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

M455847296

FACILITY: Bodycote Thermal Processing Inc.		**SRN / ID:** M4558
LOCATION: 38100 Jay Kay Drive, ROMULUS		**DISTRICT:** Detroit
CITY: ROMULUS		**COUNTY:** WAYNE
CONTACT: Walter D'Souza , Plant Manager		**ACTIVITY DATE:** 12/14/2018
STAFF: Katherine Koster	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** Minor
SUBJECT: Targeted FY19 Inspection		
RESOLVED COMPLAINTS:		

Reason for Inspection: Targeted Inspection
Level of Inspection: PCE
Inspected by: Katie Koster, AQD
Personnel Present: Walter D'Souza, Plant Manager; Ahmad Hammoud, Regional Health and Safety Manager
Facility phone number: 313-442-2387; 313-414-6122
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FACILITY BACKGROUND

Bodycote Thermal Processing, Inc is located at 38100 Jay Kay Drive, Romulus, MI. This company has multiple locations throughout the world. The company moved into the Romulus facility in April 2018. Currently, there is no sign on the building. Precision Hardware operated at this location prior to Bodycote. There are 12 employees, and the facility operates Monday through Friday, 24 hours a day. They are heat treating transmission parts for the automotive industry; currently GM is their only client. The facility is still operating in "trial phase" and has not sold any production parts.

COMPLAINT/COMPLIANCE HISTORY

No complaints have been received.

OUTSTANDING CONSENT ORDERS

There are no outstanding consent orders.

OUTSTANDING LOVs

There are no outstanding LOV's.

INSPECTION NARRATIVE

On December 14, 2018, I arrived at Bodycote Romulus at 10:00 a.m. I met with Walter D'Souza, Plant Manager, and Ahmad Hammoud, Regional Health and Safety Manager. They accompanied me about the facility. In March 2018, the company applied for the general permit for anhydrous ammonia storage. However, the ammonia system has been installed but is not yet in use. According to the facility, the storage tank is empty.

We walked to the production floor. The general process is as follows: pre-washing, pre-ox, hardening furnaces, post-washing, tempering, and cooling table with fans. There is also a shot peening station and an end line washer.

We viewed the hardening furnaces. At this time, three hardening furnaces have been installed. There are plans to install many more tempering and hardening furnaces. Ammonia is used in the hardening furnace during the last three hours of the process. According to Mr. D'Souza, the ammonia system that was permitted is not yet in use. Currently, the facility is using individual ammonia canisters to manually add ammonia at the furnace. The hardening furnaces are each rated at 1.2 MMBTU/hr heat input and have an integral oil quench tank. The furnace chamber is injected with different gas mixtures which are

generated by cracking natural gas in the endo generators and by adding anhydrous ammonia into the furnace. The furnace is brought to a temperature above 1400F (explosive conditions exist below this temperature). This creates the desired atmosphere needed to affect the metal structure. After completion, the parts are quenched in oil. The oil quench takes approximately 30 minutes, and there are agitators in the oil bath. No water can be present, and the process has to use virgin oil.

There are two endothermic gas generators for cracking natural gas for use in the furnaces. A fire curtain is present at the face of the furnace where the door opens to prevent O2 from entering the furnace. After quenching, parts are removed and cleaned of residual oil. The washer is electrically heated and the solution is water based. There are three electrically heated tempering furnaces. Finally, the parts are then placed on a cooling table to dry.

We walked outside and viewed the anhydrous ammonia equipment. The equipment appears to be situated properly as it relates to the required distance from certain facilities. It is in a business park, and I did not observe any residence, school, or hospital/nursing home nearby.
Below is a summary of our discussion:

- The supplier will be responsible for providing trained personnel for ammonia deliveries
- Tank is 1,000 gallon capacity
- Company already started an inspection process
- Signs were posted at the entrance of the gate around the ammonia equipment with the emergency phone number. Emergency plan has reportedly been approved by the fire department.
- Valve certification is affixed to the equipment
- No hoses observed
- No venting through a water trap will occur
- Emergency shut off valves were pointed out

There is also a 10,000 gallon nitrogen storage tank in this area.

Back inside the facility, we viewed the shot peening and end line washer. Shot peening exhausts through a dust collector situated inside of the building. The collector does not exhaust to outdoor air. The end line washer is natural gas fired and is in place to finish cleaning of certain parts.

RULES/PERMIT CONDITIONS EVALUATED

At this time, I was not able to complete a full compliance evaluation of the anhydrous ammonia equipment as it is not in use. Technically, there is no required recordkeeping as of yet. Of note, the general permit is not truly indicative of the operations/manner in which ammonia is used in a heat treating capacity. For example, there is no "nurse or applicator tank." Another inspection is needed when the system becomes operational.

The hardening furnaces with oil quench do not appear to be exempt. The exemption for heat treating furnaces is R 336.1282(2)(a)(i) – Any of the following processes or process equipment which are electrically heated or which fire sweet gas fuel or no 1 or no 2 fuel oil at a maximum total heat input rate of not more than 10,000,000 BTU per hour: (i) Furnaces for heat treating or forging glass or metals, the use of that does not involve ammonia, molten materials, oil coated parts, or oil quenching.

As the furnaces at Bodycote use ammonia and oil quenching, they do not appear to meet the exemption. During the inspection, I asked if the facility had performed an exemption analysis for all of the equipment that they could provide to me. Bodycote was not able to provide an analysis.

Tempering furnaces appear to be exempt per R 336.1282(2)(a)(i) as they are electrically heated and do not involve any of the prohibited materials or operations listed in the exemption.

Endo generators appear to be exempt per R 336.1285(2)(l)(iv) which exempts the following equipment and any exhaust system or collector exclusively serving the equipment: (iv) atmosphere generators used in connection with metal heat treating processes.

Shot peening appears exempt per R 336.1285(2)(l)(vi)(B): equipment for carving...shot peening... metals...which meets any of the following: (B) equipment that has emissions that are released only into the general in-plant environment.

Washers appear to be exempt per R 336.1285(2)(l)(iii): equipment for the surface preparation of metals by use of aqueous solutions, except for acid solutions.

Nitrogen storage tank appears to be exempt per R 336.1284(2)(j): Pressurized storage of....nitrogen...

Note, while some equipment appears exempt at this time, a review of other hardening furnace permits indicates that the emission unit is considered to be the heat treating line and includes some of the exempt equipment in addition to the furnace. This will be determined during the permitting process.

COMPLIANCE DETERMINATION

At this time, facility does not appear to be in compliance with the Rule 201 permit to install requirements. A violation notice was issued.

NAME Katie Koster DATE 2/13/19 SUPERVISOR W.M.