DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B430657672

FACILITY: Gerdau Special Steel North America - Jackson Mill		**SRN / ID:** B4306
LOCATION: 3100 BROOKLYN RD, JACKSON		**DISTRICT:** Jackson
CITY: JACKSON		**COUNTY:** JACKSON
CONTACT: Chris Hessler , Regional Environmental Manager		**ACTIVITY DATE:** 04/14/2021
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FCE. Announced inspection. Melt Shop ceased operations in June, 2020. It is not expected to restart in the foreseeable future. As such, emissions are now at a minor source level. Only the finishing operations consisting of two heat treat furnaces remain active along with some emergency generators.		
RESOLVED COMPLAINTS:		

Major / ROP Source. Full Compliance Evaluation (FCE) and Inspection (PCE)

Facility Contacts

Chris Hessler (CH), Regional Environmental Manager, 734-818-7113. Christopher.hessler@gerdau.com

Purpose

On April 15, 2021, I conducted a scheduled, announced inspection of the Gerdau Special Steel North America - Jackson Mill (Company or GJ) facility located in Jackson, Michigan (Jackson County) at 3100 Brooklyn Road. (The purpose of the inspection was to determine the facility's compliance status with applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, and the conditions of GJ's Renewable Operating Permit (ROP) number MI-ROP-B4306-2020, issued September 10, 2020.

Facility Location

Several residential and commercial properties, including a preschool, are located about 1,000 feet south and southeast of the facility, while US-127 and open / agricultural fields are located west and north, respectively, of the facility.

Arrival & Facility Contacts

No smoke or odors were observed upon our arrival and parking at the facility, at approximately 8:45 am. I proceeded to the facility security office to request access for an inspection of the facility. I then met with Chris Hessler (CH) and other Gerdau representatives just before 9:00 am. CH accompanied me on the inspection.

Regulatory Applicability

The facility is a Major / ROP source for CO and had also accepted PM, NOx, SO2, CO, and VOC emission limits in order to remain below major source emission thresholds for these pollutants. The facility is regulated by ROP number MI-ROP-B4306-2015. It is also subject to:

Title 40 of the Code of Federal Regulations (CFR), Part 63, Subpart YYYYY (5Y), National Emission Standards for Hazardous Air Pollutants (NESHAP) for Electric Arc Furnace (EAF) Steelmaking Facilities. This MACT includes requirements to limit mercury and other contaminants in the steel scrap, and a PM and PM10 emission limit of 0.0052 gr/dscf of exhaust gases and 6 % opacity limit for the facility's electric arc furnaces (EAFs).

Title 40 of the CFR, Part 63, Subpart ZZZZ, NESHAP for Reciprocating Internal Combustion Engines (RICE) (AKA RICE MACT).

Title 40 of the CFR, Part 64, Compliance Assurance Monitoring (CAM), with the following CAM monitoring parameters for FG-EAF/LMF/VAD: VE readings, bag house pressure drop monitoring, and bag house inspection and maintenance activities.

Title 40 of the CFR, Part 60, Subpart AAa, Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983. This standard does NOT apply. See Scheduled Inspection Activity Report dated 6/26/2013 for a discussion on applicability.

A new baghouse has been installed to control particulate emissions from the Caster roof monitor style vent is exempt from PTI requirements per Rule 285 (2) (e). However, under terms of EPA Consent Decree 18-12228, the Company is required to make the language in the Consent Decree enforceable in a PTI. PTI Application 118-19 was received by AQD on July 30, 2019 and was issued on September 23, 2019 shortly after the inspection was conducted.

A ROP renewal application was submitted to AQD on July 25, 2019 to renew ROP MI-ROP-B4306-2015. The new ROP MI-ROP-B4306-2020 was issued on September 10, 2020.

The facility reports its emissions to MAERS and is designated as a Fee Category I source.

Facility Background

GJ is a Secondary Steel Producer (Mini-Mill) that employees about 100 persons; down from 400 employees earlier in 2020. The melt shop previously operated 5 to 6 days a week except Sundays, while the finishing shop operates 7 days a week. (Note: The Melt Shop ceased operations in June, 2020 and won't be restarting in the foreseeable future.) Typically, production occurred over three, 8-hour shifts. A heat typically lasts about an hour, and under normal operations, GJ can achieve 24-26 heats per day. Typical production as measured through the caster was 50 to 55 tons per hour. A "heat" refers to a batch of molten steel. In addition, "tap-to-tap" is used to define the start and end of a heat, which includes furnace charging, melting, refining, de-slagging, tapping (pouring of the molten steel to a ladle, etc.), and furnace turn-around. The facility primarily produced small bar steel having a diameter between 0.9 to 4.25 inches. (Recently, only finishing operations are still be conducted at the facility. Steel bars are shipped in from Monroe or Ohio and then value-added upgrades are made to the bars based on customer specifications. Some of the bars are heat treated in one of two heat treat furnaces.)

Scrap is selected from the various piles found in the facility's scrap yard and is loaded in a charge bucket. The charge bucket's bottom opens to load 1 of the 2 EAFs with cold steel and the melting phase begins once the operator strikes an arc on the scrap as the EAF electrodes are lowered into the furnace. The furnace is charged again with additional cold steel. The EAFs alternate operations, as only 1 EAF is charged at one time.

Once the molten steel is to spec, tapping occurs when the EAF is tilted and the steel pours into a ladle to transfer the molten steel to the ladle metallurgy furnace (LMF) for additional fine refining / secondary addition of alloys, and then to the vacuum arc degasser (VAD) for the injection of argon to stir the molten steel for additional refinement and removal of entrained gases using a steam vacuum system. After melting in the EAF's, approximately one percent by weight of carbon, manganese, silicon and a fraction of a percent of aluminum are added as alloys. Emissions from the EAFs, the LMF, and VAD are controlled by a positive pressure baghouse (DV-BH03).

(Note: The EAF's were installed in 1973 and were first permitted under PTI 239-75. PTI 535-96 replaced 239-75 and allowed a production rate increase although the capacity of the EAFs were not increased.)

(Note: Side draft hoods and canopy hoods associated with the EAFs are connected by ducts to a spark-arrestor that subsequently connects to three separate fans, which are connected to the #3 bag house. The LMF is equipped with a hood that is fitted over a hot metal ladle. It is connected through ductwork to the #3 bag house. The VAD has a hood outside the vacuum chamber that collects fugitive emission released when the vacuum chamber is opened after a ladle is degassed. This hood connected is by ductwork to the #3 bag house.)

Next, the 50-ton ladle is transported to the caster area. (Note: Ladles do not have covers at this facility.) A 2 strand tundish feeds molten steel to a continuous caster. A conveyer transports the molten steel strands to a walking beam furnace for reheat. Then the strands go through 6 roughing mills, which slowly round out the strands. The finishing mills conduct additional rolling and fine adjusting, prior to being cut. The finishing department then polishes, inspects, and conducts heat treatment in the facility's annealing furnaces. The final product is banded and shipped offsite.

FG-EAF/LMF/VAD has a less than 6% opacity limit, except for one 6-minute average of not more than 10%, per SC III.1 and a 6% opacity limit at the FG-Shop (Roof Monitor), per SC III.1. The North roof monitor was sealed in 2011. The casting roof monitor is limited to a 20% opacity limit, per GC 11 but because opacity is entering from EAF area, it also subject to the more stringent requirement of 6%.

The Company reported the following, facility-wide total emissions for 2020: 230 tons CO, 44 tons NOx, 2.7 tons PM10, 13 tons S02, and 13.5 tons VOC. The facility reported emissions using CEMS, stack testing, and MAERS EFs. The Company's ROP does not specify facility-wide emission limits, but for comparisons, FG-EAF/LMF/VAD have the following limits, 280 tons per year (tpy) for SO2, 148.4 tpy for NOx, 1,400 tpy for CO, and 84 tpy for VOC.

Note: Main EAF bag house (referred to as the #3 bag house) ventilation system was upgraded December 2011. It was originally installed in July 2004. Capacity increased from 600,000 to 800,000 scfm. New fiberglass bags were installed in 2018.) The bag house consists of ten compartments for a total of 264 bags per compartment. Three (3) ID fans capable of moving a total of 828,000 acfm provide suction for capturing and moving the dust laden gases through the fume control system. Note: As part of this project, the North roof monitor was closed.

Summary of the reporting / submittal requirements and include the follow items listed below.

· Annual MAERS report.

· Annual and Semi-Annual ROP Certifications, per ROP requirements. Recent deviations, with additional comments available on the FCE report, include: Records for daily non-Method 9 reading were not taken for 1 day, per FG-SHOP SC VI.2 and no records were produced for daily preventative maintenance work on the baghouse for one day, per FG-Facility SC III.1.

· Quarterly EAF baghouse dust analysis, per FG-EAF/LMF/VAD SC VI.2.

· Quarterly Continuous Emission Monitoring System (CEMs) Excessive Emissions Reports (EER), per ROP Appendix 3. The facility measures SO2 and CO emissions using CERMS, per ROP requirements.

· Semiannual mercury compliance reporting, per subpart YYYYY requirements.

· Stack testing test plan: every 5 years.

<u>Stack Testing Summary:</u>

May 6-9, 2014 Stack Test:

PM Limit 0.0052 gr/dscf Actual 0.0005 gr/dscf

PM-10 Limit 0.0052 gr/dscf Actual 0.0004 gr/dscf. Limit 24.7 pounds/hour Actual 1.78 pounds/hour.

Mercury Limit 0.026 pounds/hour Actual 0.004 pounds/hour

Manganese Limit 0.39 mg/m^3 Actual 0.018 mg/m^3. Limit 0.817 lbs./hour Actual 0.044 lbs./hour.

Lead Limit 0.28 pounds/hour Actual 0.006 pounds/hour.

NOx limit 0.53 pounds/ton Actual 0.27 pounds/ton of scrap charged.

VOC Limit 0.30 pounds/ton Actual 0.11 pounds/ton of scrap charged.

Visible Emissions Limit 15% Melt Shop Roof Monitors/ 6% Bag house Actual 0%.

Mercury dust measured entering baghouse 3.1 mg/Kg

Manganese dust measured entering baghouse 34,117 mg/Kg

Lead dust measured entering baghouse 4852 mg/Kg

Average flowrate through bag house 640,185 dscfm.

June 8-9, 2011 Stack Re-Test for 40 CFR 63 Subpart YYYYY Compliance

PM Limit 24.7 pounds/hour Actual 0.4 pounds/hour Limit 0.0052 gr/dscf Actual 0.00008 gr/dscf.

Average flowrate through bag house 580,894 dscfm

January 19-20, 2011 Stack Test for 40 CFR 63 Subpart YYYYY Compliance after bag house upgrades. Results not valid.

Pre-Inspection Meeting

I held a brief meeting with CH and other Gerdau representatives. I indicated that I wanted to visit the Melt Shop and the finishing operations where the only 2 significant emission units that are still active reside. (EU-AF01 & EU-AF02 which are also referred to as New Salem heat treat furnaces 1 & 2.

CH noted that TMS International's slag operation was removed from Gerdau's property on October 2020. He did not where that equipment now resides. The equipment was removed since there is no longer any slag to process and there is no current plans to restart the Melt Shop into the foreseeable future.

I noted to CH that if the Melt Shop remains idle for 18 months, a full PSD PTI application will be required prior to restart. (i.e., the Melt Shop will need to be restarted by December 2021.) Gerdau representatives indicated that it would take a full 3 months to restart the Melt Shop from its current idle state. CH indicated that in June, internal discussions will be taking place about the future of the Melt Shop. Gerdau will consider whether to seek an opt-out permit or not since current low level of emissions would allow this as an option.

CH indicated that with TMS's departure, Lester Brothers was hired to water/apply dust suppressant to Gerdau's haul roads. (A Lester Brother's water truck was spotted applying water during the inspection.)

Onsite Inspection

Below is an evaluation of the compliance requirements for each regulated emission unit evaluated this is currently operational. Attached to the report are required natural gas records/emission calculations for EU-AF01 & EU-AF02 which are the only significant emission units that are still operating at the facility.

Note: Required personal protection equipment to fulfill the safety requirements of the Company includes long pants, steel toed boots or closed toe hard sole shoes, no jewelry, safety glasses with side shields, green fire protection jacket, hearing protection, hard hat with chin strap and high visibility vest.

EU-AF01 Status: Compliant

Emission unit includes one 60.2mmBtu/hr. annealing furnace (Furnace #1) located in the detached finishing building, which is south of the main building. (See attached photos.)

<u>Emission Limits - Monitoring/Recordkeeping</u>

Restricts NOx emissions to 4.92 pounds per 24-hour period and 22 tons per 12-month rolling time period. Compliance is based upon an annual and 24-hour time period natural gas usage restriction. The facility is required to determine hourly gas usage based on a 24-hour average and use established emission factors to calculate and maintain records of NOx, along with natural gas uses on a monthly basis.

Review of requested records for 2021 showed compliance with the NOx emission limits, as well as the natural gas usage limit. Daily NOx emissions are below the 4.92 pounds per hour.

EU-AF02 Status: Compliant

Emission unit includes one 38.4mmBtu/hr. annealing furnace (Furnace #2) located in the detached finishing building, which is south of the main building. (See attached photos.)

Emission Limits - Monitoring/Recordkeeping

Restricts NOx emissions to 3.12 pounds per 24-hour period and 13.9 tons per 12-month rolling time period. Compliance is based upon an annual and 24-hour time period natural gas usage restriction. The facility is required to determine hourly gas usage based on a 24-hour average and use established emission factors to calculate and maintain records of NOx along with natural gas uses on a monthly basis.

Review of requested records for the past 12-months showed compliance with the NOx emission limits, as well as the natural gas usage limit.

Other Requirements

Prohibits direct venting of the furnace to the outside atmosphere.

FG-RICE Status: Compliant-Not reviewed/engines not operating.

Four (4) compression ignition emergency generators and two spark ignition emergency generators subject to the requirements applicable to area source RICE MACT.

Process/Operational Restrictions

Requires non-resettable hour meters on each engine and maintenance records.

Melt Shop Visit:

We toured the Melt Shop building. The interior of the building was dark with no activity. Dust covered the ground with some pigeons flying inside. The two EAFs appeared to have been moth balled and were not being maintained in idol status. The water system to the EAFs had been cleaned/shutoff. The hydraulics systems were shutoff. The Control Room was dark. The two baghouses that controlled the Melt Shop were also off. The EAFs lacked refractory brick and appeared to be in poor condition. See attached photo of one of the EAFs. The condition of the Melt Shop supported the notion that it would take months of work for the equipment to be restarted.

Post-Inspection Meeting

I held a brief post-inspection meeting with CH.

I indicated that I did not have any concerns but would be following up with a request for records for the heat treat furnaces. about open burning that was observed and the smoke coming from the oil mist system associated with the Castor. I thanked CH for his cooperation and assistance and departed the facility at approximately 10:40 am.

Compliance Summary

Based upon the visual observations and the review of the records, the Company appears to be in substantial compliance with the requirements of their ROP. It appears that the Company could choose to seek a Opt-out PTI due to the current low air emissions and with no plans to restart the Melt Shop.

Image 1(EAF) : Photo of one of the EAFs.

Image 2(Gerdau Yard) : Gerdau Yard area

Image 3(Heat Treat) : One of the heat treat furnaces.

Image 4(Heat treat stack) : Heat treat furnace stack that serves both furnaces.

NAME Mike Kovalchick DATE 4/14/21 SUPERVISOR