

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

N263147054

FACILITY: Barron Industries, Inc.		SRN / ID: N2631
LOCATION: 215 Plexus Dr, OXFORD		DISTRICT: Southeast Michigan
CITY: OXFORD		COUNTY: OAKLAND
CONTACT: GREGORY BARRON, VICE PRESIDENT		ACTIVITY DATE: 10/26/2018
STAFF: Rem Pinga	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced Level 2 Scheduled Inspection		
RESOLVED COMPLAINTS:		

On October 26, 2018, I conducted an unannounced level 2 target inspection at Barron Industries, Inc., formerly known as Barron Cast, Inc., located at 215 Plexus Drive, Oxford, Michigan. The purpose of the inspection was to determine the facility's compliance with the requirements of the Federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), the Administrative Rules, and the facility's Permit to Install Nos. 136-90A and 994-90. During the pre-inspection meeting, I met with Mr. Gregory Barron, Vice President-Engineering, and stated the purpose of my visit. Mr. Tom Hinckley accompanied me during the facility walk through inspection.

Barron Industries is an investment casting foundry facility. Investment casting is a foundry operation producing casting from ceramic molds formed by initially using wax to form the ceramic molds. Wax is injected into an aluminum die to produce the pattern for the mold production. The wax pattern is shaped into a tree by attaching several patterns using hot melt glue and then immersing the tree pattern into a ceramic slurry tank composed of aqueous emulsion, aluminum oxide, and binding material. The emulsion is composed of water, surfactant, and orange terpene. The binder is composed of water, fused silica called Zircon Sand, and polymer material called Citric Etch. The ceramic material dries up to form the outer shell of the wax mold. After a desired shell thickness is achieved, the entire mold is baked in a burnout oven to melt the wax for reclaim and form the ceramic mold. The ceramic mold is heated to 800 to 2000 degrees F depending on the alloy to be casted. In this facility, the metal to be casted is melted in 2 aluminum electric resistance furnaces (900 lb. and 2400 lb.) and 3 steel furnaces (200 lb., 500 lb., and 750 lb.) powered by 2 electric induction power supplies. The melting process is constrained by the 2 power supplies. Molten metal from the melting process is poured in the ceramic mold for casting. After cooling, the ceramic material is vibrated and blasted off the metal part and discarded. The casted metal is then processed into finished material using cutting, grinding, and other metallic finishing equipment.

During the walk-through inspection, I observed the 750 lb. steel furnace and the 2400 lb. aluminum furnace operating. I verified that the facility melts aluminum ingots and does not melt reclaimed materials as reported in the facility's Semi-Annual Compliance Report submittals required by 40 CFR Part 63 Subpart ZZZZZ. I observed a melting temperature of 1310°F for the 2400 lb. furnace while in the area.

The facility operates under Permit to Install Nos. 994-90 and 136-90. PTI No. 994-90 was issued for metal processing equipment such as grinding, blasting, and belting processes. During the facility walk through, I observed the shotblast, 2 tumbleblast, a grinder, and 5 finishing stations connected to the external Torit fabric baghouse collection system for particulate control. Per PTI No. 994-90 special condition no. 15, I did not observe any visible emissions outside the building and at the baghouse particulate control systems. Per PTI No. 994-90 special condition no. 16, the baghouse appeared to be operating properly as I did not observe any particulate fallout outside the vicinity of the filter system and the container that captures the particulate matter. Per Mr. Hinckley, a regular inspection and maintenance is being conducted on the facility's filter systems that included cleaning the bags every 6 months and changing the bags once per year. The particulate collection tank gets changed once every 2 weeks. I observed 3 sandblast equipment in the same room but individually ducted to each dust collection system that is exhausted indoor.

PTI No. 136-90A was issued for 2 wax reclaim ovens. The burnout oven has an automated control system to ensure that the afterburner control operates at the desired temperature during the wax melting process. Per PTI No. 136-90A special condition FG-OVENS(IV)(1), the emissions from the 2 ovens are controlled individually by an afterburner control system. During the inspection, these ovens were operating. I noted the following temperatures:

- Oven 1 - 1655°F, main chamber; 1612°F, afterburner
- Oven 2 - 1650°F, main chamber; 1624°F, afterburner

Per PTI No. 136-90A special condition FG-OVENS(IV)(2), I did not observe any internal visible emissions (VEs) by the oven area and outside the stack. In the melting area, the 900 lb. aluminum melting furnace was not in use but the 2400 lb. furnace was operating and I observed 1310°F as mentioned earlier. Pre-heat Oven 3 was not operating but Preheat Ovens 1 & 2 were on with 1897°F and 1907°F temperature readings during inspection. The melting pots still has molten materials and I did not observe any VEs in the melting area.

In the wax room, the facility operates 6 wax injection machines, the tree building processes for the wax mold, and the ceramic dip processes. These processes are controlled by another torit particulate control system located outside the room. The tree wax is washed in an etch equipment containing a citrus etch slurry to remove excess sand. This process is controlled by an internally vented dust collector. I observed a new line installed a few years ago but still not operating. It comprises of 4 sand drums (various sand sizes) and an automated conveyor system to simulate an automated ceramic mold production process. This line included a drying oven and has a particulate control system, a Torit dust collector, that is exhausted indoors. Maintenance of this particulate control system is the same as the other dust collector.

The finishing processes for the casted aluminum and steel metals production go through 3 deburring stations, a belt sander with a water scrubber system exhausted indoor. This process was not operating during the walk-through inspection. The facility also operates 12 CNC machines (previously 14 machines), cutting equipment, machine shop equipment, 3 hard presses, 1 large press, 2 milling machines, 2 electric ovens, and torch cutting equipment for all casted metal finishing processes. I did not observe visible emissions while in the area.

The facility operates a Caterpillar diesel fired emergency generator. The engine is rated at 300-400 kW 60 Hz 1800 rpm. At 400 kW, the conversion is about 536 brake horsepower (BHP). Since the engine was built in 1998, it is subject to 40 CFR Part 63 Subpart ZZZZ only as an existing stationary reciprocating internal combustion engine >500 HP located in an area source for Hazardous Air Pollutant (HAP) and constructed before June 12, 2006. The engine is exempt from notification requirements as an area source. During the walk-through inspection, the non-resettable hour meter showed 510 hours. Submitted records showed a total of 20.8 hours of non-emergency run time in CY 2017. From January through October 2018, the total run time added to 17.2 hours. This is below 50 hours per year and meets the 40 CFR Part 63 Subpart ZZZZ limit for operating as an emergency generator. The facility submitted a maintenance work sheet for work conducted by Cummins Bridgeway dated June 22, 2018. Mr. Barron mentioned that the company has a 5-year maintenance contract with Cummins Bridgeway that included oil/filter changes, inspections on the air cleaner, hoses, belts, etc. The facility is also subject to 40 CFR Part 63 Subpart ZZZZZ - The National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources. The facility submitted on time the Semi-annual Compliance reports for CY 2017 per 40 CFR Part 63 Subpart ZZZZZ (§63.10880 - §63.10906). The First Semi-annual Compliance Report for the January - June 2018 time period was received on time last July 6, 2018 and no deviations were reported.

Overall, I did not observe any non-compliance issues during inspection.

NAME

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DATE

12/10/2018

SUPERVISOR

Joyce B