sand and the other one holds the bonding agent for the green mold process. The silos are loaded from a truck and dispense material pneumatically to the processes.

The temperature of the sand and the pouring temperature of molten metal are critical in the casting process. The hot metal burns out the binder and the hot sand gets cooled and re-used.

Conclusion: Based upon my observations and review of the records, Specialty Castings is complying with the requirements of Permit to Install 223-09. The plant is operating at a significantly lower production rate than what the permit allows.

I left at approximately 4:30 p.m.

Attachments: Records and information about the casting process in general. Information from Specialty Castings website and the products they make.

NAME *Serrin White*

DATE *8-27-2014*

SUPERVISOR *[Signature]*