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

B430627315

FACILITY: Gerdau Special Steel North America - Jackson Mill		SRN / ID: B4306
LOCATION: 3100 BROOKLYN RD, JACKSON		DISTRICT: Jackson
CITY: JACKSON		COUNTY: JACKSON
CONTACT: Ross Bradley , Environmental Manager		ACTIVITY DATE: 09/19/2014
STAFF: Sersena White	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: An announced targeted inspection was conducted to ensure appropriate personnel would be available.		
RESOLVED COMPLAINTS:		

SRN: B4306
Facility Name: Gerdau Special Steel North America – Jackson Mill
Facility Address: 3100 Brooklyn Road, Jackson, MI 49203
Facility Contact: Ross Bradley, Environmental Manager
Facility Contact e-mail: Ross.Bradley@gerdau.com

Introduction: Gerdau Special Steel North America is a manufacture of quality steel bar used primarily in the automotive industry. Scrap metal is certified as part of the material management plan required by 40 CFR 63 Subpart YYYYY (5Y) to reduce mercury from switches and there is an opacity limit of 6% from the EAFs (North Roof monitor on the melt shop). The facility relies on the End of Life Vehicle Solutions (ELVS) to evaluate potential suppliers that meet the qualifications of an approved scrap provider. The scrap is maintained by sorting according to the type of scrap before being loaded into a ladle according to the scrap recipe for the grade steel that will be made. The scrap is weighed while in the ladle before being dropped into one of the two electric arc furnaces (EAF).

Each EAF is equipped with three water cooled carbon electrodes which are used to produce an electrical charge to the scrap after the EAF furnace hood is in place. The EAF's are lined with a refractory material to protect the EAF shell and to retain heat during the melting of the steel. The EAF shells and hood are water cooled to maintain and control the temperature during the different phases (multiple charges) of the melting process. The EAF's are also equipped with side draft hoods that capture particulate and gaseous emissions from the process and direct them to the positive pressure baghouse. In addition to controlling the emissions from the EAF's, the baghouse also controls the emissions from the Ladle Metallurgical Furnace (LMF) used to add alloys to refine the metals properties, and the Vacuum Arc Degasser (VAD) is the last stage in the refining process where the metal is injected with a gas and more discreet amounts of alloys to complete the metal specifications that were ordered.

The baghouse has a horizontal roof monitor or vent that allows the exhaust to leave the baghouse. There are three large ducts entering the baghouse with fixed speed fans to draw the exhaust to the baghouse from the melt shop. There is two strand tundish that feeds a water-cooled single continuous caster where the final product molten metal is formed into a standard size bar. The bar leaves the caster and enters the multi-station rolling mill where the bars are turned to the specific diameter. The bars go through one of three heat treat furnaces to obtain additional metallurgical properties and finally go through the finishing process, before being bundled for shipment.

Purpose: Inspection to determine compliance with the current ROP MI-ROP-B4306-2009. This permit is currently going through the renewal process with one change to the frequency of baghouse dust sampling being reduced from monthly to quarterly and other clarifications that do not affect compliance or operations.

PPE: Steel toed shoes/boots, safety glasses with side shields, hearing protection, hard hat with chin strap, spark resistant jacket and high visibility vest provided by the company. All jewelry must be removed prior to entering the plant. As of May of this year additional personal protection equipment is required to enter the melt shop. A see-through tunnel has been built to allow personnel to walk through the melt shop without the additional PPE. The new PPE required is a snood which is a triangular flame retardant scarf/hood that has a Velcro attachment to the back of the hard hat to protect the neck and covers the ears. The other pieces are called spats which are Velcro straps with the same material that cover the each shin to the tops of the shoes/boots. These provide protection from metal that could be splashed accidently.

Inspection: This inspection was scheduled to ensure the appropriate personnel would be available. Ross has recently been given the additional responsibilities of Safety for the plant. He has Tarek Zamzam of PHI Environmental Consulting, assisting him with the ROP renewal process. I arrived at approximately 9:08 a.m. in the Security office where I met Ross. We went to his office where went over the conditions of the ROP to verify methods of compliance and to make note of changes that should be included in the renewed version of the ROP. After observing the records that Ross keeps electronically, we toured the plant leaving his office at approximately 10:58 a.m.

I was at the plant in May of this year for a stack test and Ross and I went over the details of parameter monitoring, accuracy and data management to demonstrate compliance with the requirements of the ROP.

Emission Units:

EU-HTOV001 is a 30 MMBTU/hr. natural gas fired heat treat furnace. It has a Nitrogen Oxide (NOx) emission limit based upon an emission factor multiplied by the fuel combusted. The only other requirements are to record the amount of natural gas used and not exhaust directly to the outside atmosphere.

This furnace is located in the same building as the rolling mill and is sometimes referred to as the Old Salem furnace. It is rarely used as a heat treat furnace but has found a new role in providing a reheat of bars during off-hours to serve the rolling mill. This furnace has a separate gas meter. It was not in operation at the time of the inspection.

The following two heat treat furnaces are located in a separate building from the melt shop and the rolling mill. They each have a separate gas meter. Both were in operation at the time of the inspection which was determined by observing the bars slowing entering the front of the furnace. The emissions are calculated using an emission factor multiplied by the fuel combusted.

EU-AF01 is a 60.2 MMBTU/hr. annealing furnace. It has NOx and carbon monoxide (CO) emission limits in tons per 12 month rolling time period and NOx limits on a pound per 24 hour period. There are limits on the amount of natural gas combusted on a 24 hour averaging period and on a 12 month rolling time period. The fuel used is restricted to natural gas and propane. This annealing furnace has a stack to exhaust to the outside atmosphere.

EU-AF02 is a 38.4 MMBTU/hr. annealing furnace. It has NOx and carbon monoxide (CO) emission limits in tons per 12 month rolling time period and NOx limits on a pound per 24 hour period. There are limits on the amount of natural gas combusted on a 24 hour averaging period and on a 12 month rolling time period. The fuel used is restricted to natural gas and propane. This annealing furnace exhaust shall not be directly vented to the outside atmosphere.

FG-EAF represents two electric arc furnaces that melt scrap metal in a batch process. The EAF emissions are ducted to a common positive pressure baghouse with a long horizontal opening in the ceiling of the baghouse rather than a stack. This flexible group has limits on the tons of scrap steel charged on a calendar day and 12 month rolling time period. The calendar day amount is determined at the end of each calendar month.

Both EAFs were operating at the time of the inspection. The observation was made from within the tunnel. The EAF operation was closely observed during the stack test in May.

FG-EAF/LMF/VAD represents the two electric arc furnaces, a ladle metallurgy furnace (LMF), and a vacuum arc degasser (VAD) controlled by the same positive pressure baghouse as the FG-EAF. This flexible group has emission limits for particulate matter (PM), particulate matter 10 microns (PM-10), sulfur dioxide (SO2), NOx, CO, volatile organic compounds (VOC), lead (Pb), Manganese (Mn) and Mercury (Hg). The emissions are calculated using stack test results multiplied by the charge tons, except for SO2 and CO, which are measured using the CERMS.

This emission unit also has an opacity limit based upon the 5Y requirements and is observed from the North Roof monitor of the melt shop. A red light is on the melt shop is used as an indicator to read opacity so that it occurs when charging is taking place, which is the worst case operating condition. According to the ROP, this limit also applies to the baghouse. Visible emission observations are required daily.

Both the LMF and VAD were in operation at the time of the inspection. They were not observed closely because they are not clearly visible from within the tunnel. They were closely observed during the stack test in May.

Stack Testing: The following pollutants have a concentration, mass per ton, or mass per hour emission limit that can only be verified using a test protocol: PM, PM-10, NOx, CO, VOC, Pb, Mn, and Hg. A stack test was conducted on May 6-8, 2014 with passing results for all of the tested pollutants. Testing is required at least once every five years as a Title V source. The facility is required to determine the amount of manganese alloy added to the emission units in this flexible group during the stack test only and evaluate the collected baghouse dust from the hopper for Pb, Mn and Hg. These pollutants are also to be evaluated monthly and reported.

Continuous Emission Rate Monitoring System (CERMS): SO2, CO and exhaust flow are continuously monitored using a CEMS as required by the permit. The CERMS are required to have Relative Accuracy Test Audits (RATA) annually, and the data from the CERMS are to be audited using Excess Emission reports (EER) conducted quarterly. The instrumentation involved in fulfilling this requirement is four flow meters located in the inlet ducts of the baghouse a sampling rake located at the back of the baghouse where actual gas concentrations are sent to the monitoring equipment. The plant keeps calibration gases on site and check the span and drift daily to ensure accuracy.

Calculated Emissions: The criteria pollutants and mercury with a ton per 12 month rolling time period are calculated using the amount of steel melted multiplied by the emission factor determined during stack testing or using the CERMS (SO2 and CO) data. The information collected during the stack test and the MAERS audit demonstrate compliance with these requirements. The plant uses the most recent stack test results to calculate emissions. Ross uses indicator colors in the spreadsheet cells to show when an exceedance occurs.

Baghouse: Visible Emissions are limited to 5% during a 6-minute average, except for one 6-minute average per hour of not more than 10%. The permit states that Method 9 will be used to determine compliance, but they make daily observations by a certified observer to determine if a Method 9 is required. The processes controlled by the baghouse require that the associated exhaust capture systems and ventilation hoods be installed and operating properly to direct the emissions to the baghouse. The pressure drop across the baghouse is required to be monitored on a continuous basis.

There were no visible emissions observed from the baghouse or the North melt shop roof monitor (EAFs) during the time of the inspection. According to Ross, the only time there will be any visible emissions from the baghouse is when there is a bag failure.

FG-SHOP (Roof Monitor): Represents the fugitive emissions exhausted from the South melt shop roof monitor, which houses the caster operations. The opacity for this roof monitor is 15 percent for a 6-minute average, except for one 6-minute average per hour of not more than 20%. The visible emission observations are made in the same manner as for the baghouse. No visible emissions were observed during the time of the inspection.

FG-FACILITY: Represents all of the equipment at the facility including the emission units identified above and equipment that is grandfathered or exempt. The flexible group requires a Malfunction Abatement Plan and maintenance procedures and schedules for the EAF's, the LMF and the VAD, including control equipment and all monitoring and recording equipment.

Scrap steel quality is managed using a written on-site screening procedure and a material management plan in accordance with 40 CFR 63 Subpart YYYYY. The scrap is visually and radioactively screened before it enters the scrap yard. Then a closer inspection is conducted at the scrap tower scales to verify the contents and quantity of the load. The scrap is separated by type within the yard.

Compliance Assurance Monitoring (CAM) parameters are visible emissions, pressure drop and inspection and maintenance of the baghouse.

A fugitive dust plan is required to be implemented and maintained in order to operate FG-FACILITY. The plan includes the control of fugitive emissions for all plant roadways, the plant yard, all material storage piles, and material handling operations. Ross provided me with records of hours of application of sweeping and water for January through August 2014. There were no fugitive dust problems observed during the time of the inspection.

Conclusion: Based upon my observations, the detailed parameter monitoring review conducted during the May stack test observations, the MAERS data for 2013 and the certifications of compliance for all applicable requirements, Gerdau Special Steel North America – Jackson Mill is complying with all requirements of MI-ROP-B4306-2009.

I left the plant at approximately 12:10 p.m.

Attachment: Records of fugitive dust applications

NAME Steven M White DATE 9-29-2014 SUPERVISOR