

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

A017137372

FACILITY: HASTINGS MANUFACTURING COMPANY		SRN / ID: A0171
LOCATION: 325 NORTH HANOVER STREET, HASTINGS		DISTRICT: Grand Rapids
CITY: HASTINGS		COUNTY: BARRY
CONTACT: David Stephens , Maint. & Environmental Engineering Manager		ACTIVITY DATE: 10/27/2016
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced Inspection		
RESOLVED COMPLAINTS:		

**FACILITY DESCRIPTION**

The facility is located within the City of Hastings and manufactures piston rings. All processes associated with the making of piston rings are performed onsite, from the casting/forming process though finishing and chrome plating to packaging and shipping. The facility has a dedicated foundry operation housed in a separate building where grey and ductile iron castings are poured and subsequently processed into rings.

**REGULATORY OVERVIEW**

The facility holds the following active air use permits:

PTI Nos. 936-93	Metco Plasma System (Moly)
396-91	Foundry – sand silos, knock-out, shakeout, cooling conveyer
649-90	Abrasive belt sander with Metco wet collector
222-90A	Milling and Machining
277-86	Chrome Plating
267-81	Turntable pouring system
810-79A	Ajax furnace, shakeout conveyer, cooling conveyer

In addition to the permits to install, the facility is currently using Rule 290 exemption for the two 2-ton electric induction furnaces used in the foundry.

The facility is subject to NESHAPs Subpart ZZZZZ as a small area source foundry and Subpart N, chrome electroplating.

**COMPLIANCE EVALUATION**

Prior to entering the facility a survey of the perimeter was made. No abnormal odors were noted. Observation of the foundry showed intermittent white opacity coming from the pouring line stack. Due to the location of the stack, proper position and background could not be obtained to conduct Method 9 readings.

At the facility staff met with David Stephens, Maintenance and Environmental Manager, John Belles, Lead Lab and Environmental Engineering Technician, and Jeramy Collison, Maintenance Manager.

Below is an evaluation of the facility's compliance with applicable air quality rules, regulations and permits. For the purpose of evaluating compliance, the facility will be divided into three parts, foundry, finishing, and miscellaneous.

**FOUNDRY**

The facility has a dedicated foundry that produces both grey and ductile iron piston ring sleeves that are subsequently cut and finished to make piston rings.

**Mold Making**

The facility operates two shell mold machines, one large carousel unit and one small unit. The large carousel unit accounts for a majority of mold production. The large unit was installed in 1957 and has never had control. Emissions are vented via a 30 foot stack. The mold making operations are listed in PTI No. 810-79A. The permit essential requires adherence to the AQD rules (20% opacity, Rule 331) in regards to the mold making operations. No opacity was noted from the stack during the inspection. All spent shell sand is sent to RRC Inc.

## Melting

The foundry alternates melting between two 2-ton Inductotherm electric induction furnaces. The furnaces have rim vent capture systems that duct uncontrolled via a stack through the roof. Ductile inoculation is performed in a tundish ladle without capture or control. Charge material consists of pig iron, punchings, stampings and internal runaround. The facility has used Rule 290 to exempt the furnaces from the requirement to obtain a permit to install. The facility maintains records of particulate emissions as well as lead and manganese emissions to document compliance with Rule 290. Review of the facility's metallurgical data showed that they have alloys that contain nickel. Rule 290 does not allow an emission unit to emit any air contaminants with an IRSL less than 0.04 micrograms per cubic meter. Nickel has an IRSL of 0.0042 micrograms per cubic meter, which means that Rule 290 exemption from permitting is not allowed. They facility will apply for an NSR permit for the furnaces.

## Pouring/Cooling /Shakeout

Molds are manually poured on an indexing turn table that vents emissions uncontrolled via a 62.5 foot stack. Pouring operations were originally permitted in PTI No. 810-79A, and subsequently addressed in PTI No. 267-81 to account for process modifications. PTI No. 267-81 only requires compliance with the general 20% opacity limit. Poured molds are conveyed through a cooling tunnel that vents uncontrolled through a 28 foot stack. Cooling was also addressed in PTI No. 810-79A, and then subsequently addressed in PTI No. 396-91. From cooling the molds are processed through a shakeout conveyor and then through a blast cleaning unit, both of which are ducted to the foundry Torit cartridge collector. After the blast cleaning unit the sprues are removed on a small breaker machine. The piston sleeves continue on to the main plant for cutting and finishing.

## Subpart ZZZZZ – Area Source Iron and Steel Foundry NESHAP

The facility is subject to Subpart 5Z as a small area source. The facility has submitted all required notifications and continues to submit the required semiannual certification reports.

## FINISHING

After the sleeves are cast in the foundry, they are processed through equipment that splits, polishes, grinds and machines the piston rings. A number of these processes are unvented and or are exempt from permitting requirements.

Of these processes the following are covered under permits to install.

PTI No. 222-90A addresses the collection of metal chips from cast iron machining. These processes are controlled by a collection system installed in 2012, which is called the "Invincible Collector". The Invincible Collector consists of a cyclone, baghouse, and HEPA filtration unit. Within PTI No. 222-90A the only special condition more restrictive than the general conditions is an opacity limit of 5%. No emissions were observed from the outlet of the collection system.

PTI No. 649-90 addresses the operation of an abrasive belt sanding processing consisting of two units which are each controlled by a Metco wet collector. The permit special conditions limit opacity to 10%. No emissions were observed during the inspection.

PTI No. 936-93 addresses the operation of two Metco plasma spray units. The units coat the outside edge of the rings via a plasma spray system with molybdenum power. The units are controlled by the "Moly Collector". The moly collector consists of a cartridge filter unit followed by a HEPA filter. The permit limits emission to 0% opacity. No emissions were observed during the inspection. PTI No. 936-93 appears to address only one plasma spray unit, while there are two installed. The second unit appears to meet Rule 285(i), which exempts plasma coating equipment from the requirement to obtain a permit to install. The facility also has a separate moly cell that was installed approximately two years ago. This unit has baghouse control and also appears to meet Rule 285(i) exemption.

PTI No. 277-86 addresses the operation of a chrome plating operation which is also subject to the Chrome NEHAP, Subpart N. The plating operation consists five tanks, Tanks No. 1 through 4 and the Udyllite Tank (No. 5). Tanks No. 1 through 4 and the Udyllite tank are controlled by Scrubber No. 1. All of the ancillary process tanks for stripping/deplate, heated rinse tanks and alkaline baths are controlled by

Scrubber No. 2. Observation of the pressure drop across each stage of Scrubber No.1, showed the following readings: 1) 1.6 inches, 2) 1.4 inches, 3) 1.3 inches. The overall pressure drop was 4.0 inches, which is with the range established during testing 3.3"-6.0".

The facility undertook numerous upgrades to the hoods, ducts and mist eliminator boxes in 2015/2016. The facility had an issue in 2016 when a steam flange in the bath of the Udylite tank cracked. The additional fluid to the bath caused an overflow. The facility fixed the problem and placed the workers on respirators. The facility stated that MIOSHA investigated the incident and did not find any problems. The facility also had an issued in the summer of 2016 when a crack in the middle mesh housing of the No.1 scrubber caused a pressure drop loss. The facility discovered and fixed the crack about 30 days after the last preventative maintenance inspection on the system.

#### MISCELLANEOUS

In 2012 the facility replaced the existing larger boiler with two 6.2 mmBtu/hour boilers. These units are exempt from the need to obtain a permit to install under Rule 282(b).

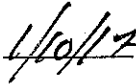
#### Conclusion

Based on the information and observations made during this inspection, the facility appears to be in compliance with all applicable air quality rules and regulations, taking into consideration the pending PTI application submittal for the induction melting furnaces.

NAME



DATE



SUPERVISOR

