

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

N247327704

FACILITY: Gerdau Lansing Mt. Hope Facility		SRN / ID: N2473
LOCATION: 209-1 W MT HOPE RD, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: INGHAM
CONTACT: Clint Gilsdorf, Safety Director		ACTIVITY DATE: 10/24/2014
STAFF: Brian Culham	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM 208A
SUBJECT: The purpose of the announced scheduled inspection was to discuss what Atmosphere Annealing needs to do prior to the rescission of Rule 208A, to complete a FCE, and to determine source compliance with Air Quality regulations.		
RESOLVED COMPLAINTS:		

Noise is a safety issue in this plant. Take adequate hearing protection.

Atmosphere Annealing is located in the center of the City of Lansing about 1/2 mile south of the Grand River.

Atmosphere Annealing was part of MacSteel, which has been purchased by Gerdau. The company offers their customers a variety of heat treating options for metal parts including hardening, annealing, and tempering. Several quenching options are available for the hardening treatments. Shot blasting may be required to remove scale from some parts after treatment. The majority of the parts treated are automotive components.

Air emissions are primarily generated from the combustion of natural gas in the heat treat furnaces, from oil mist by quenching processes, or from carry out oil combusting in the furnaces.

The source is presently an Air Pollution Control (APC) Rule 208a minor source for Title V purposes. The State of Michigan will be rescinding APC Rule 208a. According to C. Gilsdorf, Atmosphere Annealing did not receive the letter explaining this process until mid-October. In late October C. Gilsdorf contacted me by phone stating that his PTE calculations for PM<sub>10</sub> appeared to be greater than 100 tpy, therefore an Opt-Out Permit application is being prepared and will be submitted for Atmosphere Annealing.

A Michigan Air Emissions Reporting Systems (MAERS) report was submitted as well as a Rule 208a certification. Actual emissions of pollutants have been maintained at less than 50% of potential to emit thresholds for major source. Atmosphere Annealing is presently in compliance with Rule 208a.

Tons Pollutants Reported to MAERs (208a < 50 tons/yr.)				
Year	NO <sub>x</sub>	PM <sub>10</sub>	SO <sub>2</sub>	VOC
2013	9.17	13.28	0.04	0.19
2010	9.94	12.66	0.04	0.20
2009	24.99	13.42	0.10	0.49
2008	11.64	24.08	0.50	0.23

I did not identify any processes which would generate significant Hazardous Air Pollutant (HAP) emissions. Because Atmosphere Annealing is not a Title V Major Source of HAP it is considered an Area Source.

The MACT NESHAP subpart XXXXXX applies to 9 Metal Finishing Categories at Area Sources. Dry shot blasting is a metal finishing process regulated by the subpart; however "heat treating" NAICS 33281, does not appear to be one of the nine subject categories identified by the subpart. It is my understanding that Atmosphere Annealing is not subject to this subpart.

The Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, does not apply to Atmosphere Annealing, because they are not presently a Major Source of HAP.

The MACT NESHAP Subpart JJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers - Area Sources, does not apply to Atmosphere Annealing, because in this subpart "Process Heaters" is excluded in the definition of "Boiler".

Before entering the plant I drove to Bradley Rd. and entered plant property near the location of Furnaces #9 and #10. This location gave me a good view of the stacks associated w/ this line. I did not identify any opacity from this line or any other stacks evident from this location. I then drove to and parked on the plant property across from Davis Street. Again I checked the roof line, and did not identify any opacity. A final observation was made during the end of the inspection at the northeast corner of the property near the rail tracks. No opacity was identified from Atmosphere Annealing stacks at any location.

I arrived at 1:15 as scheduled. I met with Clint Gilsdorf, Safety and Environmental Manager. The purpose of the announced scheduled inspection was to discuss what Atmosphere Annealing needs to do prior to the rescission of Rule 208A, to complete a FCE, and to determine source compliance with Air Quality regulations.

No.	Emission Unit or Flexible Group	Description	Permit Number or Exemption	Comp. Status
1	EU1&2waterln	Furnace #1 Heating w/ Water Quench and Furnace #2 Tempering	Exempt by Rule 282(a)(i)	C
2	EU3&4oilquench	Furnace #3 Heating w/Oil Quench. Furnace #4 Tempering w/Parts Washer	Grandfathered	C
3	EU5&6polyquench	A Heating Furnace and a Temper Furnace In Series	Exempt by Rule 282(a)(i)	C
4	EU 7 normalize and EU 8 tempering	Two Furnaces and a Exothermic Generator.	Exempt by Rule 282(a)(i)	
5	EU9&10 oilquenchln	Heating w/Oil Quench and Tempering with Wash Station.	PTI 289-98	C
6	EU11normalize	Normalized Heat Treat Furnace (no quench)	Removed from operation	C
7	EU12normalize	Normalized Heat Treat Furnace (no quench)	Exempt by Rule 282(a)(i)	C
8	EU13 anneal and EU14 anneal	Two Annealing Furnaces	Exempt by Rule 282(a)(i)	C
9	EUshotblast	3 batch airless shot blast machines w/pulse jet baghouses	Exempt by Rule 285(l)(vi)(B)	C
10	EUCBlast	continuous blast line w/inplant cartridge baghouse	Exempt by Rule 285(l)(vi)(B)	C

An inspection brochure was left with C.Gilsdorf.

It is my understanding that all heat treating furnaces combust natural gas and are less than 10 mmbtu in size. Heat treating occurs in the temperature range from 1000 °F to 1700°F.

It is my understanding that each furnace series is set up to offer different quenching rates. The cooling speed differs based on submersion in oil, polymer, or water. Some lines may be unused for periods of time depending on contracts. It is also my understanding that the quench material may change over time based on the incoming process demands. Likewise the temperature range of a furnace may change.

#### **#1 - Furnace #1 Heating w/ Water Quench and Furnace #2 Tempering**

MAERs reported this unit as a water quench line; however C. Gilsdorf stated that this line is being used with a polymer quench. The polymer quench in use is still Paraquench 90. It contains Sodium Tetraborate-deca and Sodium Nitrite. It is my understanding that this product is added to water and makes a slightly caustic solution.

Because the quench is aqueous and not considered oil, the process is exempt from air use permit requirements by APC Rule 282(a)(i).

The two furnaces are in series and following the heat and quench process they enter the second furnace for tempering.

**#2 - Furnace #3 Heating w/Oil Quench and Furnace #4 Tempering w/Parts Washer**

This is a continuous conveyor heat treating line with an oil quench and tempering furnace. A water wash is used following the quench to remove excess oil prior to entering the second furnace.

The file indicates that this is a grandfathered source. That means that the process was installed prior to August 15, 1967 and therefore prior to the regulation requiring an air use permit. It did not appear that any significant modifications or reconstruction had occurred since the last inspection in September of 2009. C. Gilsdorf confirmed this by saying that changes to the operation have been restricted to repairs. In 1992 a permit application was submitted for adding an afterburner to control excessive smoke from the quench process and the #4 furnace. Permit #974-92 was issued, but voided 3 months later when the equipment was not installed.

The parts were slowly conveyed upward from the quench tank toward a second furnace. This conveyor arrangement allowed for the drainage of oil from the smooth part back to the quench tank.

**#3 - A Heating Furnace w/Polymer Quench and Temper Furnace in Series**

Furnaces #5 and #6 are operated in series. The polymer quench is called Parquench 90. It contains Sodium Tetraborate-deca and Sodium Nitrite. It is my understanding that this product is added to water and makes a slightly caustic solution.

Because the quench is aqueous and not considered oil, the process is exempt from air use permit requirements by APC Rule 282(a)(i).

**#4 - Exothermic Heat Treat Furnace**

C. Gilsdorf pointed out the exothermic generator stating that it is used to change the environment in furnace #7. Unit #8 is used as a batch tempering furnace. The units were not operating during my inspection. Because there is no quench used, the process is exempt from air use permit requirements by APC Rule 282(a)(i).

**#5 - Oil Quench Heat Treat Line with Wash Station**

This is a continuous conveyor heat treating line with oil quench. The line is permitted by Permit to Install (PTI) #289-98. Heated parts exit furnace #9 and are submerged in a quench pit below floor level. A "dumbwaiter" is used to elevate the quenched parts from the pit to the wash station. The pit area appeared to be enclosed except for the "dumbwaiter" opening. I did not identify any oil mist exiting this opening or from any other area associated with the oil quench.

A wash station is used to remove oil carried out from the quench tank. If not washed, the cupped parts would carry quench oil to the second furnace. The residual oil would ignite, or smolder in the #10 furnace.

Before plant entry I had observed the stacks associated with this line. The southern stack was the discharge point for a manifold of ducting that included combustion of the #9 furnace fuel, hoods from the quench area, and hoods from the wash area. No opacity was evident. The northern stack is the #10 furnace. No opacity was evident. The limit is 20% per APC Rule 301.

**#6 - Normalized Heat Treat Furnace (no quench)**

According to C. Gilsdorf, Furnace #11 has been removed from operation.

**#7 - Normalized Heat Treat Furnace (no quench)**

Because there is no quench used on Furnace #12, the process is exempt from air use permit requirements by APC Rule 282 (a)(i).

**#8 - Heat Treat Line without Quench**

The furnaces #13-#14 can be used separately or in series. An Endothermic Generator can be used to create a high nitrogen atmosphere for these two furnaces.

**#9 - EUshotblast**

Blast Units 3, 4, and 5 are three batch machines which appeared similar in their type and installation. The blast media being used is steel shot. Each blaster had a control device that exhausted into the in-plant environment. Cartridge type

filter media are used in the control devices and cleaned by pulsed air.

Maintenance schedules are based on operational demand. Low use blasters may go two years without maintenance, high use every 6 months. Maintenance staff indicated that a failed cartridge causes visible opacity in the in-plant environment. A failed cartridge receives immediate maintenance response, because it is not tolerated by employees.

The shot blasting units are exempt from the need to obtain an air use permit by APC Rule 285(l)(vi)(B).

A haze was noticed near Furnaces #9 and #10. C. Gilsdorf stated that the source was maintenance arc welding that was occurring on a shot blaster being repaired. The opacity could not be seen outside the plant.

**#10 - EUCBlast**

This is the #7 blast process. It is a conveyORIZED continuous shot blast with a baghouse that vents into the plant. The unit is exempt from the need to obtain an air use permit by APC Rule 285(l)(vi)(B).

I did not identify any violations during my inspection. I left at 4:00 pm.

NAME Bruce Wilson

DATE 11/7/2014

SUPERVISOR M. M. G. G.