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

A017145678

FACILITY: HASTINGS MANUFACTURING COMPANY		**SRN / ID:** A0171
LOCATION: 325 NORTH HANOVER STREET, HASTINGS		**DISTRICT:** Grand Rapids
CITY: HASTINGS		**COUNTY:** BARRY
CONTACT: John Belles , Environmental Engineering Manager		**ACTIVITY DATE:** 07/27/2018
STAFF: Eric Grinstern	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Unannounced Compliance 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 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 is subject to NESHAPs Subpart ZZZZZ as a small area source foundry and Subpart N, chrome electroplating.

The facility holds the following active air use permits:

Main Plant

649-90	**Abrasive belt sander with Metco wet collector**
222-90A	**Milling and Machining**
936-93	**Metco Plasma System (Moly)**
277-86	**Chrome Plating**

Foundry

810-79A	**Ajax furnace, shakeout conveyor, cooling conveyor**
267-81	**Turntable pouring system**
396-91	**sand silos, knock-out, shakeout, cooling conveyor**

There appears to be some overlap in processes covered by PTI No. 810-79A and PTI No. 396-91.

PTI No. 810-79A covers the following equipment:

Ajax Megnethermic coreless induction furnace (Removed from facility)
New mold indexing conveyor (Uncontrolled)
***New sand shakeout conveyor (BH)**
***Relocated casting blast cleaning (BH) – (Removed)**
Hand mold machine (BH) – (Removed)
***Snag grinder with blasting with existing Parsons dust collector (BH) – (Removed)**
***New casting cooling conveyor (Uncontrolled)**

PTI No. 810-79A requires the sand handling and shakeout equipment to be controlled by a baghouse. Processed listed in the permit requiring baghouse control are noted with (BH).

PTI No. 396-91 appears to address the installation of a Torit cartridge collector to control emission from the processes addressed in PTI No. 810-79A. The casting cooling conveyor was also added as a process requiring baghouse control. PTI No. 396-91 lists the following equipment:

3 sand storage silos (BH)
Sand receiving hopper (BH)
Hand-operated pattern abrasive blaster (BH)
***Feed-through abrasive cleaning machine (BH)**
Knock-out sound enclosure (BH)
***Shake-out conveyor (BH)**
***Snag grinder - Removed**
Wheelebrator tumblaster - Removed
***Casting cooling conveyor (BH)**

(*) processes listed in both PTI No. 810-79A and 396-91

It appears that the only process still active that is covered only by 810-79A is the mold indexing conveyor, which was permitted as uncontrolled.

COMPLIANCE EVALUATION

An initial inspection was performed on July 27, 2018 by Eric Grinstern (EG). A follow-up inspection was performed by Eric Grinstern and Tyler Salamasick on August 3, 2018. Additionally, a meeting/inspection occurred on September 6, 2018. 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 melt furnace stack. The opacity was around 10%.

At the facility staff met with John Belles, Maintenance and Environmental Manager. During the September 6, 2018 meeting, the facility was represented by John Belles, Ron Wobma, VP of Engineering, and Jim Ruddock, Consultant.

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. The unit exhausts through a stack directly above the process. The large unit has a sand receiving hopper located at the top of the process that is ducted to the Torit Collector, as required by PTI No. 396-91. Observation of the sand receiving hopper on August 3rd showed a short period of particulate emissions being emitted in-plant from the area of the hopper. The large mold making operation appears to be identified in historical permitting records as the "Semi-automatic mold machine". The unit appears to be grandfathered from PTI requirements. The small mold machine is ducted to the Torit collector.

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 (square) through the roof. Ductile inoculation is performed in a tundish ladle without direct capture or control. There are vents above the furnace tapping area that duct uncontrolled through a stack. Charge material consists of pig iron, punchings, stampings and internal runaround. The facility previously used Rule 290 to exempt the furnaces from the requirement to obtain a permit to install. However, during the last inspection it as determined that Rule 290 cannot be used since the facility's metal contains 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 0.0058 micrograms per cubic meter. The facility was directed to obtain a permit to install, however, they indicated a preference to use the recently developed Rule 291 exemption. The facility was requested to provide documentation that furnace emissions meet Rule 291. During the meeting on September 6, 2018, the facility indicated that they will either provide a Rule 291 determination or submit an PTI application.

Regarding ductile inoculation, it was previously determined that ductile inoculation is a grandfathered practice. The facility estimates that 8-10% of the iron is inoculated to produce ductile iron.

Pouring/Cooling /Shakeout

Pouring/Cooling

Molds are manually poured on an indexing turn table that vents emissions uncontrolled via a 62.5-foot stack. Pouring operations are permitted in PTI No. 810-79A. The mold indexing turn table is a round conveyor where pouring and cooling takes place. The pouring station has a side-draft hood that ducts uncontrolled via a stack. After pouring, the molds travel around the enclosed table which has three exhaust ducts. Two of the ducts vent to the same stack as the pouring station, while the third duct exhausts through a separate stack uncontrolled. Observation of the pouring/cooling stacks showed no visible emissions during the inspection.

Shakeout

After pouring and cooling on the indexing turn table, molds travel through a knock-out enclosure. The knock-out enclosure is ducted to the Torit collector, as required by PTI No.396-91. The mold is then conveyed though what the facility appears to identify as a shakeout tunnel that is required to have baghouse control. Shakeout was addressed in PTI No. 810-79A, and then subsequently addressed in PTI No. 396-91. Observation of the shakeout line showed that there are four ducts associated with the tunnel. The first and fourth duct exhaust to the baghouse. The second and third combine into one stack. It was determined during the September 6, 2018 meeting that these two ducts are intakes providing ambient air to the tunnel for cooling. Inspection of the stack from the roof top showed that it was equipped with an intake fan that was operating.

Cooling

After shakeout, the molds are processed through what the facility has identified as a cooling conveyor and then through a George Fischer "feed through" abrasive cleaning unit, both of which are required by PTI 396-91 to have baghouse control. Observation of shakeout conveyor showed five ducts that exhaust the cooling line and exhaust to the Torit collector. There are also five ducts other ducts on the conveyor line that combined to a single stack equipped with a rain cap. On September 6, 2018, it was determined the stack and ducts provide ambient air for cooling. Inspection of the stack from the roof top showed that it was equipped with an intake fan that was operating.

After the blast cleaning unit, the sprues are removed on a small breaker machine. The piston sleeves continue to the main plant for cutting and finishing.

Observation of the Torit collector showed a pressure drop of 2.5 inches. The unit can either be ducted via a stack through the roof or back into the in-plant atmosphere.

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, with the exception of the report covering the second semi-annual period for 2017.The facility believed that they had submitted the report, however was unable to locate a copy, and AQD does not have a copy on file. The facility immediately submitted a semi-annual certification for the second half of 2017. As a small area source, the facility is required to maintain records of the annual melt rate. The facility submits melt records each year. The facility is also required to maintain a scrap plan and comply with scrap specifications. The scrap plan was previously evaluated. All scrap on site is very clean due to the product they are producing. Except for the late certification, the facility appears to be in compliance with Subpart ZZZZZ.

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 under Rule 285(2)(l)(vi)(B) &(C).

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

Milling and Machining

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. PTI No. 222-90A restricts PM missions to 0.05 pounds per 1,000 pounds of exhaust gases and 1.13 pound per hour. The process is also required to have baghouse control with an opacity limit of 5%. No emissions were observed from the outlet of the collection system. The facility records the pressure drop across the baghouse on a daily basis. During the inspection the pressure drop on the primary filter was 2.2", while the secondary filter had a pressure drop of 3.5".

Abrasive belt sander with Metco wet collector

PTI No. 649-90 addresses the operation of an abrasive belt sanding process consisting of two units which are each controlled by a Metco wet collector. PTI No. 649-90 restricts PM missions to 0.1 pounds per 1,000 pounds of exhaust gases. The emission unit also has an opacity limit of 10%. The process is also required to be controlled by a wet collector with a stack not less than 39 feet and maximum diameter of 12 inches. The facility has established preventative maintenance procedures to assure proper operation.

Metco Plasma Spray System (Moly)

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 powder. 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 PM emissions to 0.003 pounds per hour and 0.02 tons per year. Visible emissions are limited to 0% opacity. 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(2)(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 three/four years ago. This unit has baghouse control and appears to meet Rule 285(2)(i) exemption. The three cells are controlled by Collectors 2157 and 1003. Collector 2157 controls cell #1, while Collector 1003 controls cells #2 and #3. During the inspection Collector 2157 had a pressure drop of 1.1". The facility has a posted maximum pressure drop of 3.0". Collector 1003 had a pressure drop of 0.4" for the collector and a pressure drop of 5.3" for the HEPA. The facility has a posted collector operating range of 0-2" and a HEPA operating range of 0-6". No emissions were observed from either of the collectors during the inspection

Chrome Plating

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 of five tanks, Tanks No. 1 through 4 and the Udylite Tank (No. 5). Tanks No. 1 through 5 are controlled by Scrubber No 1. Additionally, the facility has ancillary tanks (rinse, etc.) that are exhausted to Scrubber No. 2. Observation of the pressure drop across each stage of Scrubber No.1, showed the following readings: 1) 0.8 inches 2) 1.9 inches 3) 0.8 inches. The overall pressure drop was 3.8 inches, which is with the range established during testing 3.3"-6.0".

Tanks No.1 through No. 5 and Scrubber No. 1 are regulated by the Chrome NESHAP. The scrubbers are located in and enclosure above the chrome plating room. Observation of Scrubber No. 1 showed red/yellow staining on each of the three mesh pads, indicating chrome exposure. Stage 3 had a slightly sagging/wavy appearance and had a wood frame constructed around it for support. Stage 2 had a slightly sagging/wavy appearance. Stage 1 and a pronounced sagging/waving appearance with the pad appearing to slightly be pulling away from the frame.

Scrubber No. 2 is located adjacent to Scrubber No. 1 and is a packed bed scrubber system.

PTI No. 277-86 limits chrome emissions from Scrubber No. 1 to 0.000149 pounds per hour and 6.35 micrograms per cubic meter. Scrubber No. 2 limits chrome emissions to 0.000368 pounds per hour and 15.8 micrograms per cubic meter. The opacity limit for both scrubbers is 0% opacity. No opacity was observed from either scrubber during the inspection.

The last compliance testing was conducted on Scrubber No. 1 in 1998. It appears that prior to conducting testing to demonstrate compliance with the Chrome NESHAP the facility rerouted the exhaust from the chrome tanks to go to Scrubber No. 1. Prior to that time, the tanks were

exhausted to Scrubbers No. 1 and No. 2. AQD files contain a staff determination that based on consultation with Permits, the chrome emission limit for Scrubbers No. 1 and No. 2, contained in PTI No. 277-86, could be combined to apply to Scrubber No. 1. It appears the facility conducted an initial test on February 3, 1998 and a follow-up test on September 17, 1998 to allow for the expansion of the scrubber pressure drop operating range. Results for the September 17, 1998 testing showed a chrome emission rate of 0.007 mg/m3, which is less than the NESHAP limit of 0.015 mg/m3. The average emission rate was 0.000255 pounds per hour. This rate is in excess of the permitted limit, however, it is less that the combined chrome limits for Scrubbers No. 1 and No. 2. The permit should have been modified to reflect the correct emission limits after the system was reconfigured. During the September 6, 2018 meeting, discussion took place regarding the modification of the permit to accurately represent the current configuration.

Based on the length of time since the last test and age and condition of the scrubbers, the facility will be required to conduct emission testing on both scrubbers to demonstrate compliance. Testing will most likely be required to be conducted after the permit is modified.

The facility provided a copy of the most recent on-going compliance status report for Subpart N. The status report documented the scrubber preventative maintenance that is performed every 90 days. The reported documented no deviations and showed the overall scrubber pressured drop to be within the established range.
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Information was requested regarding the use of PFOS-based fume suppressants in the chrome plating tanks to determine compliance with Subpart N. Mr. Belles has worked with the chrome plating operation for over 20 years and stated that he is not aware of any fume suppressant being used in the tanks. Mr. Belles supplied copies of the chemicals added to the chrome tanks. Review of the SDSs provided showed no PFOS/PFAS or similar compounds.

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.

NAME  DATE 9/11/2018 SUPERVISOR