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

B706144268

FACILITY: Gerdau MacSteel Monroe		**SRN / ID:** B7061
LOCATION: 3000 E FRONT STREET, MONROE		**DISTRICT:** Jackson
CITY: MONROE		**COUNTY:** MONROE
CONTACT: Craig Metzger , Environmental Manager - Monroe Mill		**ACTIVITY DATE:** 04/26/2018
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Inspection of steel mill.		
RESOLVED COMPLAINTS:		

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

Facility Contacts

Craig Metzger (CM), Regional Environmental Manager, 734-818-7113. Craig.metzger@gerdau.com

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Purpose

On April 26, 2018, I conducted an unannounced compliance inspection of the Gerdau Macsteel Monroe Mill (Company) facility located in Monroe, Michigan (Monroe County) at 3000 E Front Street. Zach Durham (ZD), Jackson District EQA, also joined me for this inspection. (Note: TMS International's slag handling facility located on the Company's property was also inspected.) 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 the Company's Renewable Operating Permit (ROP) number MI-ROP-B7061-2016, issued on December 1, 2016. This facility was last inspected on September 26, 2016 and found to be out of compliance with several emissions limits for the FGMELTSHOP.

Facility Location

The facility is in an industrial/commercial area near the shores of Lake Erie. It is directly adjacent to the DTE Monroe coal fired power plant. The closest residential area is about ½ mile to the southwest where a couple of homes are located. See attached aerial photo.

Arrival & Facility Contacts

No visible emissions or odors were observed upon our arrival and parking at the facility, at approximately 9:30 am. We proceeded to the facility office to request access for an inspection, provided my identification and meet with Craig Metzger (CM)-Environmental manager for the both the Monroe & Jackson facility. I informed him of my intent to conduct a facility inspection and to review the various records as necessary.

CM extended his full cooperation and fully addressed my questions.

Regulatory Applicability

The stationary source is in Monroe County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants. On April 30, 2018, EPA announced that Monroe County had been reclassified as nonattainment for ozone effective 60 days after the formal notice appears in the Federal Register. (Expected to be reclassified as nonattainment in July 2018.)

The stationary source has been subject to review under the Prevention of Significant Deterioration regulations of Title 40 of the Code of Federal Regulations (CFR), Part 52.21 due to modification at the facility.

The stationary source has an emission unit that was subject to R 336.1220 for Major Offset Sources at the time of New Source Review permitting.

The facility is a Major / ROP source for CO and NOx (Minor for HAPs but considered an area source.) The facility is regulated by ROP number MI-ROP-B7061-2016. PTI 102-12A was the latest PTI permit to be rolled into the ROP. The PTI included changes to the EAF and for the installation and operation of new equipment including, ladle metallurgy station(LMF), new twin tank vacuum degassers (VTD), a new continuous caster, a new slide-gate heater, a new cooling tower, and a new walking beam billet reheat furnace. The modifications proposed in application 102-12A included changes in the proposed control devices and a decrease in the annual melt rate limit from 1,000,000 to 850,000 tons per year. (Note: PTI 102-12 was

issued on January 4, 2013. PTI 102-12A issued on October 27, 2014 with minor modification on July 27, 2015 and August 2015.)

The facility is also subject to the following federal requirements:

Title 40 of the Code of Federal Regulations (CFR) Part 60, Subpart AAa - Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983.

Title 40 of the CFR, Part 63, Subpart YYYYY (5Y), National Emission Standards for Hazardous Air Pollutants (NESHAP) for Electric Arc Furnace (EAF) Steelmaking Facilities.

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 60, Subpart JJJJ, New Source Performance Standards (NSPS) for Stationary Spark Ignition-Internal Combustion Engines

Title 40 of the CFR, Part 64, Compliance Assurance Monitoring (CAM). EUEAF has a control device (DVBAGHOUSE-01) and potential pre-control emissions of particulate matter greater than the major source threshold level. Monitoring for the control device is a continuous opacity monitor. EUEAF has potential pre-control emissions of VOC and CO that exceed 100 tpy major source threshold; however neither pollutant is controlled by a device that meets the definitions of a control device in 40 CFR 64.1. Additionally, the ROP requires the facility to operate a CO CEMS. Therefore, CO and VOC are exempt from CAM applicability. (See Attachment (7). Also refer to Attachment #G18.)

Title 40 of the CFR, Part 60, Subpart JJJJ, New Source Performance Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

Title 40 of the CFR Part 63, Subpart CCCCCC - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities for a less than 10,000-gallon gasoline dispensing facility.

The following emission units are considered exempt from PTI permitting:

Exempt Emission Unit ID	Description of Exempt Emission Unit	Rule 201 Exemption
EUBUNDLEHTRS	Bundler post heaters (2) -1.3 MMBTU/hr each	R336.1282(2)(b)(i)
EUSCALEHTR	Scale post heater -1.3 MMBTU/hr	R336.1282(2)(b)(i)
EUPORTABLEHTRS	Portable natural gas space heaters (20) - 0.25 MMBTU/hr each	R336.1282(2)(b)(i)
EULADLE-DRYER	Natural gas dryer to dry green refractories - 3.6 MMBTU/hr	R336.1282(2)(b)(i)
EULADLE-PREHEAT	Natural gas heaters to maintain refractory high temperature (2) - 15 MMBTU/hr each	R336.1282(2)(b)(i)
EUSPACEHEATERS	152 units, 2 at 3.65 MMBTU/hr the remaining at < 0.15 MMBTU/hr	R336.1282(2)(b)(i)
EUTUNDISH-DRYER	Natural gas dryer to dry green refractory on newly lined ladle - 2.4 MMBTU/hr	R336.1282(2)(b)(i)
EUTUNDISH-PRHT	Natural gas heaters for refractories high temperature (2) - 8 MMBTU/hr each.	R336.1282(2)(b)(i)
EUFURNACES	Two (2) roller hearth heat treat furnaces - 7 MMBTU/hr each	R336.1285(2)(a)(i)
EUFINISHING	Metal finishing process(campher) with a 30,000 cfm baghouse	R336.1285(2)(l)(vi)
EUBUNDLEHTRS	Bundler post heaters (2) -1.3 MMBTU/hr each	R336.1282(2)(b)(i)

Facility Background

Gerdau MacSteel Monroe Mill is in the city of Monroe. Gerdau melts scrap metal via the EAF method to produce special bar quality (SBQ) steel bars, which are used by its customers in the manufacture of various products. Gerdau acquired MacSteel from the Quanex Corporation in 2008. The facility has been a steel manufacturing operation since approximately 1978. The Monroe mill is part of Gerdau Special Steel North America, which is a subset of mills that produce special bar quality steel at three plants (Jackson, MI, Monroe, MI and Fort Smith, AR). In addition to the mills, Gerdau Special Steel North America includes processing plants in Michigan, Wisconsin, Indiana and Ohio.

Gerdau MacSteel is an electric arc steel making facility that operates one 140-ton capacity electric arc furnace, a ladle

metallurgy station, two vacuum tank degassers, casting line, billet reheat furnace, rolling mill and finishing operations. The facility completed an extensive modification/upgrade to the plant a couple of years ago. The modifications increased the mill's potential output from 740,000 tons of steel to 850,000 tons of steel per year. A new modification is pending that may begin in late 2018 or 2019.

Gerdau reported the following facility-wide total emission for 2017: 329. 7 tons CO, 116.4 tons NOx, 23 tons PM10, 48.6 tons SO2, and 9.9 tons VOC. The facility estimated emissions using CEMS, stack testing and MAERS emission factors. The Company's ROP does not specify facility-wide emission limits, but for comparisons, the FG MELTSHOP have the following limits: 85 tons per year for S02, 85 tons per year for NOx, 850 tons per year for CO and 55.3 tons per year for VOC.

Stack Testing Summary:

August 10-17, 2010 Stack test from EAF for PM, SO2, NOx, VOC, Metals including mercury, VE. High sulfur in the scrap being used cited as reason for SO2 emission test failure. 16.99 pounds/hour and 0.2 lb/ton-steel. (Limit at that time was 14.6 pounds/hour and 0.09 lb/ton-steel)

December 9-10, 2010 SO2 Retest. Passed. 6.9 pounds/hour and 0.068 lb/ton-steel (Limit same as above.)

November 10-11, 2011 Mercury test. Passed 0.016 pounds/hour. Limit is 0.033 pounds/hour.

July 17, 2015 stack test of Billet Reheat Furnace. (EUBILLETREHEAT-WB) CO 0.18 pounds/hour, NOx 7.4 pounds/hour 0.082 lbs/mm BTU. (Limit 0.07 lb./MMBTU)

February 25-26, 2016 stack test of EAF, VTD, LMF of NOx, VOC, PM-10, PM2.5, SO2, CO, VOC, lead, mercury, visible emissions, fugitive emissions in Melt shop. Failed VOC due to oil leak above LMF electrodes. Failed NOx due to improper air to fuel ratio inside EAF. Natural draft openings (NDO) verified from main door East and main door West but not for other openings higher up in building. No new mercury test conducted one year after February 25-26, 2016 test. Also note that the test plan did not specify that auto scrap be used in the test which is likely the principal source of mercury in the exhaust stream.

April 28, 2016 1st retest. The test results showed exceedances for VOC, PM10 and PM2.5. However, upon review by TPU-AQD, the test was rejected due to an insufficient volume of gas collection for a valid test.

October 20-21, 2016 2nd retest. LMF and EAF simultaneous baghouse testing for PM, PM2.5, VOC. Showed compliance.

Note: Jan/Feb 2015 experienced incidents of CO emissions greater than 2.4 lb/ton due to buildup in the elbow of the DEC evacuation system. There is a procedure now in place to clean elbow during EAF down days. (Note: Currently not included in MAP.)

Note: Jan 2015, there was 48 incidents of opacity greater than 3% due the baghouse dust stopped moving from the bottom of the hoppers to the dust silo which lead to a buildup of material in the hoppers which reached the bottom of the bags causing damage to the bags. (Note: Alarms in place to prevent similar problem from occurring again.)

Note: 2 opacity incidents occurred on 1/28/2018 due to broken bags. Another opacity incident on 3/8/2018 due to a broken bag. On 3/19/2018 there was 2 more incidents due to improper alignment of the CEM. (Note: Resolution was to replace broken bags.)

Attachment (1) is stack information for the facility.

Pre-Inspection Meeting

I gave CM a list of records that I was requesting as part of the inspection. I gave him a deadline of May 21, 2018 to submit the information.

I outlined where in the plant that I wanted to visit including TMS's slag handling/torch cutting plant.

CM indicated that the roof is not safe and he never goes up there. He says a safety harness would be required and he would need to contact other plant personnel to find a safe vantage point. I indicated I would not be going up there although it appears that visible emissions of any dust coming from the roof monitor or fugitive sources would be difficult to see from the ground due to the distance or being partially obscured by the various parts of the buildings.

We discussed the pending PTI application PTI 75-18. (See Attachment (2) Power Point presentation.) (Note: Application PTI 75-18 was received on 5/15/2018.)

A series of proposed modifications will increase the steel bar production capacity of the mill to 900,000 tpy, when compared to the annual production limit of 850,000 tpy in the current ROP.

Onsite Inspection

Below is an evaluation of the compliance requirements for each regulated emission unit evaluated.

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.

EUEAF, DVBAGHOUSE-1, CEMS Room, EAF Pulpit: **Non-Compliant**

The 140 ton electric arc furnace (EAF) melts steel scrap in a batch operation. (Limit 130 tons liquid steel per hour averaged over 24 hours. Normally, about 135 tons of scrap steel per 90 minute heat with approximately 10 tons of alloys/fluxes added.) The EAF is a refractory lined cylindrical vessel with a bowl-shaped hearth and dome shaped roof. Electrodes are lowered and raised through the furnace roof for melting the steel scrap. (See attached photo. Considerable smoke was observed escaping from the EAF when the lid is closed through the gaps around where each of the 3 electrodes are placed.) Six oxy-fuel burners are used to increase the steel melting rate especially in the outer parts of the shell away from the electrodes which has the effect of reducing the time to tap the molten steel. The molten steel is gravity fed from the EAF to the ladle used in the LMF by tapping at the bottom of the unit. Note: The EAF is slightly tilted to facilitate unloading and provide clearance of the DEC duct from the EAF.

Each heat takes approximately 90 minutes with an initial scrap metal addition, a second addition and sometimes a third. (More information about the complete EAF melt cycle can be found here: https://en.wikipedia.org/wiki/Electric_arc_furnace)

The EAF employs a positive pressure type bag house for its emission control. This bag house has a reverse air cleaning system with dust handling by means of hopper screw conveyors to a pneumatic conveying system that loads the dust into a storage silo. This dust is loaded into haul vehicles within a full building enclosure. The building is designed to evacuate and capture fugitive dust emissions during the loading of the truck. Potentially up to 17,000 tons of dust per year are loaded out. Note: Rated capacity of EAF bag house is 637,500 ACFM.

The EAF has two main emission capture points. Most of the emissions are captured directly from the EAF while melting with the DEC, emissions not caught by the DEC are captured overhead by a canopy hood system. (Note: See Attachment #G21 for more canopy hood information.)

The DEC system utilizes a "forth hole" exhaust duct located on the top of the EAF to create negative pressure in the furnace. It contains an adjustable gap opening in the duct work to allow extra air to enter the system so that the CO and hydrogen are combusted. (See attached photo. The bright spot is the gap.) The elbow gap is controlled by the Melt Shop pulpit based on the CO emission rate. If the CO rises, the elbow gas is decreased restricting excess air into the CO/VOC reaction chamber. There are a few set points that have been programmed into the computer system 80%, 90% and 100% closed. At 100% closed the elbow has zero gap.

At the DEC 4th hole elbow, material builds up from the particulate it pulls off. The elbow is cleaned periodically with no actual set timeframe. MS pulpit operators have a CO checklist that if the CO emissions are high, they need to look at the elbow for buildup and have it cleaned. The elbow is inspected on down days as part of the MS's routine. In order to clean the buildup, the roof is opened and the elbow is pulled as far away from the EAF as possible. An outside contractor will come in with vac truck and also a water blaster to clean the material from the elbow. If the material is fine enough, the vac truck can remove the material straight from the elbow. If not, the material is blasted down to the drop out box where the contractor can vac out the material.

The DEC exhaust system also includes a reaction chamber which is essentially a widening of the exhaust duct which has the effect of reducing VOC/CO emissions. It follows the air gap between the DEC elbow and DEC duct. It is also considered a safety device for any workers present due to the threat posed by carbon monoxide. (Note: A diagram depicting the CO and VOC reaction chamber and quench system is located in Attachment #G19. See also the description from PTI 102-12A page 5 in this Attachment.)

The exhaust system includes equipment that introduces atomized water into the DEC gas stream to cool the gases prior to entering the bag house and damaging the filter bags. (Non-contact i.e. sprayed on ductwork.)

The EAF bag house emission control system consists of a positive pressure bag house with thirteen (13) compartments, three (3) main ID fans, one (1) DEC fan, and reverse air fans that clean the bag house. (Note: Current malfunction abatement plan states that the Melt Shop can continue to operate if one of three fans fail.) The bag house exhausts through a single stack positioned above the center of the bag house. Each bag house compartment contains 184 bags. (Polyester bags need to be replaced every 7 to 10 years. Last changed in the 2014 time frame.) Dust captured by the bag house is screw conveyed across the bag house and pneumatically loaded into a storage silo. Each of the thirteen (13) EAF bag house compartments is equipped with a magnehelic gauge. (Note: Too high- valves need to be opened for cleaning cycle, too low means bags may be damaged. Buildup of material on the dust collector hoppers due to a problem with the conveying system can reach/damage the bags. Buildup of material on the elbow in the DEC evacuation system can lead to CO exceedances.)

No visible emissions were seen coming from the EAF bag house stack during the inspection.

A programmable logic controller (PLC) continually monitors critical bag house operations. Once a problem is detected, the PLC triggers an alarm to the EAF pulpit, at which time the pulpit personnel notify maintenance. Maintenance arrives, views the PLC screen, which indicates the exact location and malfunction problem. Repair activities are initiated; when the repair is complete, the alarm is cleared.

The EAF bag house PLC monitors incoming bag house temperatures. At 250 F, an alarm is triggered. At 275 F, the PLC shuts down the bag house. This is to protect the polyester bags, which have a maximum temperature rating of 275 F.

The Company is now required to pre-coat bag house bags (both EAF and LMF bag houses) by existing Consent Order 14-2017. (Attachment (3) is the Consent Order.) The pre-coat helps build a thicker cake on the bags. The thicker cakes with the pre-coat materials reacts with the SO2 in the off gas and falls out in the bag house dust prior to being emitted out of the stack. The bag coating material is injected into the EAF bag house through the inlet duct by a hose and pump. This allows the material to disperse through the bag house compartments covering each compartment with material. In the LMF bag house the process is the same but done less often since S02 emissions are low. (EAF and LMF sulfurous emissions duct to the EAF baghouse.) The amounts per month of addition for the last 12 months is Attachment #G23.

To further assist this reaction, the bag house cleaning cycle was also adjusted to clean the bags at a slower pace to raise the differential pressure of the bags. By doing so, this allows the lime pre-coat to react longer with the SO2 in the off gas to remove the S02 prior to exiting the bag house. (Notes: Much of PM emissions are condensable. Extending the time between cleaning cycles improves the filtering of condensable PM. High sulfur content scrap was cited as another reason for high SO2 emissions.)

Due to a NOx emission exceedance, the Company had to adjust the air to fuel ratio for the burners in the EAF to ensure complete combustion of natural gas. This was required as part of the Consent Order. There was too much gas to air making the mix very rich and creating excess NOx. During the stack test, Melt Shop employees adjusted the fuel to air ratio and found a 2:1 ratio being the optimal setting (2 parts Air, 1 part NG). Once the Company retested with this ratio, the NOx emissions were in line with the permit requirements. The ratio of 2:1 is locked in the computer program.

Fugitive emissions from the furnace are captured by a roof canopy hood that ducts to DVBAGHOSEU-01. There are no roof monitor style vents in the portion of the building housing the EAF; therefore, VE observations are made at the roof line.

As part of the steel making process, carbon (in the form of granular coal or coke which contains sulfur) is injected into the EAF. Carbon is added to the EAF for energy efficiency reasons (to reduce electrode usage by forming slag and also to provide energy as fuel for melting scrap.) In January 2016, a new supersonic carbon injector was installed which drives carbon into the bath instead of letting it be evacuated by the off-gas system. This has resulted in a 55% drop in carbon additions and corresponding reductions in SO2 emissions. Typically, 500 to 2000 pounds of carbon are added to each melt. This new system is required by the Consent Order.

There is a control room containing the CEMS monitor Data Acquisition Handling System (DAHS) that contains monitors displaying CO, opacity and SO2 data. The SO2 monitor was installed in July 2015. See attached photos.

See attached photos of Electric Arc Furnace pulpit control room. (Note: Currently the typical Melt Shop down day is on Thursday. All process down time is recorded in Attachment #G2, tab "CO DAS Data".)

(Note: During a production down day, the EAF bag house fans are on until the steel from the VTD is done processing. Once the ladle clears the VTD, the EAF bag house can be shut down. The LMF bag house continues to run until steel is done casting at the Caster. If needed, it will be shut down for its own PM's. Therefore, for most of the down day, the bag houses are running. Ongoing maintenance activities in the Melt Shop may include bricking the EAF, welding, etc. None of these activities are expected to generate particulate emissions that would be emitted from the roof monitor style vents.)

Emission Limits/Testing/Recordkeeping

Restricts visible emissions to 3% for the EAF bag house stack and 6% from the EAF Shop Building. (Note: Limit is presumed to apply only to lower half of building.) PM emissions are restricted to 0.0052 gr/dscf from the bag house stack. The VE and PM restrictions are based on the requirements of NSPS Subpart AAa. Additionally, the permit restricts VE from the openings and vents in the upper half of the EUEAF building portion of the facility to a six-minute average of zero percent opacity during operation of the electric arc furnace.

A COMS unit is used to demonstrate ongoing compliance with the bag house VE limit. Compliance with the EAF Shop Building and openings and vents of the upper half of EUEAF building is based upon daily VE observations. VE is also used as a surrogate to demonstrate continued compliance with the PM limit for 40 CFR Part 64 CAM. The VE limit of 3% from the bag house is a NSPS Subpart AAa requirement, while the 6% from the melt shop is a NSPS Subpart AAa requirement as well as a Subpart YYYYY requirement.

For 2017, the facility documented 2 instances of opacity above 3 percent averaged over a 6 minute average due to some broken bags. The EAF bag house compartments were isolated and the broken bags replaced and no Violation Notice was

sent. A few additional opacity exceedances were noted in the First Quarter of 2018 due to broken bags.

Process/Operational Restrictions

Requires that the permittee not melt any radioactive scrap metal in the electric arc furnace and that the permittee shall not transfer material to the LMF from the EAF without a ladle cover.

All incoming scrap passes through multiple radiation detection systems. See attached photo.

Requires the ladle have a closed lid during transfer of molten metal between the different processes.

Design/Equipment Parameters

Requires the EAF to be equipped with the following:

CO and VOC reaction chamber, DEC canopy hood, quench system, bag house, combustion controls, including real time process optimization (RTPO) and the oxy-fuel burners, transferring of liquid steel to the LMF ladles is accomplished by tapping the bottom of the unit, use of a COM to monitor VE from the EAF bag house stack.

Based on this and previous inspections, the facility is in compliance with the above listed requirements.

Monitoring/Recordkeeping

Requires the operation of a COM unit on the EAF bag house stack, requires VE observations of the roofline portion of the shop building containing the EAF on a daily basis. (Note: See Attachment #G17 for aerial view of roof.)

The facility has installed and is operating a COM unit on the EAF bag house stack.

The facility conducts and records daily VE observations for the roofline of the shop.

Gerdau reviews its roofline during charging and EAF building containing the EAF once per day. If any emissions are observed a Method 9 must be performed. During the months of January – March 2018 no emissions were observed from the Melt Shop roofline and EAF Building. Therefore, no Method 9's were performed and as such no records were generated. However, a record of Gerdau conducting the daily observation is documented in Attachment #G1. (Only included one example in staff report.) Gerdau employees know when the facility is charging and operating due to radio communications with the EAF Furnace Pulpit. - Please see Attachment #G17. VE's are taken during charging and tapping. Readers communicate with the EAF pulpit via radio to see where in the heat they are before starting.

- During a melt cycle the EAF roof is first opened to receive a load of scrap from the charge bucket. Once the scrap has been dumped into the EAF, particulate emissions rise up to the canopy for capture. The EAF roof is closed and the electrodes drop down to the scrap. The power is turned on and electricity heats the steel to begin the melting process. During the first phase of melting, particulate emissions may come up from the EAF roof to the canopy. Other particulate emissions are pulled off the EAF by the DEC system (4^{th} hole). The DEC is routed to the EAF baghouse. After some time, a second charge is added to complete the loading of scrap for that heat. The roof is opened again for the second charge and particulate emissions rise to the canopy. The roof is closed and melting is restarted. After some time the EAF has completed the melting and the steel is ready to be tapped into an awaiting ladle. The EAF will rock to the North and begin to pour the steel into a ladle. Emissions from the pouring rise up to the canopy.

Gerdau records the furnace pressure on a per shift basis as per NSPS AAa. Those readings are recorded in Attachment #G2, tab "DEC Fan Data". Any deviations of our range are reported to the MDEQ via Semi-Annual Deviation Report. During 2018, there have been zero deviations for furnace pressure.

"The permittee shall verify, annually, that the direction of air flow at each natural draft opening (NDO) is into the non-fugitive enclosure, using a smoke test (i.e., smoke bomb, smoke tube) or an approved alternate method. The permittee shall notify the AQD District Supervisor in writing at least 15 days before the test is scheduled. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of air flow direction includes the submittal of a complete report of the test results to the AQD District Supervisor within 30 days following the date of the test. After two consecutive tests demonstrate that the direction of air flow at each NDO is into the non-fugitive enclosure, the permittee may submit a request for a change in the testing frequency to the AQD District Supervisor for review and approval."

This test was last conducted on 2/25-26/2016. It verified inflow into the EAF building in the "Main Door East" and "Main Door West" which are located on the ground level. Other NDO openings in the upper reaches of the Melt shop were not tested or at least not described in test report. **No evidence that the annual test was conducted in 2017. Non-Compliance.**

This requirement seems to stem from a PSD BACT analysis done for PTI 102-12A/102-12 for filterable PM emissions. BACT was determined to be 100% capture of PM emissions from the EASF. It consists of DEC and building evacuation. Building

evacuation means that the portion of the building in the EAF is housed will be operated under a negative pressure with airflow directed through the canopy hood. BACT for the LMF and Vacuum degassers is also 100% capture.

See Attachment (4) which is EPA document 452/B-02-001 on Permanent Total Enclosures which also has relevant information on NDO's.

(Notes: The following standards apply during periods the fans associated with DEC and/or EAF bag house aren't operating. If one of 3 Main ID fans are down, opacity is concern through openings/vents in Melt Shop due to potential loss of the negative pressure the Melt Shop building is under. 40 CFR Part 60.11(d) and 40 CFR Part 63.6(E)(1)(i).)

EUDUST-SILO: **Compliant**

Emission unit includes the silo that stores dust collected by the bag house (DVBAGHOUSE-01). The silo is controlled by a bin vent filter. Note: Fugitive emissions resulting from truck loading enclosure is controlled by a timer after the loading of the truck is finished to ensure no fugitive dust escapes to the ambient air. (Note: In 2017, the EAF bag house loaded out 14,032,387 pounds of material.) The collected fugitives are returned to the bag house. Please see Attachment #G22.

Emission Limits - Monitoring/Recordkeeping

Restricts PM emissions on a pound per hour and ton per year basis. The tpy limit is 0.8 tpy and the pph limit is 0.2.

Compliance with the emission limit is based upon the requirement to calculate emissions on a monthly and 12-month rolling time period. The emission calculations are based upon an established emission factor contained within the permit. All required calculations for EUDUST-SILO are contained in Attachment #G2, tab "EUDUSTSILO".

Review of requested records for the past 12-months showed compliance with the emission limits. Pounds per hour is set at 0.01 pph based upon control efficiency. The tpy for the previous 12 month period was 0.02 tons.

EUROADS&PKG-01: **Compliant**

Facility Roadways, Parking area, Material Storage areas, Stockpile areas, Gerdau Monroe slag transferring and hauling operations, and material handling operations.

Emission Limits / Process/Operational Restrictions/Monitoring/Recordkeeping

Restricts opacity from the roadways and material storage piles to 5% opacity based on Method 9D. Compliance with the emission limit is based upon implementation of a fugitive dust program.

The scrap in the scrap yard is stored by type (bundle, frag, turnings, scrap bar, etc.) over a drainage system that is serviced by the on-site water treatment system. They do not want water to enter the EAF due to potential danger of water and electricity mixing. The front-end loaders scrape up the material using billets as a bucket guide to prevent dirt from being picked up when the scrap is loaded. CW previously stated that the weight of the scrap is measured first by the front-end loaders. The required scrap is selected by a scrap recipe and put into the charge bucket. After all the scrap is loaded, the charge bucket is weighed to determine the amount scrap going to the EAF.

The facility has a fugitive dust plan in place. No dust was observed from the roadways or storage piles during the inspection when we first entered the facility. All roadways appeared to be wet from the normal morning water truck treatment. However, some dust was noted as we were getting ready to leave the facility due to daytime heating. CM called the contractor who is responsible for dust control (TMS) to come out right away to water treat the roads. See attached photo of water truck. CM indicated that after the morning watering, they come out once or twice in the afternoon as needed. They also apply "Dustbond", a type of asphalt resin material as a dust suppressant about twice a month.

The facility paved the South and North Roads on September 24, 2016.

Each day, the Company conducts a daily observation of the yard. Records of the observations are in Attachment #G4. (Inspection report includes only 1 example.)

EUFLINN: **Not Inspected/Compliant**

Emission unit includes a 25 MMBtu/hr natural gas fired heat treat furnace.

Emission Limits - Monitoring/Recordkeeping

Restricts NOx emissions to 10.8 tons on a 12-month rolling time period basis.

Review of requested records for the past 12-months showed compliance with the emission limit of 10.8 tpy. The facility records showed the most recent 12 month period of NOx emissions to be 3.9 tons. The facility records also document monthly and 12 month natural gas usage. The required calculations are in Attachment #G2, tab "EUFLINN".

The unit is only fired with natural gas and is not directly vented to the outside atmosphere. The Finn heat treat furnace is located adjacent to the other heat treat furnace (exempt from permitting) at the northwest end of the main building.

EULMF & DVLMFBAGHOUSE Control Room: **Compliant**

The LMF is a complete ladle metallurgy system which includes arc reheating, alloy additions, powder injections and stirring. It became operational in July 2015. Emissions from EULMF are directed to DVLMFBAGHOUSE via removable covers or decks, which are located over the ladle while the process is operating. There are 13 storage containers that hold bulk quantities of lime, alloys and other additives associated with this process. Any vents from these storage containers vent indoors. Dust from DVLMFBAGHOUSE is not stored in the dust silo but is piped from the compartments to a vac box on the ground then to a truck. The pipe is sealed to the vac box reducing any emissions from the operation. (Note: In 2017, the LMF bag house loaded out 563,189 pounds of material. Polyester bags need to be replaced every 7 to 10 years. Last changed in the 2015-time frame when the DVLMFBAGHOUSE was newly installed.) Lime is injected into the bag house to pre-coat the bags occasionally. (Note: Basis on when to pre-coat bags should be included in MAP.) This bag house contains 2880 bags and is rated at 285,000 ACFM. It has two associated fans that work in parallel each rated at 150,000 ACFM which pull air through the bag house. One is the primary and one is the secondary. The primary appeared to be operating at 99.8% capacity while the secondary was operating at 93.2% capacity. (Note: The LMF bag house is considered to be operating properly when both fans are running. Gerdau has computer screens in the pulpits of the LMF and VTD to monitor the bag house performance.) There is an additional fan between the LMF and the bag house which was operating at 41.1%. Additionally, there is a separate duct that enters the LMF bag house from a canopy hood that ducts emissions from a roof monitor style vent. See attached photo of control room screen for the LMF bag house. It shows pressure drop readings for each of the ten compartments of the bag house 4/26/2018 at 11:45 am. The cleaning cycle appears to be triggered based on a certain pressure differential being reached. No opacity was observed coming from the bag house stack. (Note: **Confidential** information about the alloys/additions that are added to the molten metal can be found here in Attachment #G24.)

Emission Limits

Restricts visible emissions to 5% for the LMF bag house stack.

Process/Operational Restrictions

Requires that the DVLMFBAGHOUSE be installed and the permittee shall not transfer material to EUVTD from EULMF without a ladle cover.

Design/Equipment Parameters

Requires the LMF process vessel roof to be in the operational position for EULMF to be operated. The operational position as discussed during the development of the PTI permit, is when the ladle is under the LMF roof. The roof is raised from the ladle at approximately 6" – 1' to allow the LMF baghouse to properly capture the emissions from the LMF. Any emissions that are not captured are caught by the enclosed East Roof Monitor that is controlled by the LMF baghouse.

Compliance with the opacity limit is documented via the facility performing daily VE observations of the LMF bag house stack. The facility conducts and records daily VE observations for the LMF bag house stack. Review of a sampling of the 2018 VE observations contained in the Melt Shop Report showed no instances where VE was noted. (Note: Please see Attachment #G16 for map locations on where visible emission readings are taken.) For 2018, no emissions have been observed from the LMF baghouse. As per condition 1, records are only kept when emissions are observed. However, as in EUEAF VI.6, 7, 8, 9 the records are in Attachment #G1.

EUVTD & VTD Control Room: **Compliant**

Two vacuum tank degassers which remove entrained gases from the molten metal delivered from the LMF. It became operational on 3/31/2015. This emission unit does not include reheating. It is controlled by the existing EAF bag house. Emissions are directed to the DVBAGHOUSE-01 via removable covers or decks, which are located over the ladle while the process is operating. A "booster" fan is used to direct emissions from the two vacuum tank degassers to the existing EAF bag house. The VTD has a control room with computers and monitors to display real time operating parameters and a visual image of inside the VTD. A ladle with the molten metal is lowered into one of the two vessels. A hood is placed over the VTD to retain as much heat as possible. Argon gas is injected from below to produce stirring and alloys are added by feeding rod according to the heat (metal) specification by the customer. There is no heat applied during this stage of the process and stirring is generated by bubbling in the argon gas. Maintaining the temperature of the heat is critical in order for the caster to turn the molten metal into billets.

Process/Operational Restrictions

Requires bag house control and the process vessel roof be sealed.

The facility's operating procedures require the sealing of the process roof and the bag house is installed and operating.

EUCASTER & Caster Control Room: **Compliant**

Molten steel produced by the electric arc furnace and further processed in the ladle metallurgy system and twin tank vacuum degasser is delivered to the continuous caster in a ladle. The molten steel is gravity fed from the bottom of the ladle to the tundish enclosure. From the tundish, the molten steel flows into the enclosed caster strands. The semi-molten steel is then cut into billets by oxy-fuel cutting torches. The four cutting torches have a combined rated capacity of 4,413 cubic feet of natural gas per hour. EUCASTER also includes a 0.4 MMBtu/hour, natural-gas-fired, internally vented process heater that preheats the submerged entry nozzle (SEN) prior to it being inserted into the caster mold. Molten metal is added after the SEN is in place.

The caster has a control room where computers and monitors are used to display the parameters for the caster operations and other process locations associated with the process. On the top of the caster where a two wing turret system allows alternate loading of molten metal into the caster.

Material Limits/Recordkeeping

Restricts natural gas usage on a 12-month rolling time period basis to 36 MMSCF.

Design/Equipment Parameters

Requires the following:

The permittee shall not operate the cutting torches of EUCASTER unless the oxy-fuel burners are installed, maintained and operating properly. The design specs for the torches are provided in Attachment #G5.

The combined maximum design heat input rate of the cutting torches of EUCASTER shall not exceed 4.5 million British thermal units per hour (MMBtu/hr.) on a fuel heat input basis.

The maximum design heat input rate of the SEN process heater shall not exceed 0.4 million British thermal units per hour (MMBtu/hr) on a fuel heat input basis.

The permittee shall not operate EUCASTER unless the liquid steel is tapped from the bottom of the ladle to the caster and sealed at the top of the caster.

The permittee shall not operate EUCASTER unless the tundish is enclosed so that fugitive emissions do not occur from ladle tapping operations.

All calculations are provided for EUCASTER in Attachment #G2, tabs "EUCASTER (billet cutting PM10)" and "EUCASTER (torches)". Review of requested records for the past 12-months showed natural gas usage to be less than the permitted limit.

During previous inspections, bottom tapping ladles were observed along with the tundish being enclosed.

EUCASTERCOOLTWR: **Not Inspected/Compliant**

Emission unit includes the cooling tower associated with the new caster. Cooling tower for caster process water. Maximum water flow rate for cooling tower is 1,630 gallons per minute. Design specs can be found in Attachment #G6.

Emission Limits - Monitoring/Recordkeeping

Restricts the emission of PM and PM-10. Compliance with the emission limits is based upon proper operation of the high efficiency drift eliminator. The facility is also required to submit and maintain a MAP for the drift eliminator.

A MAP for the casting system and other emission units been previously submitted to the District.

EUBILLETREHEAT-WB: **Compliant**

A walking beam billet reheat furnace equipped with Ultra-Low NOx burners with the total heat input capacity of 260.7 MMBtu/hr. It became operational on January 26, 2015.

Emission Limits/Material Limits - Monitoring/Recordkeeping

Restricts the emission of VE, CO, NOx, VOC, and GHG as CO2e.

Compliance with the emission limits is based upon performance testing (NOx and CO) and the requirement to calculate emissions on a monthly and 12-month rolling time period.

The facility conducted compliance testing on July 17, 2015, which showed an exceedance of the NOx limit. The facility addressed the cause and retested on April 27-28, 2016, at which time compliance was demonstrated. A Violation Notice was

issued on June 15, 2016, addressing the exceedance of the NOx limit. The Consent Order now requires maintenance procedures to remove scale buildup from billet reheating to as needed to minimize NOx emissions. Please see Attachment #G15.

All required calculations and data are provided in Attachment #G2, tab "EUBILLET-REHEAT". Note that the Company performs a daily observation of the billet reheat stack. If emissions are observed then a Method 9 is required. During the last 12 months, no emissions were observed during normal operations, therefore no Method 9's were performed. The Company does document that the observation was conducted by adding notes into its Plant Operating System (QMOS). Some example included in Attachment G7.

Review of facility records for the past 12-month time period showed compliance with the emission limits for VOC, CO, NOx, and CO2e.

Compliance with the opacity limits, 5% during normal operation and 20% during startup, is verified by the requirement that the facility performs and maintain records of daily VE observations, including startup. CM previously stated that the facility conducts Method 9 readings any time the unit has a startup. Additionally, He previously stated that they have not observed any opacity out of the unit, during startup or routine operation. No VE was observed from this process in 2018.

The billet reheat furnace was in operation during the inspection. No VE was observed from the stack when we initially drove by the stack.

Material Limits/Recordkeeping

Restricts natural gas usage on a 12-month rolling time period basis to 1,633 MMSCF.

Review of facility records for the past 12-month time period showed compliance with the natural gas usage limit.

EUGASTANK: **Not Inspected/Compliant**

This emission unit includes existing stationary gasoline dispensing facilities (GDFs) located at an area source of hazardous air pollutants (HAPs) that have a maximum monthly gasoline throughput of one of the following:

1. Less than 10,000 gallons

GDF means any stationary source which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, non-road vehicle, or non-road engine, including a non-road vehicle or non-road engine use solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment.

The facility has one 550 gallon tank on-site.

All required calculations and data are provided in Attachment #G8. Review of records provided shows compliance.

FGENGINES: **Not Inspected/Compliant**

One or more diesel fuel-fired reciprocating engine generators, including portable units, each with a maximum nameplate capacity of 5 megawatts (MW), used for power generation including emergency back-up and/or peak power shaving.

Review of records provided shows compliance.

Emission Limits/Material Limits - Monitoring/Recordkeeping

Restricts the emission of NOx and limits diesel fuel usage to 136,000 gallons per 12-month period with annual sulfur content of 0.05 percent by weight on an annual average.

Compliance with the emission limits is based the requirement that the facility may be requested to conduct a performance test to verify the set emission rate of 515 pounds of NOx per 1000 gallons of fuel used. The facility is also required to maintain records of fuel usage on a monthly and 12-month rolling time period.

Review of facility records for the past 12-month time period showed compliance with the diesel fuel usage limit.

FGMELTSHOP: **Non-Compliant**

The Melt Shop includes the EUEAF, EULMF, and EUVTD.

POLLUTION CONTROL EQUIPMENT:

DVBAGHOUSE-01 for the EAF and vacuum tank degassers, DEC for the EAF, CO and VOC reaction chamber for the EAF, and DVLMFBAGHOUSE for the LMF.

Emission Limits/Material Limits - Monitoring/Recordkeeping

Restricts emission of PM, PM10, PM2.5, SO2, CO, NOx, Pb, VOC, GHG (CO2E), and Hg. Additionally, steel output is restricted to 130 tons per hour, based on a 24-hour average and 850,000 tons per year, based on a 12-month rolling time period.

Compliance is based upon the requirement to conduct emission testing within 180 days of achieving increased output capacity, and then every five years. Testing is required for PM, PM10, PM2.5, CO, NOx, VOC, SO2, Lead and CO2e. Compliance with the CO and SO2 emission limits is also based upon the use of CEMS. Mercury testing is required once per year for five years and then once every five years thereafter. **No mercury testing was conducted in 2017. Non-compliance.**

The facility installed the SO2 CEMS on July 28, 2015 in preparation for achieving the capacity to operate at an increased output, which was achieved on October 2, 2015. The SO2 CEMS showed an average emission rate of 0.21 pounds per ton of liquid steel. The emission rate was exceeding the existing ROP emission limit of 0.09 pounds per ton. A Violation Notice was issued on October 13, 2015 for the ROP SO2 violation. The SO2 emission rate stayed above 0.20 pounds per ton after the facility achieve the ability to operate at an increased capacity, at which time the PSD BACT established SO2 limit changed to 0.20 pounds per ton. (Note: It is determined daily but averaged on a monthly basis.) A Violation Notice addressing this exceedance was issued on January 6, 2016. The facility installed a supersonic carbon injector and injected a coating on the bag house bags to assist in SO2 removal

During the first quarter of 2015 the facility reported five instances where CO emissions were greater than the permitted 2.4 pounds per ton of steel melted, and one instance that the tons per day CO limit was exceeded. A Violation Notice addressing these exceedances was issued on July 7, 2015. This was due to a build up of scale in the elbow of the DEC. A new procedure is now followed to clean the scale several times a week. No exceedances were reported in 2018.

Performance testing to demonstrate compliance with the emission limits for PM, PM10, PM2.5, CO, NOx, VOC, SO2, Lead and CO2e was conducted on February 25-26, 2016.

The test results showed exceedances of the emission limits for PM10, PM2.5, NOx and VOC. A Violation Notice was issued on June 15, 2016, addressed the emission limit exceedances. The facility retested to demonstrate compliance with the emission limits exceeded. This testing was conducted on April 27/28, 2016. The test results showed exceedances for VOC, PM10 and PM2.5. However, upon review by TPU-AQD, the test was rejected due to an insufficient volume of gas collection for a valid test. The facility is retested VOC, PM10 and PM2.5 on October 19-21, 2016 and demonstrated compliance.

Process/Operational Restrictions

Restricts the operation of each emission unit in FGMELTSHOP to an operating limit of 8,200 hours per 12-month rolling time period.

Review of the facility records for the previous 12-months documented compliance with the hours of operation limit.

Design/Equipment Parameters

Requires a device to monitor and record the SO2 and CO emissions and exhaust flow rate on a continuous basis, from the FGMELTSHOP (EAF) bag house stack (SVBH-01-STACK).

The facility has installed SO2 and CO CEMS units.

Monitoring/Recordkeeping

Requires the facility to maintain records of CEMS data for SO2 and CO, monitor and records the 24-hour calendar day metal production rate, maintain monthly records of emissions and records of hours of operation.

The facility maintains the required CEMS records. All required records/calculations for FGMELTSHOP are provided in Attachment #G2 under FGMELTSHOP, CO DAS DATA, SO2 DAS DATA and DEC FAN DATA.

FGBLDGFUG: **Compliant**

Processes located in the portion of the shop building that houses the EUCASTER, EULMF, and EUVTD, which vent fugitive emissions indoors that may escape the building through the roof monitor, as well as processes or activities other than EUEAF which are located in the portion of the shop building that houses EUEAF and which vent fugitive emissions that may escape through building vents. A portion of the plant ventilation that is vented through the ladle bay roof monitor is controlled by the LMF bag house.

Emission Limits

Restricts visible emissions to 6% from EUCASTER as measured from the roof monitors of FGBLDGFUG.

Monitoring/Recordkeeping

Requires the facility to conduct daily VE observations to demonstrate compliance with the VE limit.

The facility conducts and documents the VE observations as part of the Melt Shop Report EAF Roofline observations. The facility reported that they failed to conduct VE observations on 18 occasions during the first half of 2016. The facility has since resolved this issue through employee training. The Company performs a daily observation as part of the EAF building and LMF baghouse stack observation. During the last 12 months there were no emissions observed. Therefore, no Method 9 forms were completed. However, the Company does document the observation in shift notes in Attachment #G1. Review of the 2018 VE observations contained in the Melt Shop Report showed no instances where VE was noted.

FGGHG: **Non-Compliant**

The conditions of the flex group require a GHG emission limit, associated recordkeeping and an Energy Efficiency Management Plan.

Emission Limits / Monitoring/Recordkeeping

Restricts GHG as CO2e to 294,201 tpy, based on 12-month rolling average.

Compliance with the emission limit is demonstrated by the requirement that the facility maintain monthly and 12-month rolling records of CO2e emission rates.

Please see the required calculations/records in Attachment #G2, tab "FG102-12A". Review the facility records for the previous 12-months showed compliance with the CO2e limit.

Process/Operational Restrictions

Requires the facility to develop and submit an approvable Energy Efficiency Management Plan (EEMP) and a MAP for FGBLDFUG.

The facility has submitted the required EEMP and MAP. The EEMP dated March 7, 2016. See Attachment #G20 and #G9.

The latest MAP was dated January 16, 2015 but was not amended within 45 days as required when new equipment was installed such as the DVLMFBAGHOUSE or when malfunctions occurred due to improper maintenance procedures that resulted in emission exceedances. Non-compliance.

FGMACT-YYYYY: **Compliant**

The affected source is an existing electric arc furnace (EAF) steelmaking facility, which is (part of) an area source of hazardous air pollutant (HAP) emissions. The affected source is an EAF steelmaking facility as defined by 40 CFR Part 63 Subpart YYYYY.

The facility is considered an existing source under Subpart YYYYY and previously demonstrated compliance with the EAF emission limits. Upon completion of the furnace modifications, retesting was required to be completed within 180 days of startup.

Emission Limits

The EAF is subject to a PM emission limit of 0.0052 gr/dscf (as measured at the EAF baghouse.) and the melt shop (which is the fugitive emissions from the EAF for this facility is subject to an opacity limit of 6%.

The facility conducted testing in March 2008, at which time compliance was demonstrated.

After completion of the furnace modifications the facility retested and demonstrated compliance with the PM and VE emission limits on February 25/26, 2016.

Material Limits/Process

Contaminants in scrap other than mercury:

Requires metallic scrap charged to the EAF to comply with either the Pollution Prevention Plan option regarding selection and inspection to minimize contaminants or Restricted Metallic Scrap option described in Subpart YYYYY.

For mercury:

Requires the facility to participate in and only receive motor vehicle scrap from providers who are participating in a USEPA-approved program (NVMSRP) or to develop a site- specific plan for receipt of scrap from non NVMSRP participants.

Contaminants other than mercury:

The facility is operating under an approved plan in accordance with Subpart YYYYY. The plan addresses the use of scrap under the selection and inspection option as well as Restricted Metallic Scrap. The facility inspects and maintains records of each load of incoming scrap. The facility's scrap plan addresses actions to be taken if a non-conforming scrap is brought onsite. The pollution prevention plan is found in Attachment #G10.

Mercury

The facility's plan addresses participation in the approved program option (NVMSRP), as well as a site specific plan. The facility maintains records of all scrap providers participation in NVMSRP and verifies compliance through onsite inspections of providers as well as verifying participation in the ELVS program semi-annually.

In 2009 the facility's scrap management plan was revised to include site specific requirements to address the receipt of scrap from two Canadian suppliers that participate in Switch Out, the Canadian version of NVMSRP. The facility has not received any scrap from Canada in 2018.

All of the scrap inspections are conducted at the Truck Scale. A note is entered into the Gerdau Mayer system indicating the inspection was completed. Since Gerdau inspects every scrap load received, Gerdau has greater than 12,000 inspection records for scrap. Some examples from the Mayer system are included in Attachment #G11.

FGNSPS-SI-ICE: **Not Inspected/Compliant**

This table contains requirements of the New Source Performance Standards for Stationary Spark Ignition - Internal Combustion Engines, 40 CFR Part 60, Subpart JJJJ for spark ignition (SI, i.e natural gas/propane) emergency generators.

The facility has one natural gas unit fired generator under this flex group, EUADMINGEN. See Attachment #G12.

Review of submitted records shows compliance.

FGMACT-ZZZZ-EMERGENCY RICE: **Not Inspected/Compliant**

Each existing emergency stationary reciprocating internal combustion engines (RICE) as identified within 40 CFR Part 63, Subpart ZZZZ, 40 CFR 63.6590(a)(1), and is exempt from the requirements of Rule 201 pursuant to Rules 282(b) or 285(g)

The facility has two diesel-fired generators under this flex group, EUFININSHING, EUMAINPUMPHOUSEGEN. See Attachment #G12.

Review of submitted records shows compliance.

FGRULE290 & FGCOLDCLEANERS: **Not Inspected/Compliant**

FGRULE290 contains emission units EUPAINTING, EUTURNER and EUMILLBH. EUPAINTING addresses color coating the ends of the steel bar, EUTURNER addresses the use of a rust inhibitor and EUMILLBH addresses sawing.

The facility maintains records documenting compliance with Rule 290. See Attachment #G13.

FGCOLDCLEANERS addresses 10-11 cold cleaners onsite. No lids were observed open on any cold cleaners during the inspection. The facility has a company that services the units.

Consent Order AQD No. 14-2017: **Compliant**

Review of records shows compliance with emission limit section of the Consent Order. I asked the Company to explain how they are complying with the Operating Requirements section. See below:

Paragraph 9.B Operating Requirements.

Condition #1. Describe how the supersonic carbon injector system that was installed in January 2016 is maintained and properly operated.

- Company response: The supersonic carbon injector is in the furnace shell. The injector operates by blowing carbon into the bath like a lance. I have attached the powerpoint of the carbon injector operating as part of a meeting the MDEQ concerning the SO2 emission in 2016. You can find this in Attachment #G14. The carbon injector does not require

maintenance. It is inspected on down days as part of the normal inspection of the EAF. The nozzles are cleaned of any debris, if necessary, otherwise this is a plug-in and go type of equipment.

Condition #2. Describe what exactly the facility does to be in compliance with this condition.

- Company response: Gerdau adds bag coating material as necessary to ensure the reduction of SO2 from the off-gas systems. The cleaning cycles were delayed (or extended) as part of the trials to give enough time for the material to work. Gerdau has not changed its cleaning cycles since the new coating material has been in use and proven to be effective in maintaining Gerdau's compliance to the SO2 emission rate.

Condition #3. Describe what exactly the facility does to be in compliance with this condition. What fuel to air ratio for the EAF burner is used?

- Company response: The fuel to air ratio as described in Item #55 is maintained at a 2:1 ratio. Please see Item #55 for more information.

Condition #4. Describe what exactly the facility does to be in compliance with this condition.

- Company response: The RM has put into place a checklist for the employees to remove scale buildup as necessary to ensure the proper operation of the furnace burners. I have attached the procedure in Attachment #G15.

FGPLANT PROC: (TMS International) **Not-Operating/Non-Compliant**

This flexible group covers EUSLAPLANT, EUDROPBALL, EUROADS, EUSTOCKPILES, EUSLAGPIT, and EUSCRAPCUT. TMS International processes the slag from Gerdau. Up to 100,000 tons of slag is handled per year. This facility was not operating during inspection. In addition to Gerdau, TMS International (TMS) is located on the property of Gerdau and has process equipment for slag handling that originally covered by PTI permit 537-89A and was incorporated into the ROP as a separate Section. (It was previously named Tube City IMS, LLC SRN N1675). Attachment (5) it PTI 537-89A. TMS supports the main steel making activities of Gerdau and meets the regulatory criteria to be considered a single stationary source. TMS processes Gerdau's slag, busts up "skulls", and torch cuts non-spec metal bundles, bars and billets. TMS processes the slag received from Gerdau through a metal recovery plant that removes the metal and sorts the slag into three sizes. The slag is sorted via shaker screens and conveyed to storage piles. TMS does not conduct any slag crushing. Skull busting is conducted with a crane and ball drop system to reduce the skull into pieces small enough to be charged into Gerdau's furnace. The slag is sold as aggregates as well as some being used for the onsite roadways. The recovered metal goes back to Gerdau for re-melting. The original PTI permit limited visible emissions from the process and roads as well as the storage piles and included requirements for fugitive dust.

TMS operates a torch cutting machine with a steel bed that is elevated off the ground on which the material to be cut is placed. The unit has four cutting torches in a row that are remotely controlled. It was installed in 2015/2016 time frame and did not undergo new source review. EUSCRAPCUT which currently is in the ROP which was not part of the original slag handling PTI was for two small rail mounted torch cutting units and associated permanent oxygen storage tanks. The ROP requirements EUSCRAPCUT have a Best Management Practices (BMPs) plan for torch cutting. (See Attachment (6).) A 9/26/2016 AQD activity report states that the Company was instructed to apply for a PTI permit for this process but there is no evidence that they did so. **The torch cutting machine is out of compliance with Rule 201-No Permit to Install.** CM indicated that scrap that contains magnesium, that is high in sulfur or die cast scrap from off site can be problematic for generating smoke during torch cutting. Attachment (8) includes fugitive dust control activities forms and visible emission forms for all TMS emissions include EUSCRAPCUT generally for the last 12 months. It also includes a couple extra photos of the torch cutting machine.

Emission Limits:

The conditions of the flex group require a 15% opacity limit for EUSLAGPLANT(slag crushers), 10% opacity limit for EUDROPBALL, EUSLAGPIT, EUSLAPLANT(belts, conveyors, screens, transfer points), and a 5% opacity for EUROADS, EUSTOCKPILES

Process/Operational Restrictions:

Requires a fugitive dust plan. For EUSCRAPCUT, requires a Best Management Practices Plan for torch cutting.

Monitoring/Recordkeeping:

Requires daily records of dust control. Also requires visible emission observations of the fugitive dust sources at least 5 days per week during March through October.

Post-Inspection Meeting

We returned to a conference room and held a brief post-inspection meeting.

We thanked CM for his cooperation and assistance and departed the facility at approximately 1:10 pm.

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. However, there are a few outstanding compliance issues as follows:

-Required mercury testing was not conducted in 2017

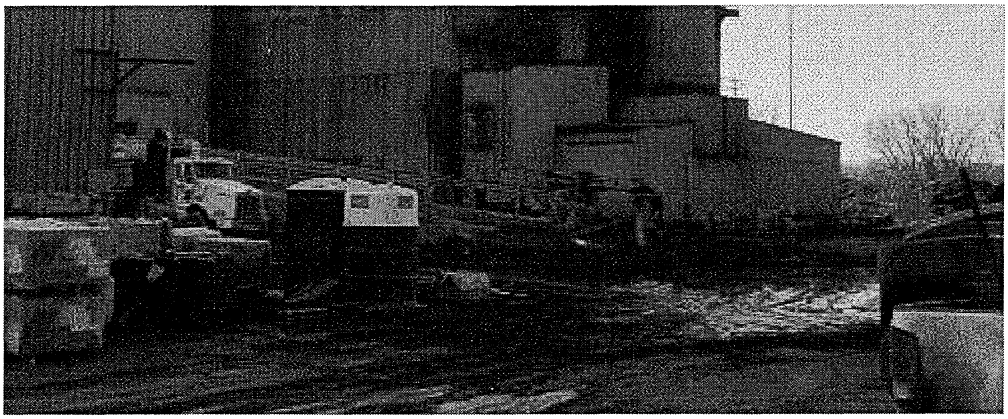
-Required natural draft openings testing for the Melt Shop was not conducted in 2017

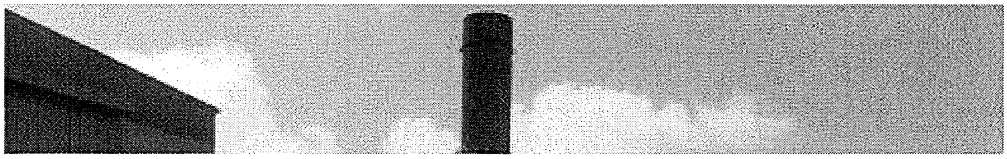
-The Malfunction Abatement Plan (MAP) is out of date.

-TMI International's torch cutting operation is operating without a PTI permit.

A Violation Notice (VN) will be sent to Gerdau for testing/MAP violations. A separate VN will be sent to TMI International for torch cutting without a PTI permit.

Image 1(Weight Scales) : Weight scales for incoming scrap with radiation detectors.





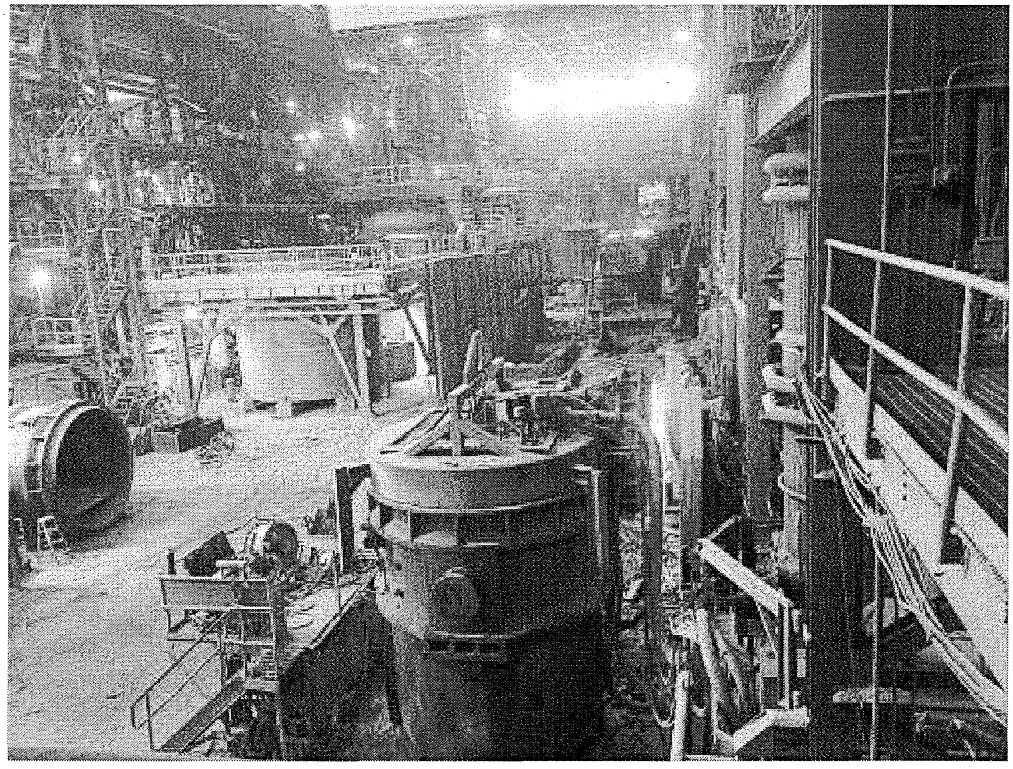


Image 3(Main Gallery) : Main Gallery view

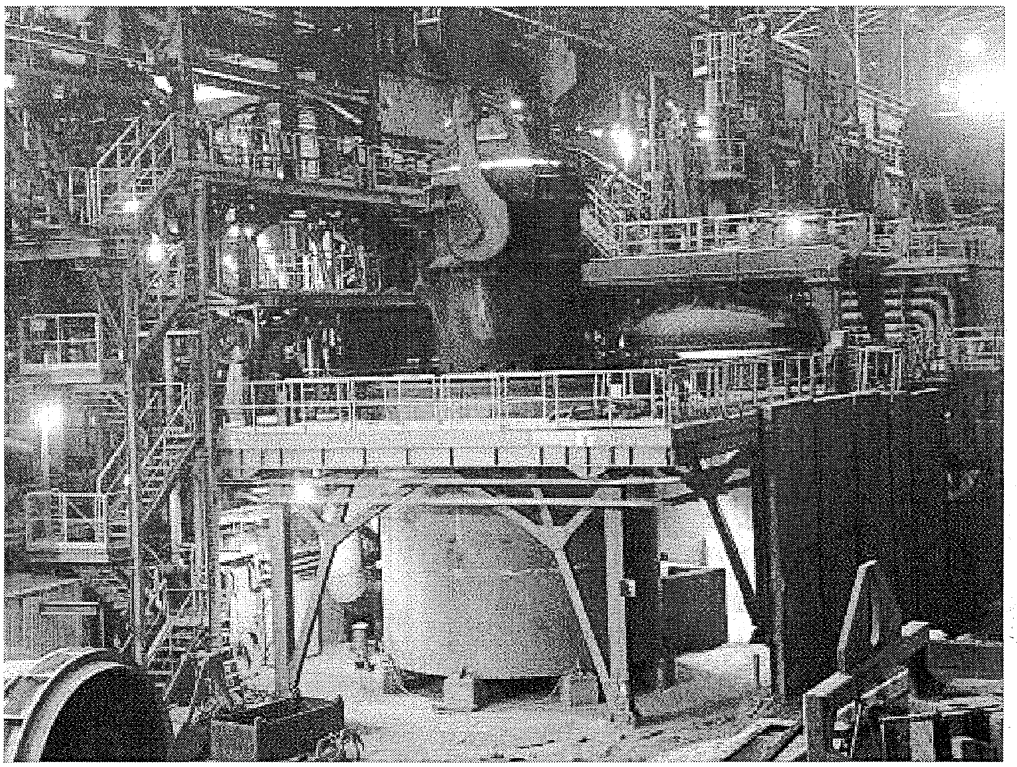


Image 4(Main gallery) : Main gallery view

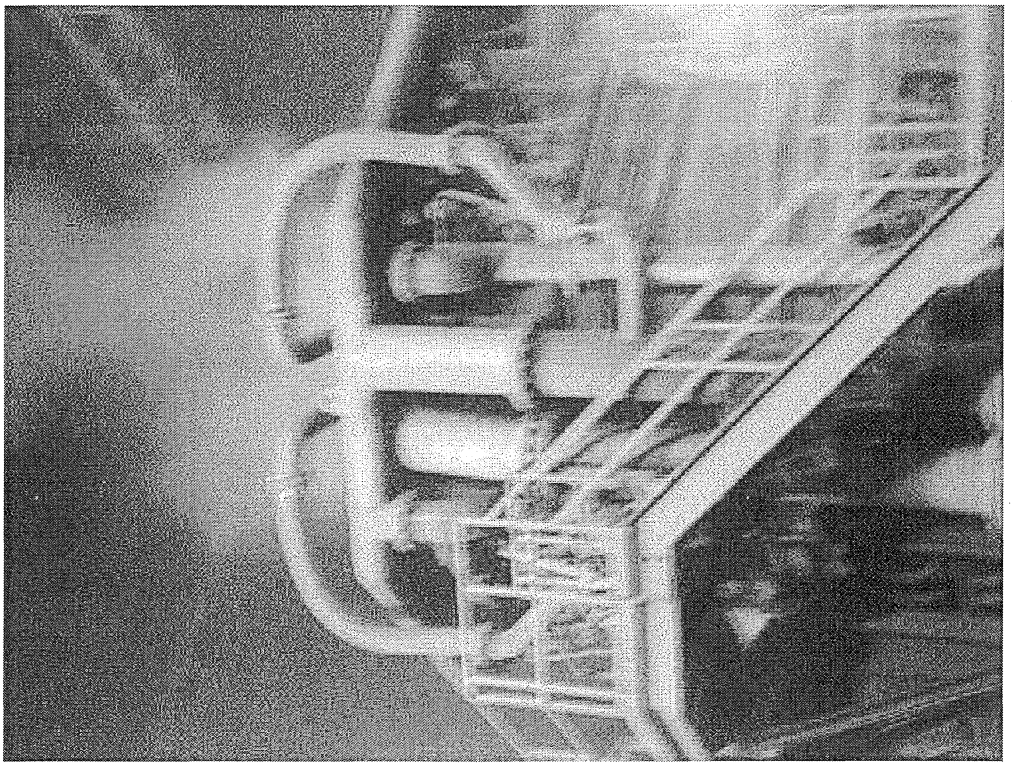


Image 5(EAF) : EAF with smoke raising up from top of EAF towards canopy hood.

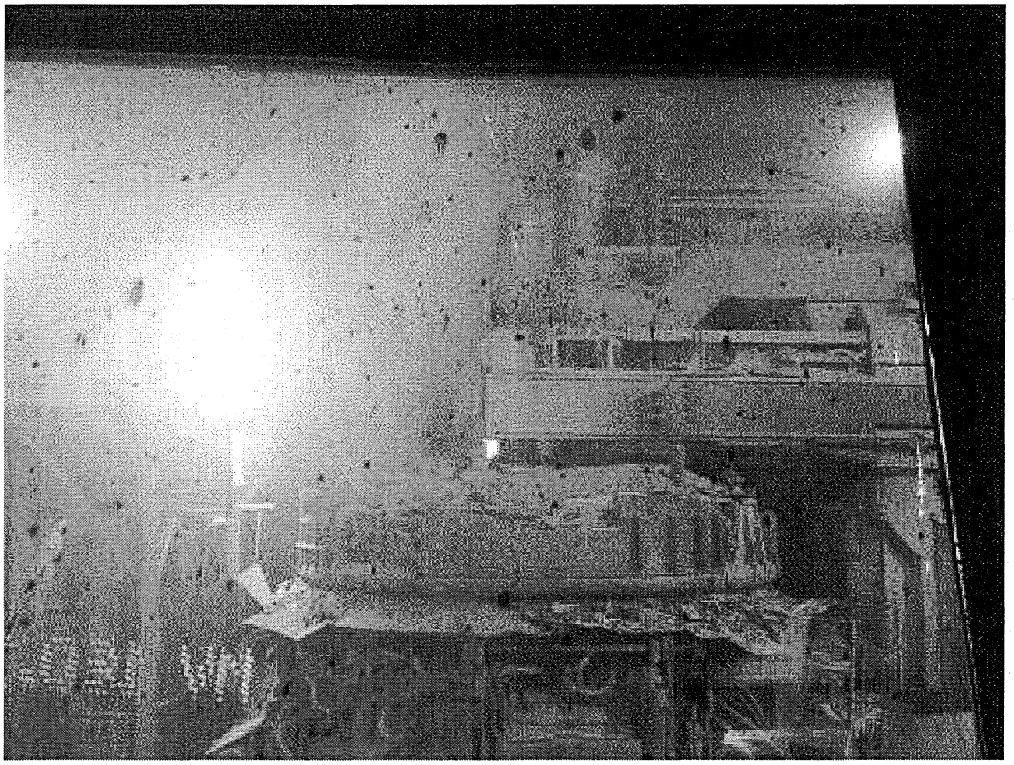


Image 6(EAF) : EAF with bright spot the elbow duct opening of the DEC system.

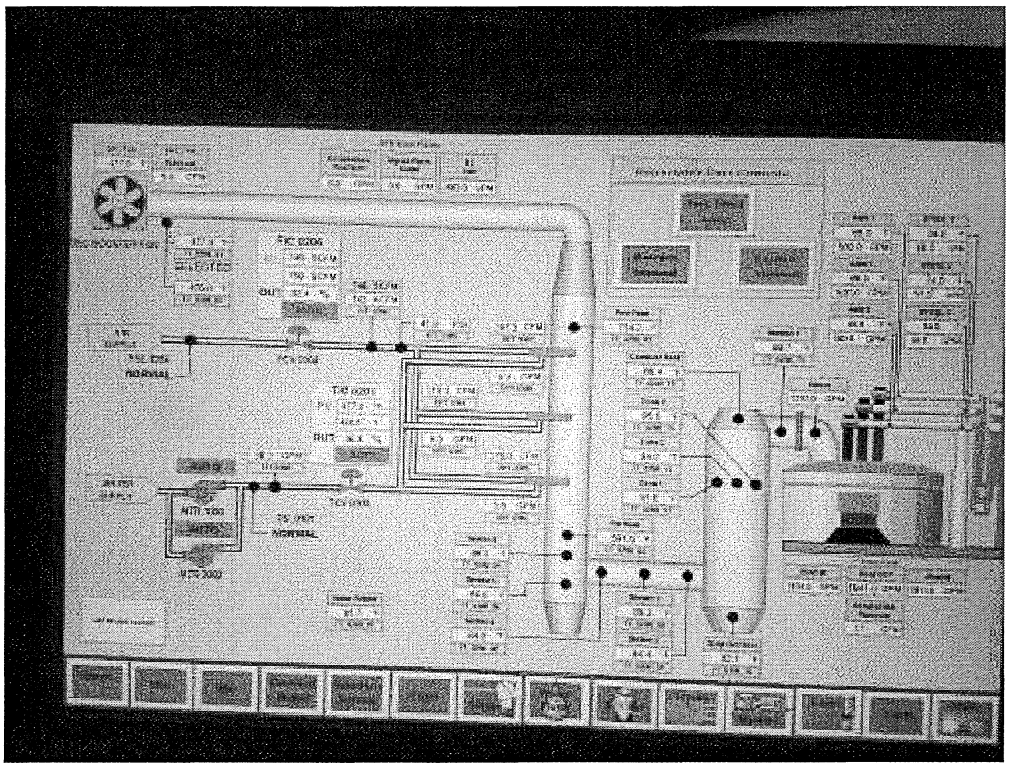


Image 7(EAF Pulpit) : EAF Pulpit view screen showing the water quench system.

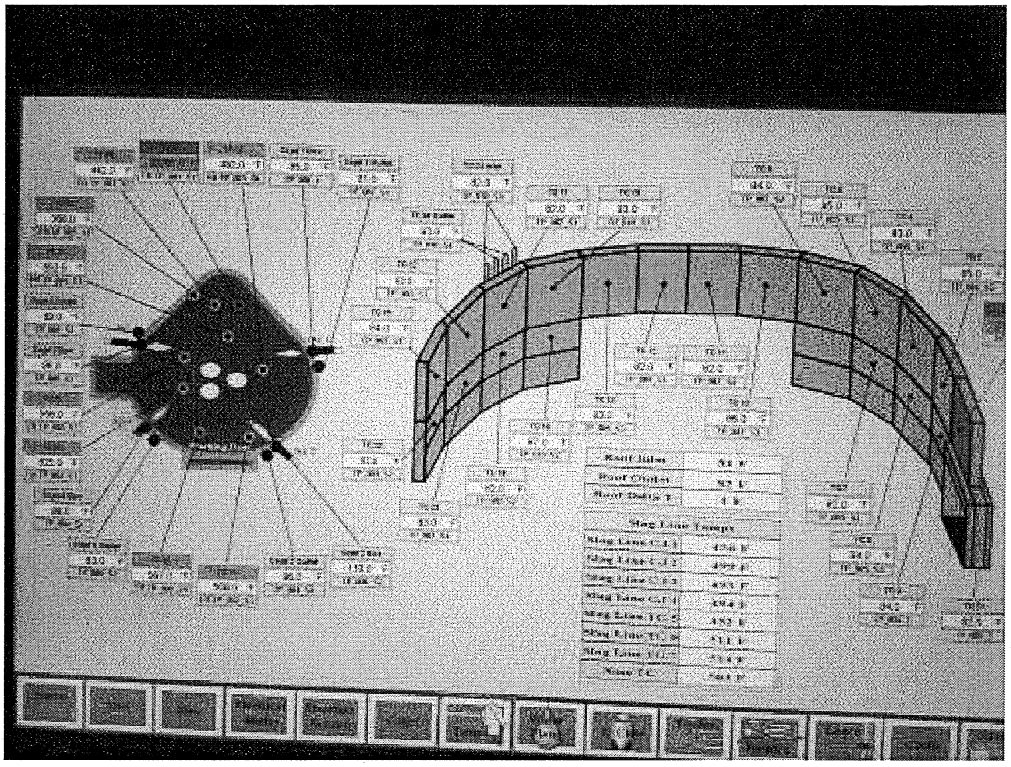


Image 8(EAF view screen) : EAF view screen showing temperatures.

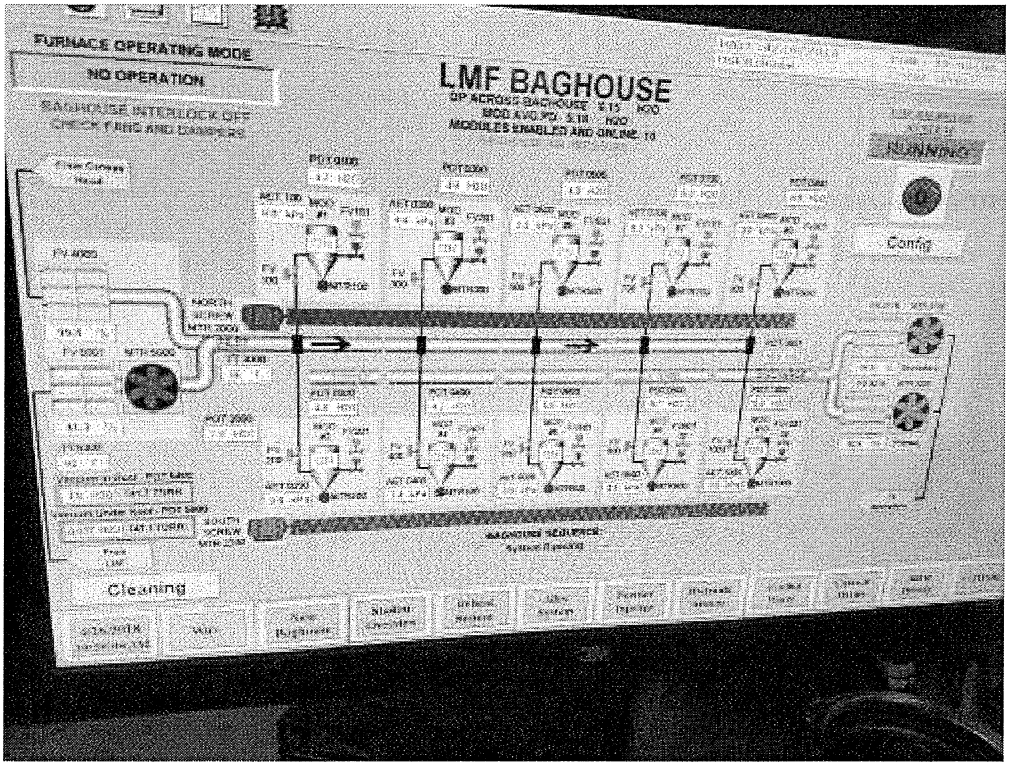


Image 9(LMF Pulpit) : LMF Pulpit baghouse view screen

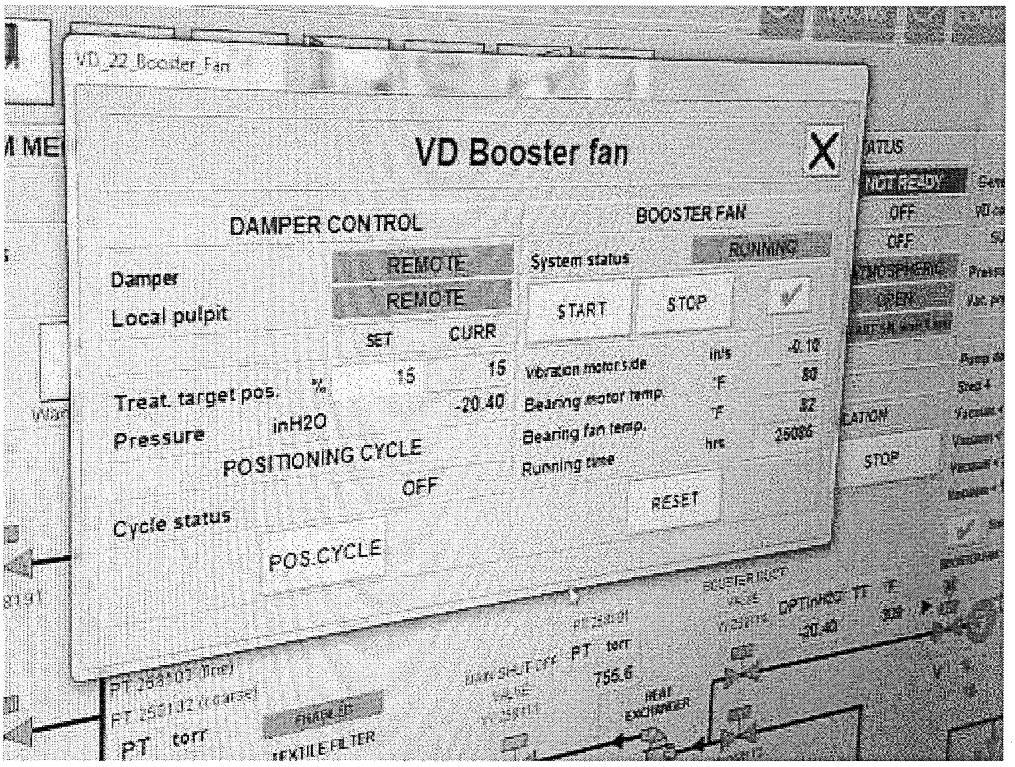


Image 10(VD booster fan) : Vaccum degasser exhaust boost fan screen

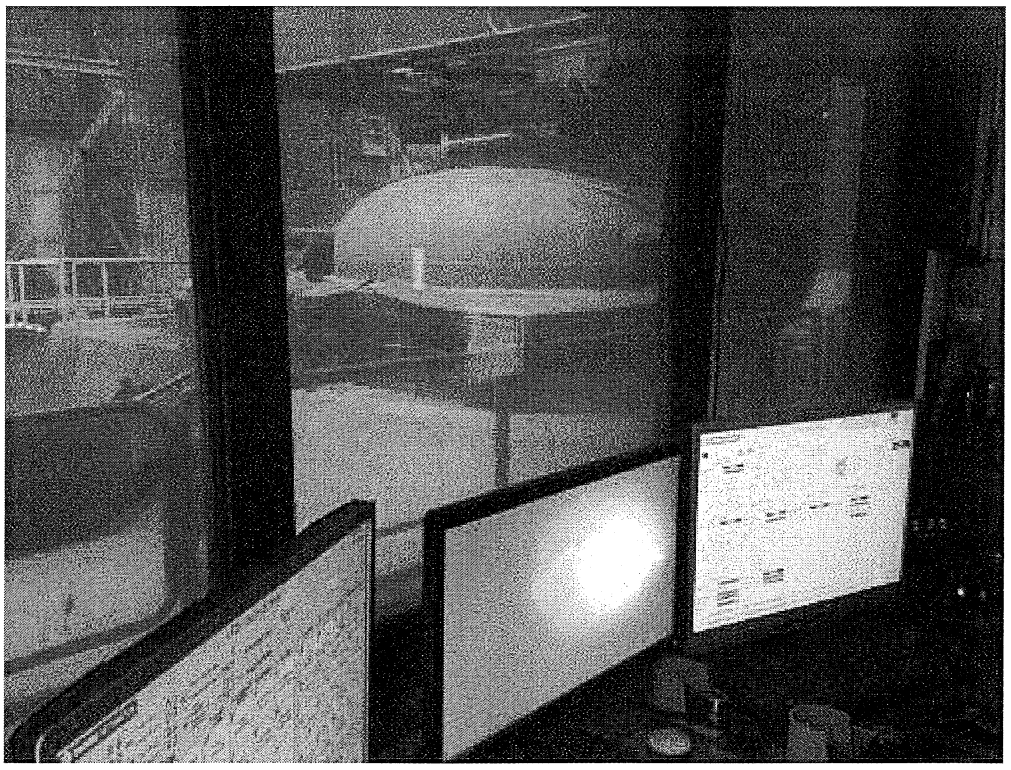


Image 11(Vacuum Degasser) : Lid of one of vacuum degassers.

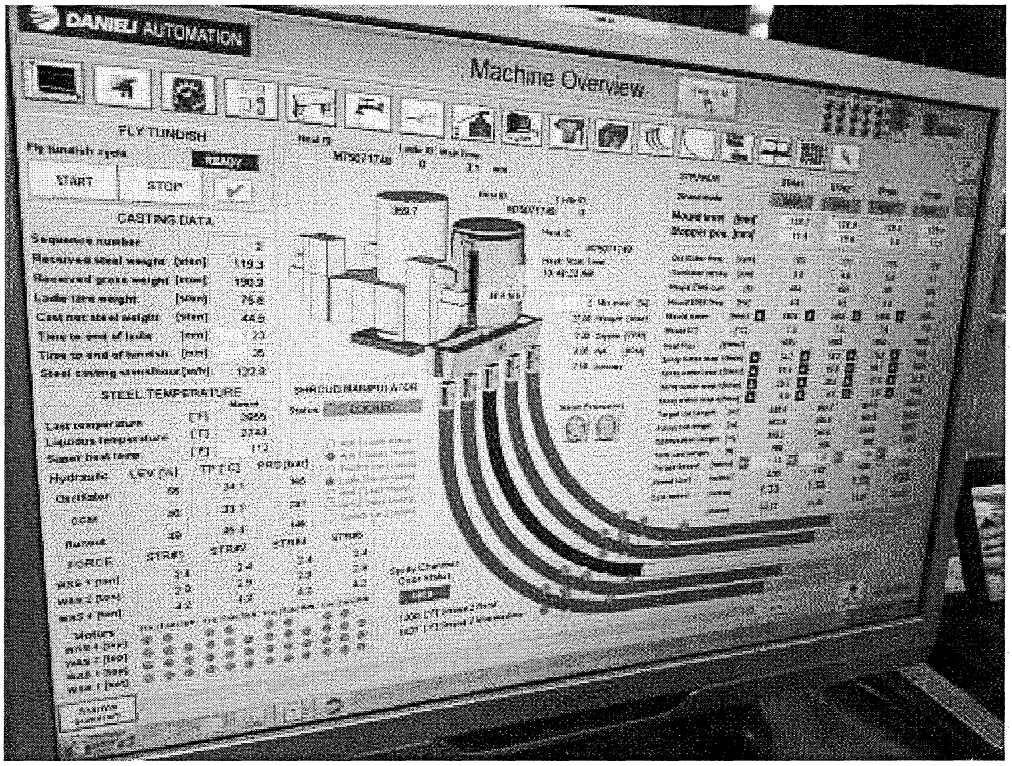
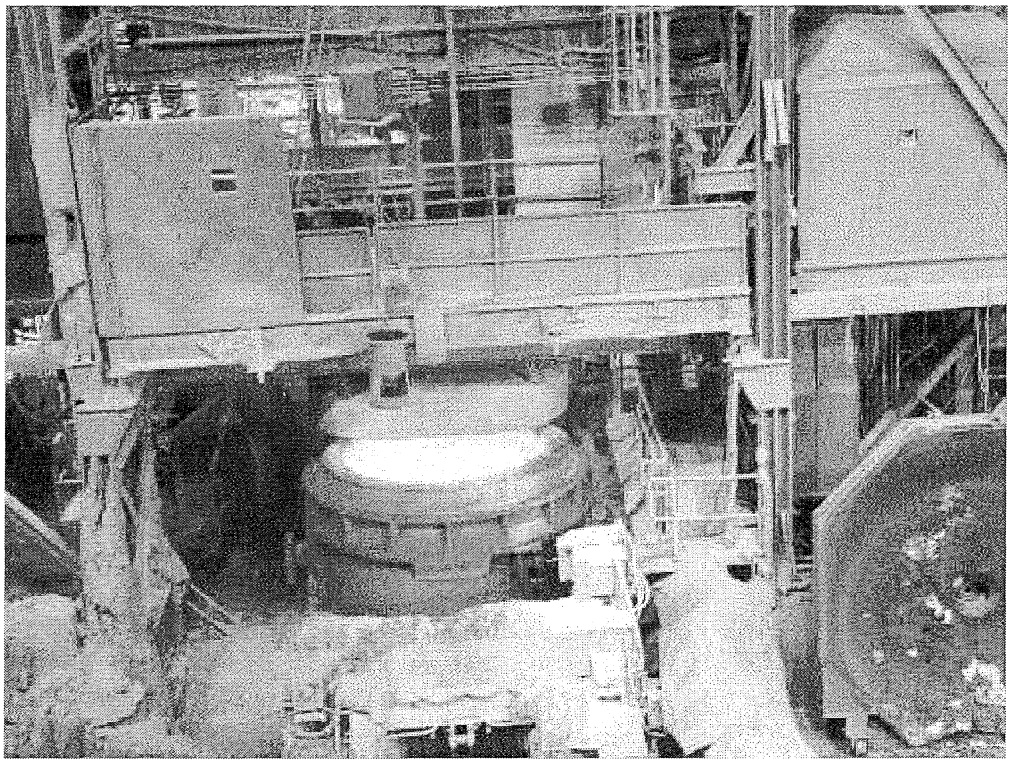


Image 12(Caster pulpit) : Caster pulpit control room screen view



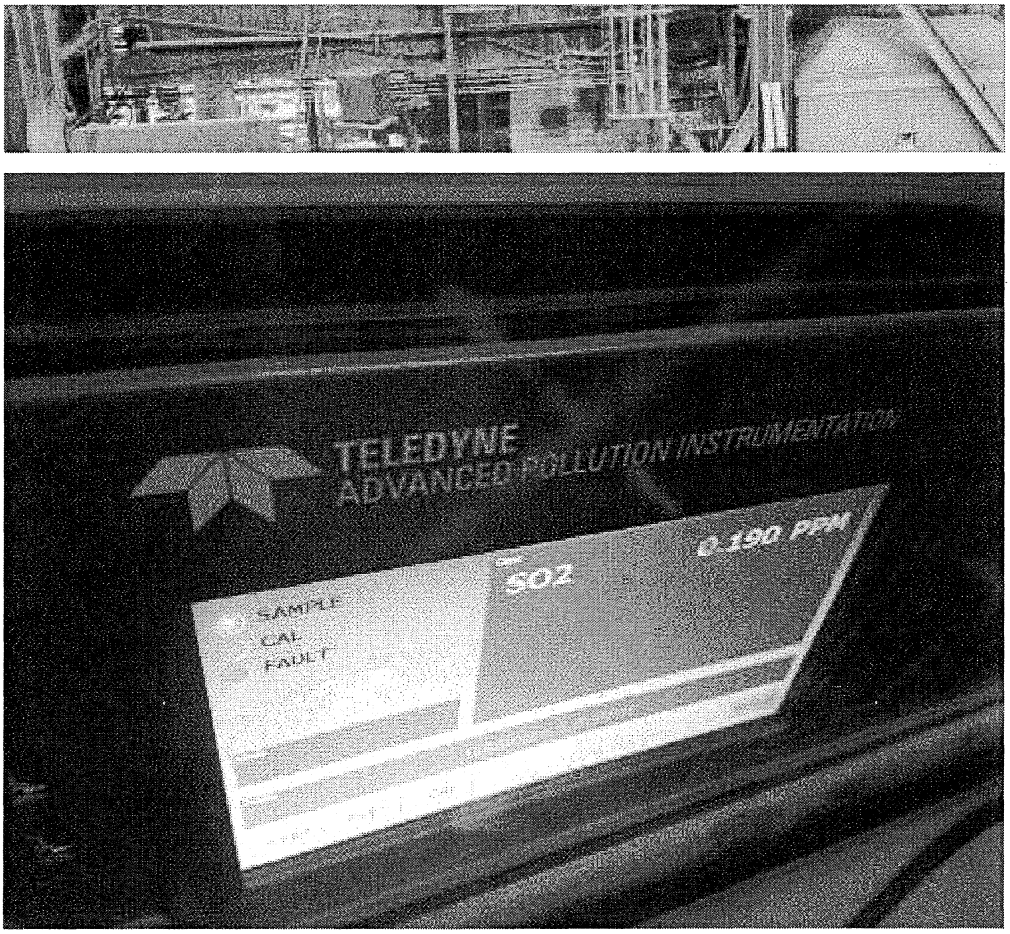


Image 14(CEMS Control Room) : S02 reading of 0.190 ppm

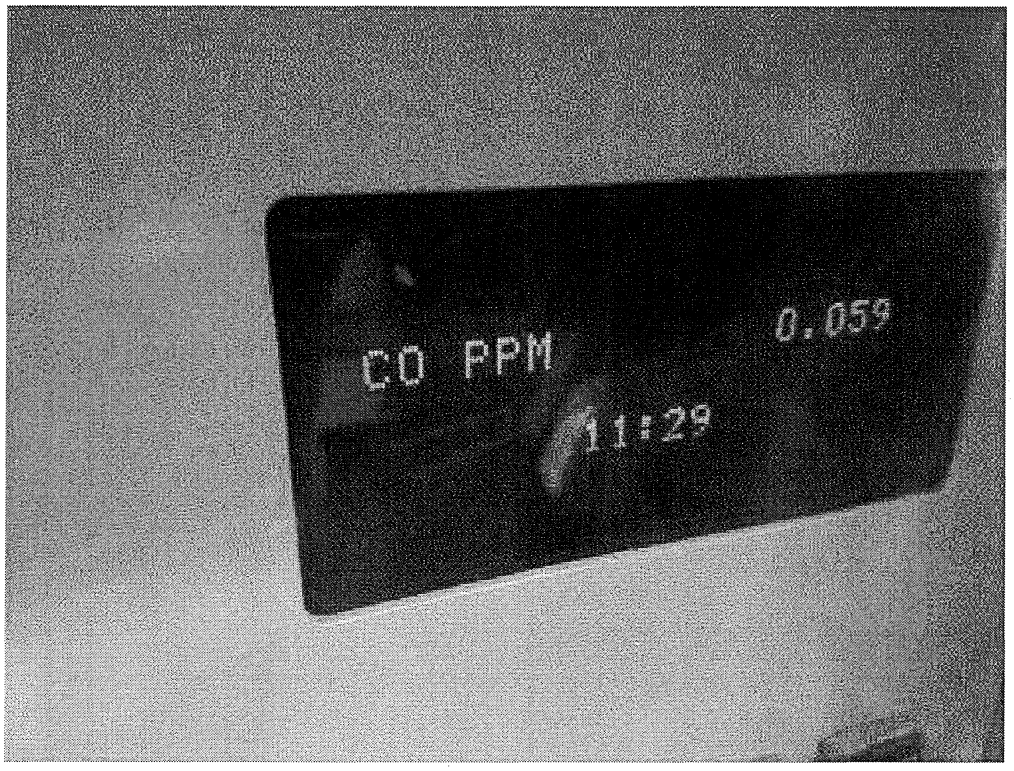


Image 15(CEMS Control Room) : CO reading of 0.059 ppm

Image 16(CEMS Control Room) : Opacity reading of 2.4 % for EAF baghouse stack.

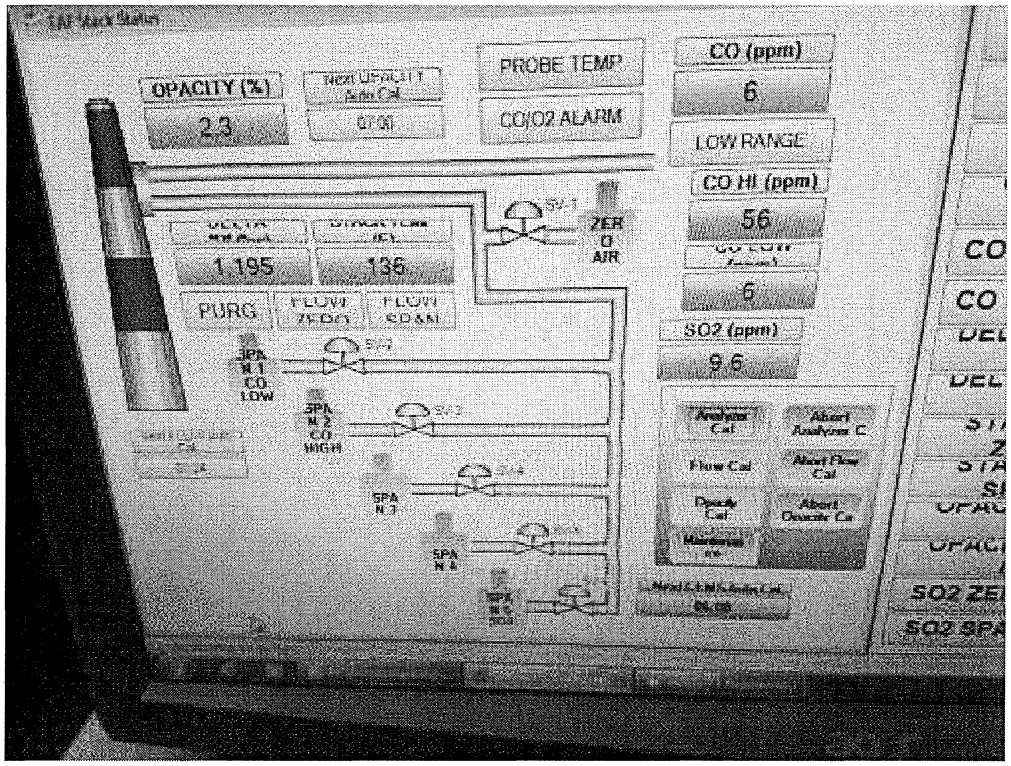


Image 17(EAF Baghouse Screen) : Opacity 2.3%

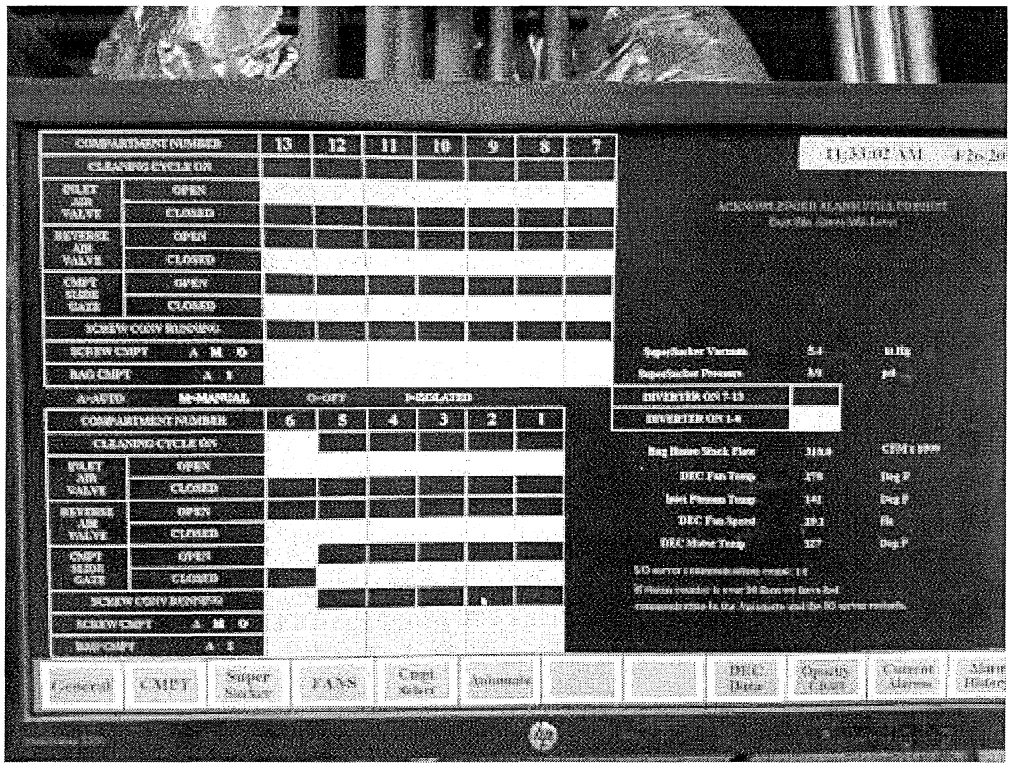


Image 18(EAF Baghouse screen) : EAF baghouse screen

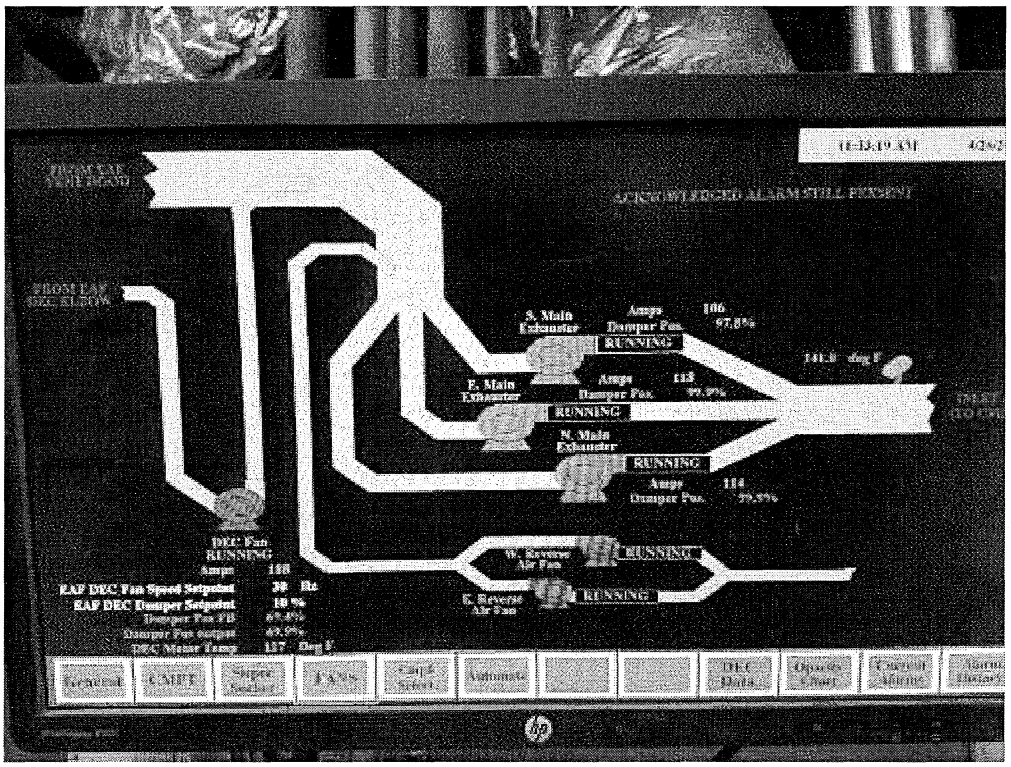


Image 19(EAF Baghouse screen) : EAF baghouse screen showing exhaust systems.

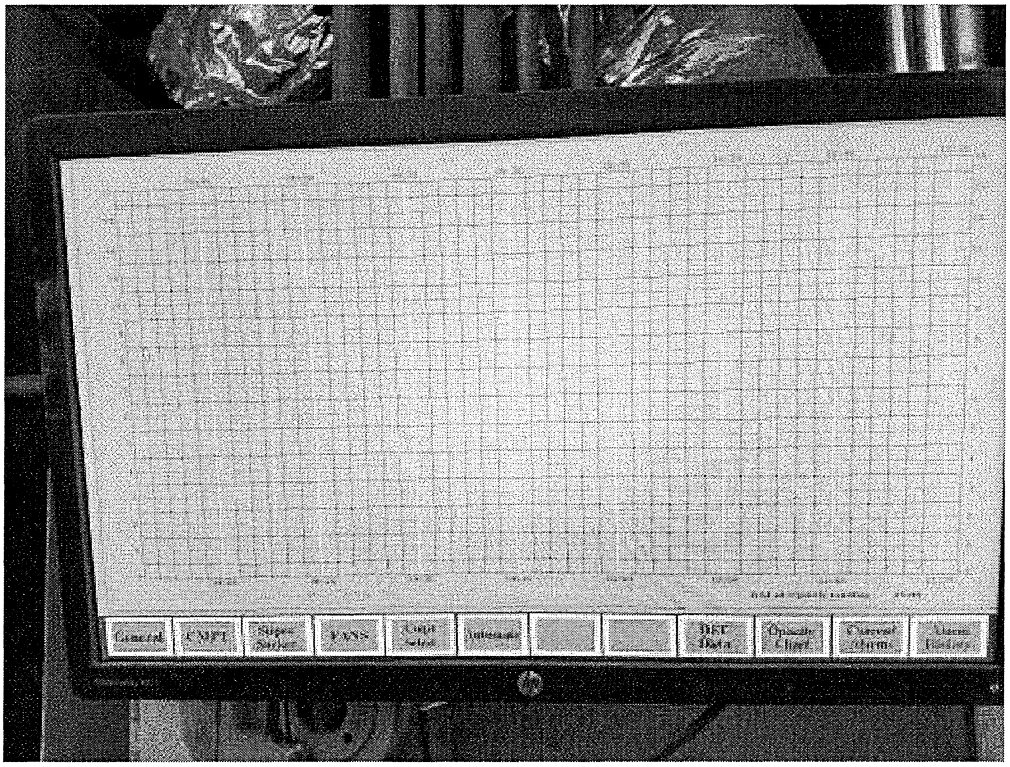


Image 20(Opacity Chart) : Opacity chart for EAF baghouse stack. (Green line)

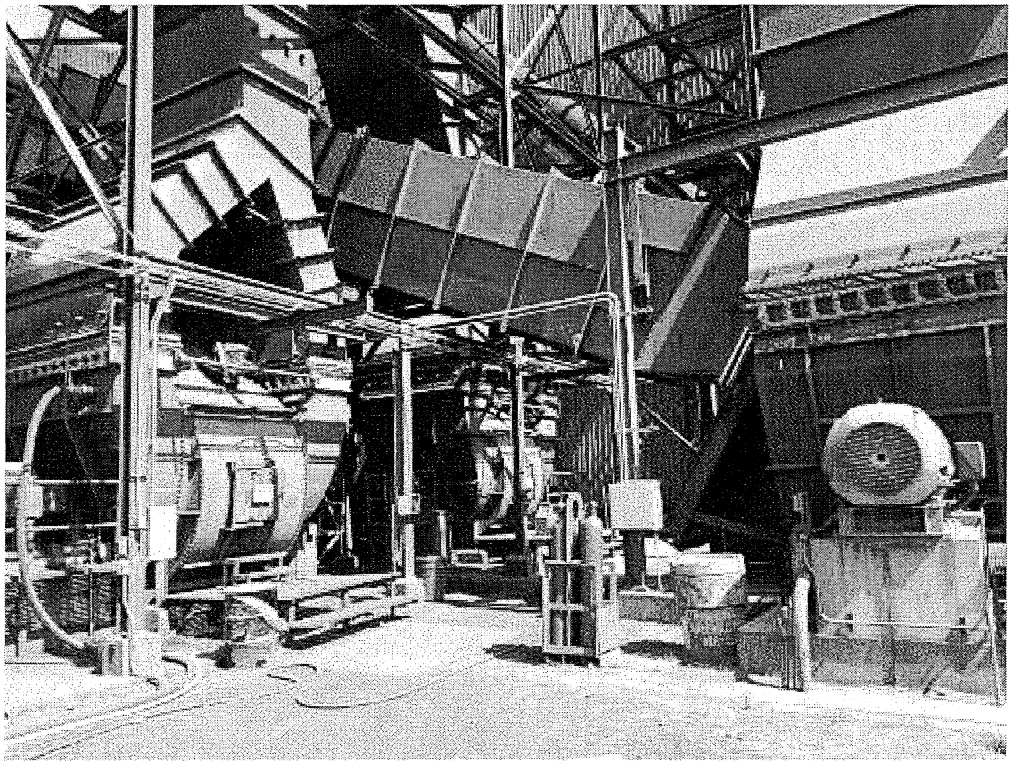


Image 21(EAF Baghouse Exhaust) : EAF Baghouse exhaust fans

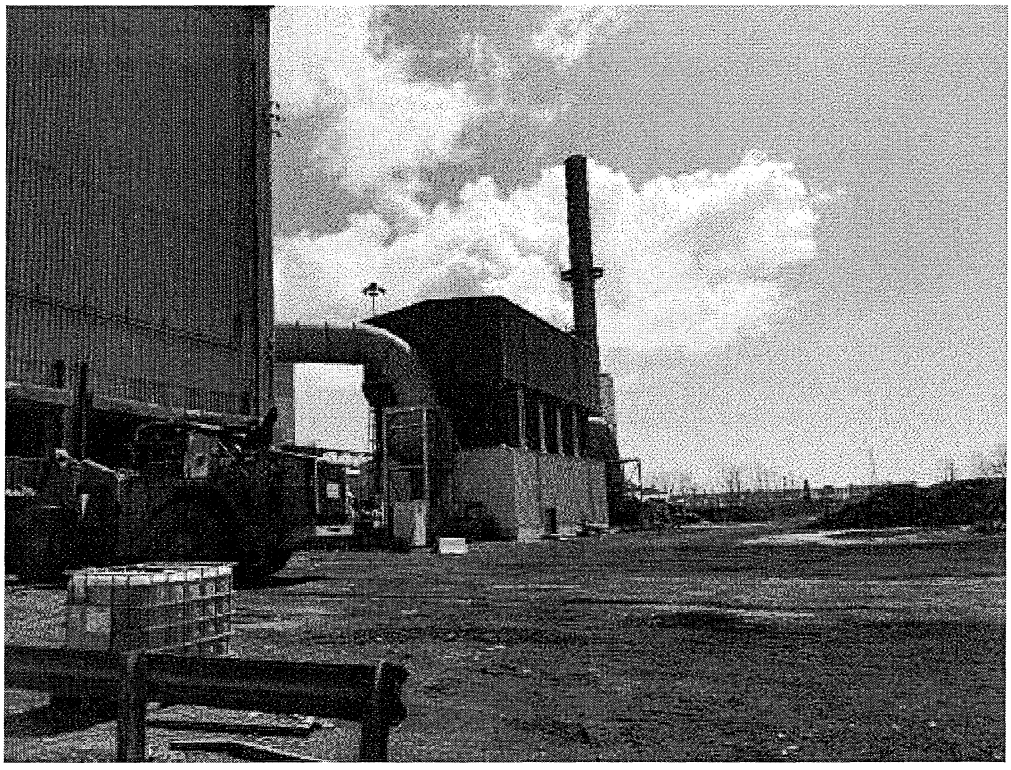


Image 22(LMF Baghouse) : LMF Baghouse

Image 23(Slag processing area) : Slag processing area

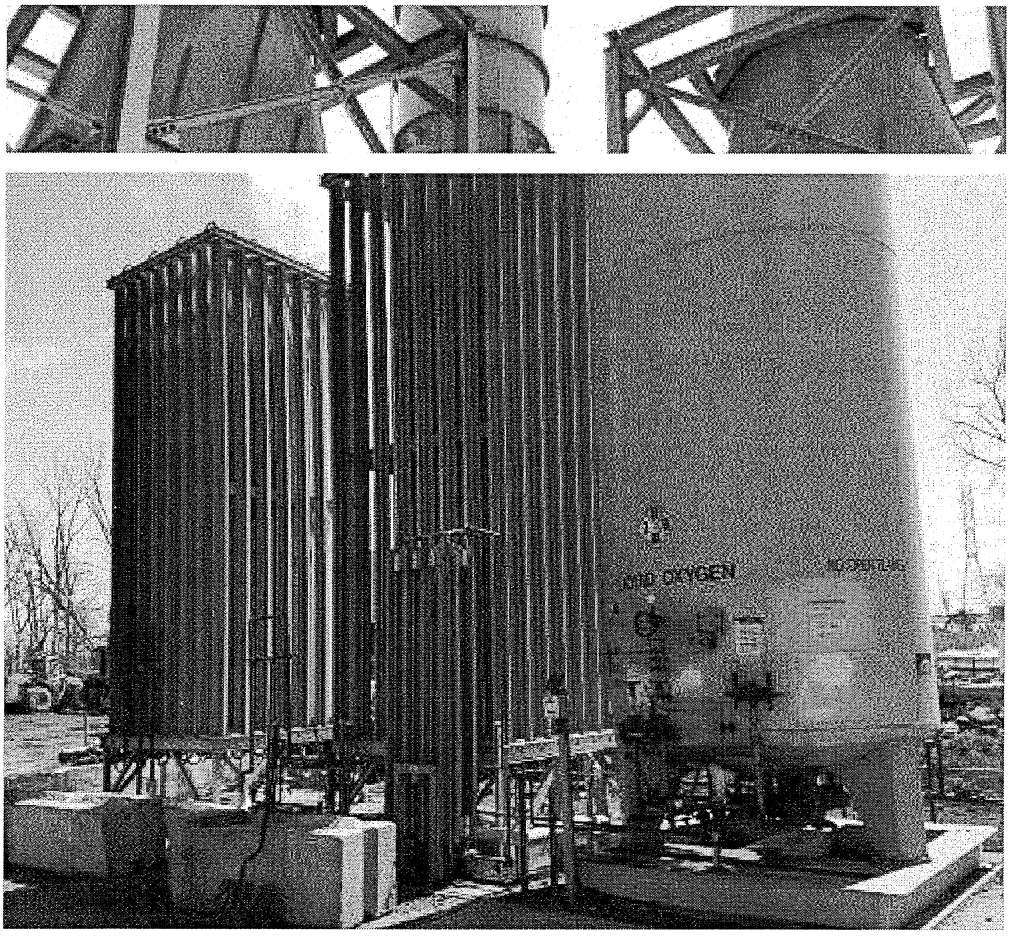


Image 25(Oxygen tank-torch) : Oxygen storage tanks for torch cutting

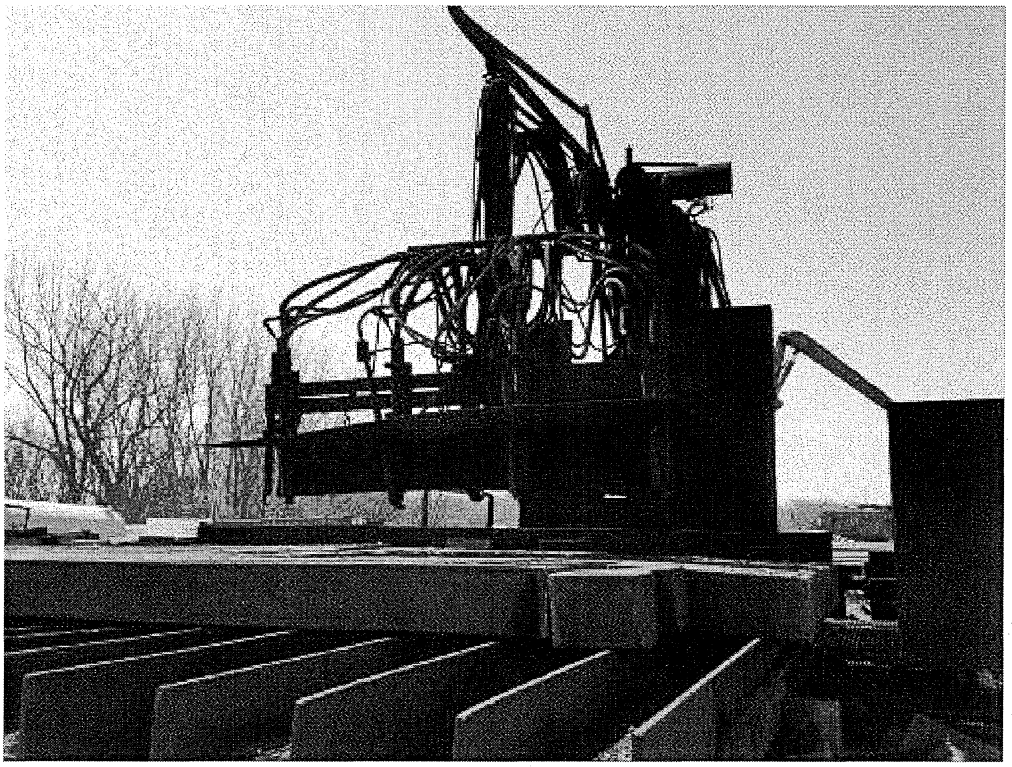


Image 26(Torch cutting) : Torch cutting machine

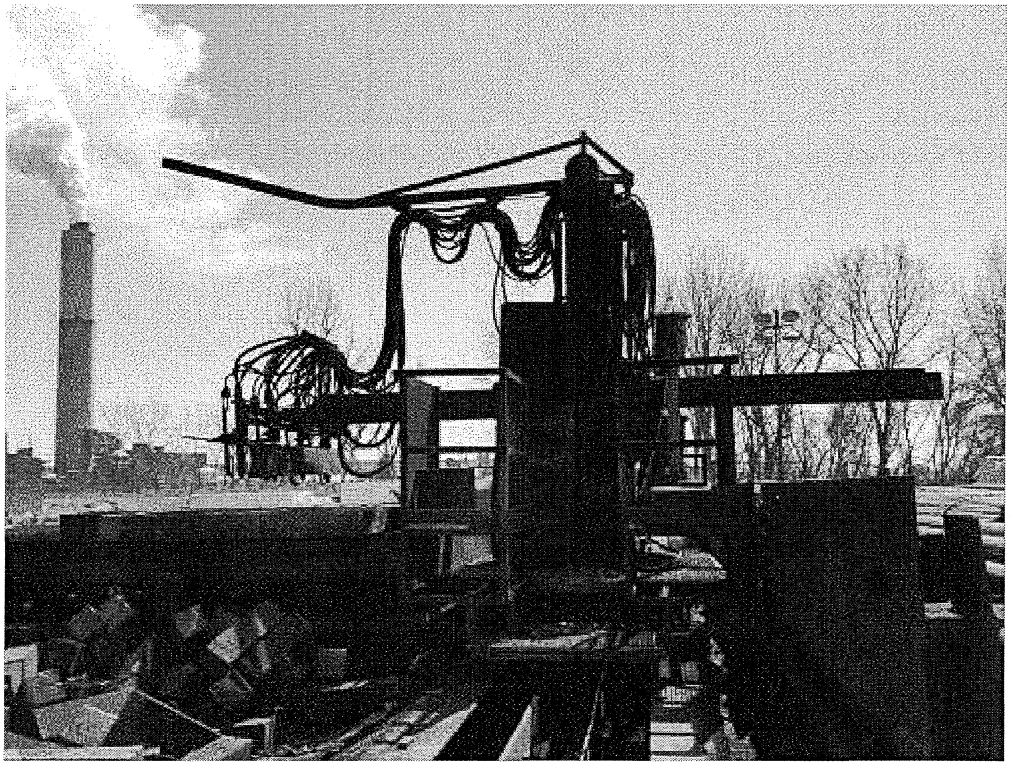


Image 27(Torch cutting) : Torch cutting machine

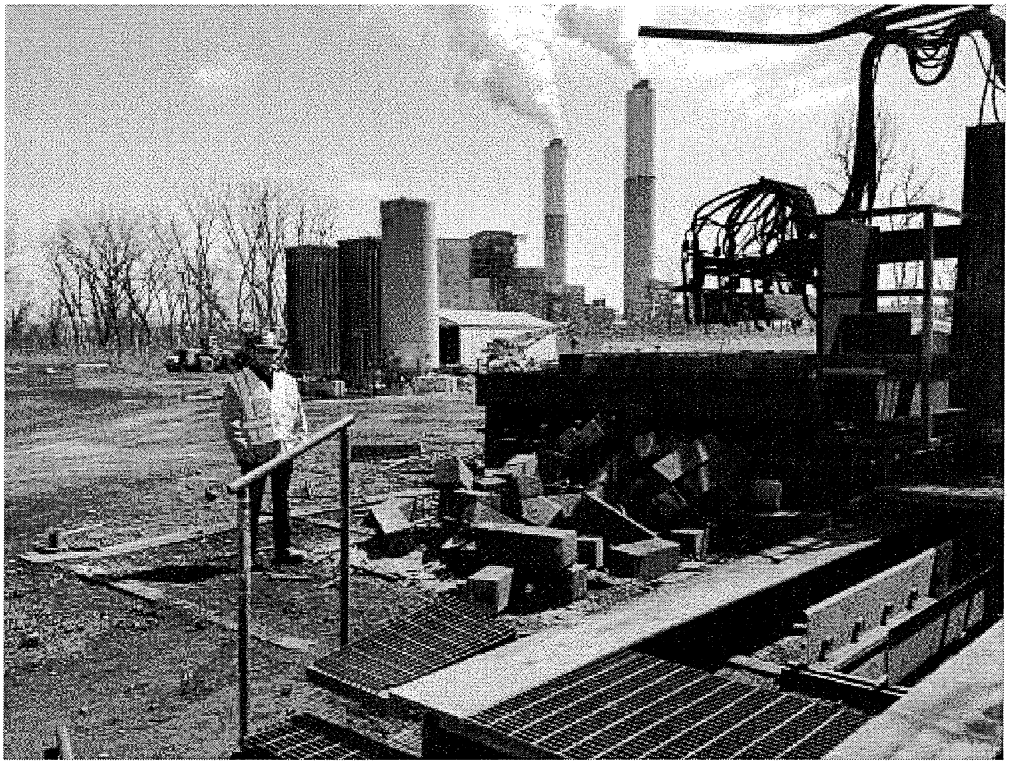


Image 28(Torch cutting) : Torch cutting machine

Image 29(Distant roof view) : Distant roof view of Meltshop

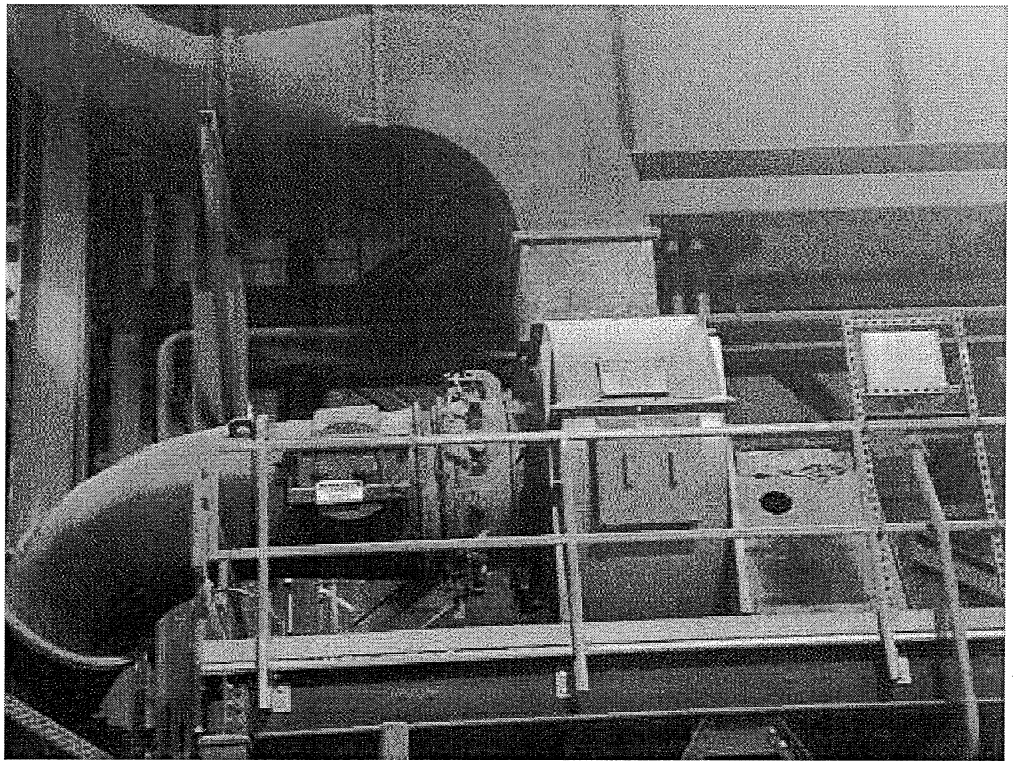


Image 30(VTD booster fan) : VTD booster fan

Image 31(Billet Reheat) : Billet reheat furnace

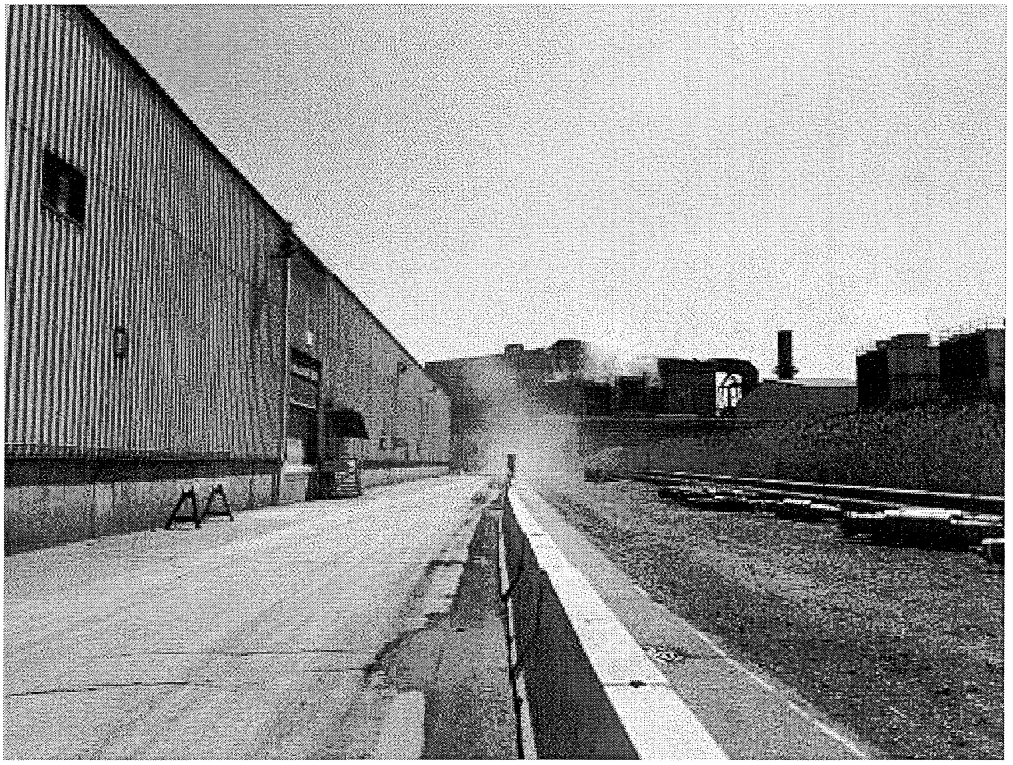


Image 32(Fugitive dust) : Fugitive dust

Image 33(Water truck) : Back of water truck watering the roads.

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