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

B175458374

FACILITY: Ervin Amasteel Division		**SRN / ID:** B1754
LOCATION: 915 TABOR ST., ADRIAN		**DISTRICT:** Jackson
CITY: ADRIAN		**COUNTY:** LENAWEE
CONTACT: Richard Payne , Plant Engineer		**ACTIVITY DATE:** 06/09/2021
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Inspection of a secondary steel mill. One compliance concern regarding opacity from vent on south wall of roof vent.		
RESOLVED COMPLAINTS:		

Major Source for CO-Area Source for HAPs-Full Compliance Evaluation (FCE)

Facility Contact

Richard (Rick) Payne III: Plant Engineer ph: 517-265-6118 ext. 117

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John Gramm: Plant Manager ph 517-265-6118

Purpose

On June 9, 2021, I conducted an announced compliance inspection of Ervin Amasteel Division (Company) located adjacent to Adrian, Michigan in Lenawee County. The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules and the Company's Renewable Operating Permit (ROP) No. MI-ROP-B1754-2018.

Facility Location

The facility is located adjacent to city of Adrian in Madison Township in an industrial area. Residential homes are located about 600 feet to the NE of the melt shop and about 1000 feet to the South.

Facility Background

The facility was last inspected on August 1, 2019 and was found to be in compliance. The facility is a cast steel shot and grit abrasives manufacturer. The facility operates one 40-ton capacity Electric Arc Furnace (EAF), from which the molten steel is processed to form shot and grit. The facility has approximately 95 employees and operates 24 hours a day, five days a week with one Saturday per month generally used for maintenance purposes. The EAF is operated from approximately 7 PM to 11:00 AM to take advantage of reduced electricity rates.

Regulatory Applicability

The entire facility currently operates under ROP No. MI-ROP-BI1754-2018 that was issued on March 5, 2018.

The facility is considered a Major source of CO and an area source of HAPs.

The facility is subject to the Area Sources Electric Air Furnace Steelmaking Facility NESHAP, 40 CFR Part 63 Subpart YYYYY, issued on December 28, 2007.

The EAF is also subject to NSPS 40 CFR Part 60 Subpart AAa, Standards of Performance for Steel Plants: Electric Arc Furnaces and AOD vessels.

There are several PTI exempt processes at the facility that were listed in the recent ROP renewal application. These include the following:

EU-SPACEHTRS-Natural gas fired space heating units ranging from 0.1-0.99 MM Btu/hr. (exempt per Rule 282(2)(b)(i)

EU-WTRHTR-Natural gas fired water heating unit 0.28 MMBtu/hr. (exempt per Rule 282(2)(b)(i)

EU-LPGTANKS-Two 30,000-gallon propane storage tanks. (exempt per Rule 284(2)(b))

EU-RXGEN-Natural gas fired (endothermic) atmosphere generator 10 MMBtu/hr. (exempt per Rule 285 (2)(l)(iv)

EU-HTSFUR-Natural gas fired heat treat furnaces ranging from 1.2-2.1 MMBtu/hr. (exempt per Rule 282 (2)(a)(i))

Arrival & Facility Contact

Visible emissions were observed upon my approach to the Company's facility. I arrived at 8:50 am in the parking lot and observed opacity coming from an open louver vent near the top of the south wall of the Melt Shop. I took photos/video of the opacity and then proceeded to the Company's front office to request access for an inspection, provided my identification and spoke with Rick Payne (RP) Plant Engineer.

I informed him of my intent to conduct a facility inspection and to review the various records as necessary.

RP extended his full cooperation during my visit and fully addressed my questions.

Pre-Inspection Meeting

The pre-inspection meeting was brief. Rick indicated that he gathered the records I previously requested and placed in a folder on his desk that I retrieved after the inspection. All the provided records were in paper form.

The following records requested that was sent to the Company on 6/6/2021, was as follows.

"Ervin Records Request 6-7-2021:

1. Monthly summaries of daily pressure drop readings for EU0007 baghouse for January 2021-April 2021.

2. Monthly summaries of daily pressure drop readings for EU0005 baghouse for January 2021-April 2021.

3. Monthly inspection records for EU0005 baghouse for last 12 months through April 2021. (FG0005 VI. Monitoring/Recordkeeping 2.0)

4. Monthly summaries of daily pressure drop readings for EU0009 baghouse for January 2021-April 2021.

5. Monthly inspection records for EU0009 baghouse for last 12 months through April 2021. (FG0009 VI. Monitoring/Recordkeeping 2.0)

6. Records showing once per shift readings of the furnace static pressure, fan motor amperes and damper position for April 2021.

7. For EU0009 baghouse, monthly summary of daily inspection of baghouse dust-handling system log of conditions noted and actions taken for April 2021.

8. For EU009 baghouse, monthly summary of Method 9 opacity readings for April 2021.

9. Monthly records of tons of steel melted for last 12 months ending April 2021.

10. Daily calculated CO emissions for April 2021 for the EAF.

11. For FGMACT-YYYYY, for the last 12 months ending April 2021; monthly records, as required by 40 CFR 63.10685(c), concerning the Control of Contaminants from Scrap plan.

12. For FGSI-RICEMACT, for the last 12 months ending April 2021;

a. Records of the maintenance conducted to demonstrate the stationary RICE was operated and maintained according to the manufacturer's emission related written instructions or developed maintenance plan.

b. Records of hours of operation recorded through the non-resettable hour meter. The permittee shall document how many hours were spent during emergency operation; including what classified the operation as emergency and how many hours were spent during non-emergency operation. "

Onsite Inspection

RP gave me a tour of the facility. Safety equipment included hard hat with earmuffs along with secondary ear plugs, safety glasses, safety shoes and a safety vest.

RP took me to the South slag area of the facility. It is a several acres of open ground directly south and surrounding the EAF baghouse. Slag coming from the EAF is brought and deposited into a pile daily. 4 or 5 times a year, an outside contractor comes in to process the slag into a sellable product. Each visit takes a couple weeks to complete. The outside contractor used conveyors and screens to sort the building and a bulldozer to crush the larger chunks. During the inspection, this process was not operating, and no dust was noted. Facility wide, levels of fugitive dust were very low. They have sweeper that is used daily, and a contractor operated vacuum truck that comes by weekly.

RP took me to look at EAF baghouse. Just outside the 8-section positive pressure-reverse jet baghouse is where a large ventilation duct was coming in from the Northside of the facility where the EAF is located. A smaller auxiliary fan has been added siting directly adjacent to the original fan. This auxiliary fan is used when the EAF is not in operation. RP indicated that all approximately 1300 bags had been replaced about 6 weeks prior. The last time they had been changed was about 8 years ago. RP indicated that the bags were still in good condition although they were getting "heavy". No opacity was visible coming from the baghouse. Next, we entered the baghouse control room. See attached photo of the control panel and pressure drop meters for each section of the baghouse. The readings were generally close to 6" of inches of water. This was in sharp contrast to previous visit when the pressure drop readings averaged about 11".

Next, we went outside to look at the 2 dust boxes located underneath the baghouse. Collected solids from the baghouse are routed into 1 of 2 dust boxes for collection. No collected fines were visible on or near the dust boxes and also no opacity. (See attached photo.)

We stopped to look at the Grit dust collector associated with EU-0007. No opacity was observed, and the collector appeared to be operating properly. (See attached photo.)

We stopped to look at a dust collector associated with EU-0005. No opacity was observed, and the collector appeared to be operating properly. (See attached photo.)

We walled by the scrap yard. (Open sided building with roof-see attached photo.) It handles 300 to 400 tons of scrap per day. 90% of the scrap comes from Omnisource with some coming from Padnos and other scrap dealers. The scrap includes sheet metal stampings, bushings, frag, plate and structural pieces, manganese pieces etc. They use the paint filter test method to verify purchase specifications that appear to be oily etc. The material is collected using a magnetic grabber that fills the charge ladle. The non-metallic materials/chucks are loaded by front end loader. No oil or dust was noted. A small train car (electric powered) like set up takes the filled ladle from the scrap yard building to the Melt shop.

RP showed me the North slag building. This is a small building open on one side located near the scrap yard. Slag from the furnace is placed inside the building to cool. When the front-end loader enters the building, it triggers a motion sensor that turns on a baghouse located behind the building.

There was some slag in the building during the inspection, but the baghouse was not running since nothing had been deposited in the building recently. The baghouse appeared to be in good shape. See attached photos. After it cools, the slag is removed from the building and brought to the South side of the plant.

We visited the EAF building and a roof adjacent to it. The EAF was in the middle of a melt. A small amount of smoke was being generated. It appeared to be captured by the roof canopy hood located near the ceiling of the 100-foot-high building. (The roof of the building has no openings.) Some of the emissions were being captured by the "fly swatter" hood located close to where tapping occurs. occurring. Generally, no smoke was observed exiting the building except through the ventilation system. There are 2 vents on the south side of the Melt shop and one on the east side of it near the roof line. These are the vents that EPA was interested in during their previous inspections and concluded an administrative consent order with the Company regarding this issue. As a result, the Company has altered the fans associated with the side vents so that they are not turned on when the EAF is in operation. The east vent was closed but the west part of south vent appeared to be stuck open. No opacity was visible while on the roof. (No fallout was visible anywhere on the roof either.) Despite the fan not being on, this is where I noted opacity upon arrival of the facility. I estimated the opacity at 10 to 20% over a ten-minute. The sun angle was directly behind the source of the opacity so a proper Method 9 reading could not be taken from where the smoke could be read on the ground. The opacity limit is 6%. (Discussion with RP after the inspection and another Ervin employee concluded that I observed opacity during the tapping part of the Melt cycle which may have been the result of an operator pouring the melt too fast or not in a steady fashion which results in excess smoke that lingers near the ceiling of Melt Shop for quite some time.) We observed the EAF for a while from the control room. I witnessed the 3 electrodes already emplaced into the scrap. I took several photos of all the process parameters being displayed on the control room screens. See attached.

The Melt shop has a HMI system to allow for the automated operation of the Melt shop hood dampers. This includes the furnace control damper, the furnace monitor damper, the caster monitor damper, the box and ladle collection damper, the fly swatter collection damper and the atomizing tank collection damper. The automated system allows for the control of damper openings, as well as the percentage that an individual damper is opened. Damper openings are controlled based on the stage of the process (melting, pouring, and casting) to optimize the use of the 300,000 scfm of airflow available to draw off emissions.

They try to control the chemistry of the steel by the scrap composition. The use four different alloys including carbon and manganese even though they only produce one grade of steel. Attached photo shows a snapshot of the chemical composition of the steel while we were in the control room. Generally, the metals that are at most concern for air quality purposes such a chromium, lead, nickel etc. were at low levels.

A heat from tap to tap takes about one hour and 20 to 30 minutes. They try to completely empty the furnace into the ladle so that they can repair the furnace every day due the use of an "acid practice" type refractory. The refractory is acidic in composition and is sprayed on rather than being in brick form. It is cheaper to shut down daily due to the cost of energy after 11 am. (When you shut down the furnace, the refractory is damaged due to the extreme change in temperature.)

As we exited the control room, we walked by the EAF and where the "fourth hole" ventilation is located coming out of the EAF.

The EAF has a Direct Evacuation Control (DEC) system that is used for primary ventilation of the off gases produced by the melting operation of the furnace. (Used when the roof to the EAF is in place when charging/taping is not occurring. They scrape the top of the furnace that holds the furnace roof prior to adding a charge to keep it free of debris for quality control purposes and to reduce air emissions.) The DEC is coupled to the furnace interior employing a method referred to as a "fourth hole." The ventilation gases drawn from the fourth hole go into ventilation elbow where the combustion process started in the furnace is encouraged to continue. There is a gap in the ventilation duct that allows outside air to be drawn in. This is the "CO destruction device" referenced in their ROP permit.

After the heat has been moved from the furnace to the casting ladle it is poured into the tundish which has holes in the bottom and water is sprayed on the molten metal as it comes through the holes. The fly swatter hood is used to cover the tundish ladles for particulate control during the casting process.

Recordkeeping/Permit Requirements Review

-MAERS Review

Facility is operating at only fraction of permitted emission limits. 24 tons of NOX, 2.5 tons of PM2.5, 10 tons of SO2, and 15 tons of VOC. CO emissions were reported to be only a couple of tons from the EAF.

Overall, 2020 MAERS shows compliance.

-Permit Requirements Review

EU-0007

Emission unit includes processes associated with the production, cleaning and sizing of abrasive grit. Emissions are controlled by a 26,420 scfm baghouse (SV11) (Grit Dust Collector) located on the south-end of the building.

Emission Limits - Monitoring/Recordkeeping

Restricts PM, PM10 and PM2.5 emissions, as well as limiting opacity to a six-minute average of 5%. Compliance is based upon proper operation of the baghouse. Proper operation is based upon differential pressure monitoring, for which the facility is required to monitor and record daily.

Status

I reviewed records from December 2020 through June 2021. The records list the operational range around 1" of differential pressure. Review of the records showed that all the readings were near 1". I also looked at the repair log for last 12 months. Nothing notable.

Note: Observation of the baghouse exhaust during the inspection showed no visible emissions. Observation of the area around the baghouse showed good housekeeping practices.

FG-0005

Flex group includes shot processing equipment controlled by Baghouse-0005

(20,000 scfm) (As Cast/Hi-Carb Collector)

Emission units within flex group include:

EUASCSTDRYER1, EURMLTDUMPHOIST, EUACSCRNLINEBINS, EU#1LINEDRYELEV1, EU#1LINEDRYELEV2, EUAMALINEBEATSYS, and EU#4BEATERSYSTEM

Emission Limits - Monitoring/Recordkeeping

Restricts PM, PM10 and PM2.5 emissions. Compliance is based upon proper operation of the baghouse. Proper operation is based upon differential pressure monitoring. If an excursion outside the established pressure drop range (1.5"-5.5") occurs, the facility is required to observe for visible emissions. If visible emissions are noted, the facility is required to conduct Method 9 readings and take remedial action within 24 hours. Also, requires monthly inspections of the baghouse.

Status

I reviewed baghouse records from December 2020 through June 2021. The records document that the pressure drop reading were within the established range. Review of the records showed that all the readings were within range. I also looked at the repair log for the last 12 months. Nothing notable.

Design/Equipment Parameters

Requires exhaust stack be vented obstructed vertically upward.

Requires the facility to implement and maintain a Fugitive Dust Control Plan. Facility is required to make daily observations in accordance with the plan.

Status

The facility has a Fugitive Dust Control Plan in place for this portion of the facility.

Note: Observation of the baghouse exhaust showed no visible emissions.

FG-COLDCLEANERS

The facility has one 30-gallon cold cleaner. It was not observed during the inspection.

FG-0009

Flex group includes the 40-ton capacity electric arc furnace and associated pouring and casting operations that are controlled by Baghouse-0009 (Flowers Dust Collector). Additionally, separate ventilation to Baghouse-0009 provides control for the pouring ladles and two side draft hoods "fly swatters" used during furnace tapping. Baghouse-0009 has eight bays and the facility replaces the bags in one bay each year.

Emission units within flex group include: EU-EAF, EU-POURING and EU-CASTINGTANK

Emission Limits - Monitoring/Recordkeeping

Restricts CO, PM, PM10 and visible emissions.

Compliance with the CO emission limit is based upon annual CO emission rate testing, which is conducted in lieu of a CEMS unit. If testing shows a CO emission rate greater than 70% of the limit, a CEMS is required to be installed. Annual testing has showed emission rates below 70% of the limit. The next test is scheduled for Mid-August. The facility calculates and maintains records of the CO emission rate based upon the annual stack testing.

Compliance with the PM, PM10 and opacity emission limits are based upon past compliance testing, calculation (based upon most recent testing) and recording of PM hourly emissions, proper operation of the baghouse and daily Method 9 observations.

The facility conducted compliance testing in July 2013 at which time they demonstrated compliance with the PM emission limits.

As required by the permit, the facility maintains records of the hours of operation and tons of steel melted. Records reviewed showed compliance with the melted steel limits and hours of operation.

The records included CO calculations based on the last stack test conducted in 2020.

Proper operation is determined via the requirements to monitor and record the pressure drop across the baghouse on a daily basis, conduct three 6-minute Method 9 readings each day for the baghouse, monthly VE observation from the melt shop and baghouse dust handling system, monitoring and recording of the furnace static pressure, fan motor amperes and damper position once per shift. Additionally, proper operation is determined via the requirement to conduct monthly operational status inspections of the total capture system.

- Monitoring and recording of the furnace static pressure, fan motor amperes and damper position is performed by the furnace operator once per heat. The furnace operator has the ability to adjust the system to control furnace static pressure. The facility provided the requested records documenting compliance with the recording requirement.

- The facility provided Method 9 observation records for the April to May 2021, as requested. No opacity was noted during this time period. Staff did not observe any VE during the inspection from this baghouse.

- **Inspection of the capture system (duct) is documented on the daily collector inspection records.**

Status

Compliance.

FGMACT-YYYYY

The emission unit is subject to 40 CFR Part 64 CAM for PM, which is also a requirement under Subpart YYYYY.

CAM requires monitoring of both the control and capture system. CAM monitoring for the control device is accomplished through the requirement to record the pressure drop on a daily basis. If the pressure drop is out of the normal parameters, the facility is required to make VE observations, and then conduct Method 9 readings if VE is noted.

As noted during a previous inspection, since the facility is required to conduct daily Method 9 readings under Subpart AAa, this is included in CAM.

The facility is submitting the required semi-annual CAM certification reports.

Subpart YYYYY – Area Source Electric Arc Furnace Steelmaking NESHAP

The facility is subject to Subpart YYYYY, which regulates scrap charged to the EAF, emissions from the EAF and opacity from the melt shop.

The facility is considered an existing source under Subpart YYYYY.

Emission Limits

The EAF is subject to a PM emission limit of 0.0052 gr/dscf and the melt shop is subject to a fugitive opacity limit of 6%.

Status: Compliance

The facility tested and demonstrated compliance with the PM limit in June 2008.

The facility conducted and documented Method 9 readings for melt shop fugitive opacity on January 30, 2013. The deadline for conducting the testing was June 30, 2008. The late testing was documented during a previous inspection and addressed in a violation notice issued September 5, 2013.

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 for the facility to have a site-specific plan.

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.

Mercury

The facility's plan addresses participation in the approved program option (NVMSRP). 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.

Reporting

Subpart YYYYY requires the submittal of semi-annual compliance certifications.

The facility is submitting semi-annual certifications in accordance with Subpart YYYYY.

Subpart AAa – NSPS, Standards of Performance for Steel Plants: EAFs and AODs

The facility is subject to NSPS Subpart AAa –Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983, which regulates PM emissions from the EAF and opacity from the EAF control device as well fugitive emissions from the melt shop.

The requirements of Subpart AAa are incorporated into the individual emission units/flex groups of the ROP.

Emission Limits

Limits PM to 0.0052 gr/dscf, which is the same limit contained in Subpart YYYYY.

Also, limits opacity from the EAF baghouse to 3% and opacity from the metal shop to 6% (same as Subpart YYYYY.)

The facility most recently demonstrated compliance with the PM emission limit as part of compliance testing required by Subpart YYYYY.

Limits opacity from the melt shop to 6%

Testing to demonstrate compliance with the melt shop opacity limit was required within 180 day of startup of the new EAF in 1994. The facility stated that the first recorded/documented Method 9 readings for melt shop opacity were conducted on January 30, 2013. Late testing was documented in a violation notice issued on September 5, 2013.

Regarding ongoing compliance, NSPS Subpart AAa allows for demonstration of compliance with the melt shop opacity limit through monitoring of the EAF static pressure drop, fan amperes and damper position once per shift. The facility is conducting the required monitoring.

Monitoring

Requires a COM unit, unless opacity from the control device is performed by a certified observed (Method 9) daily.

The facility conducts daily Method 9 readings of the baghouse.

Monitor and record the control system fan motor amperes and damper position once per shift or operate a monitoring device to continuously record the volumetric flow rate through each hood or operates a monitoring device the continuously records the volumetric flow rate at the control device inlet and check and record the damper positions once-per-shift.

The facility monitors and records the fan system amperes, furnace static pressure and damper positions once per heat.

FGSI-RICEMACT

The Company has only a very small spark ignition style generator. Provided maintenance records showed compliance.

Post-Inspection Meeting

After the inspection, I met with RP discuss the results. We discussed the issue with south vent on the EAF building and minor amounts of opacity noted and that I would be following up on this issue after I reviewed the ROP conditions related to issue. I thanked both RP for his time and cooperation and left the facility at approximately 10:30 am.

Compliance Summary

The Company is in compliance. There was one area of concern still outstanding from previous and latest inspection.

1. I was unable to determine compliance with the 6% opacity limit for fugitive dust emissions coming from the EAF building. The Company is required to:

a) Investigate what methods/procedures that they can implement that would reduce opacity coming from the vent on the upper south wall of the EAF building. Acceptable options include sealing off the vent permanently or otherwise completely redesigning the vent louvers so that they are not prone to sticking in the open position.

b) Conduct Method 9 readings to show compliance during the tapping part of the Melt cycle after modifications to the vent have been completed.

c) Provide an update by the end of July to AQD.

Image 1(EAF Baghouse) : EAF Baghouse

Image 2(South wall-Melt Shop) : South wall-Melt Shop showing roof vent with louver stuck open resulting in opacity.

Image 3(EAF Baghouse) : EAG Baghouse boxes where fines are disposed of.

Image 4(EAF Baghouse) : EAG Baghouse elbow area.

Image 5(EU-0007) : EU-0007 baghouse

Image 6(EAF Baghouse) : EAG baghouse pressure drop readings for each baghouse section.

Image 7(EU-0005) : EU-0005 baghouse

Image 8(Scrap yard building) : Scrap yard building

Image 9(North scrap) : North scrap pile building with vent in back

Image 10(Slag baghouse) : North slag building baghouse. (not operating)

Image 11(South Vent) : Vent on southside of Melt Shop. Louver stuck open on the left(west) side of it.

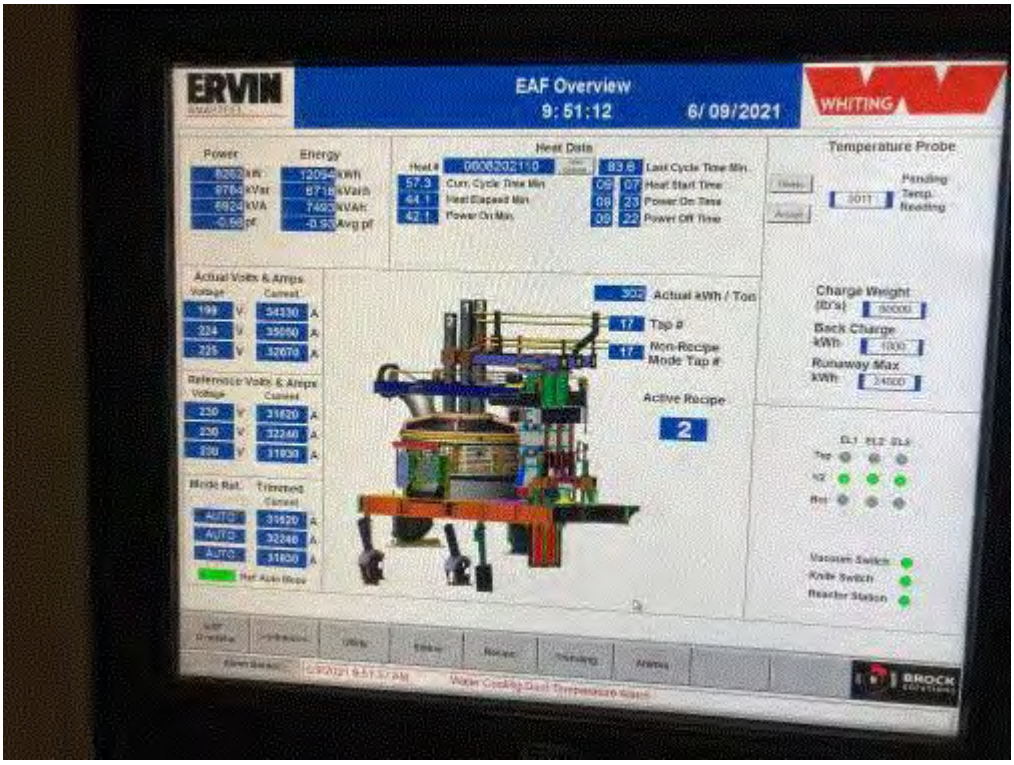

Image 12(EAF Control Room) : EAF Control Room view

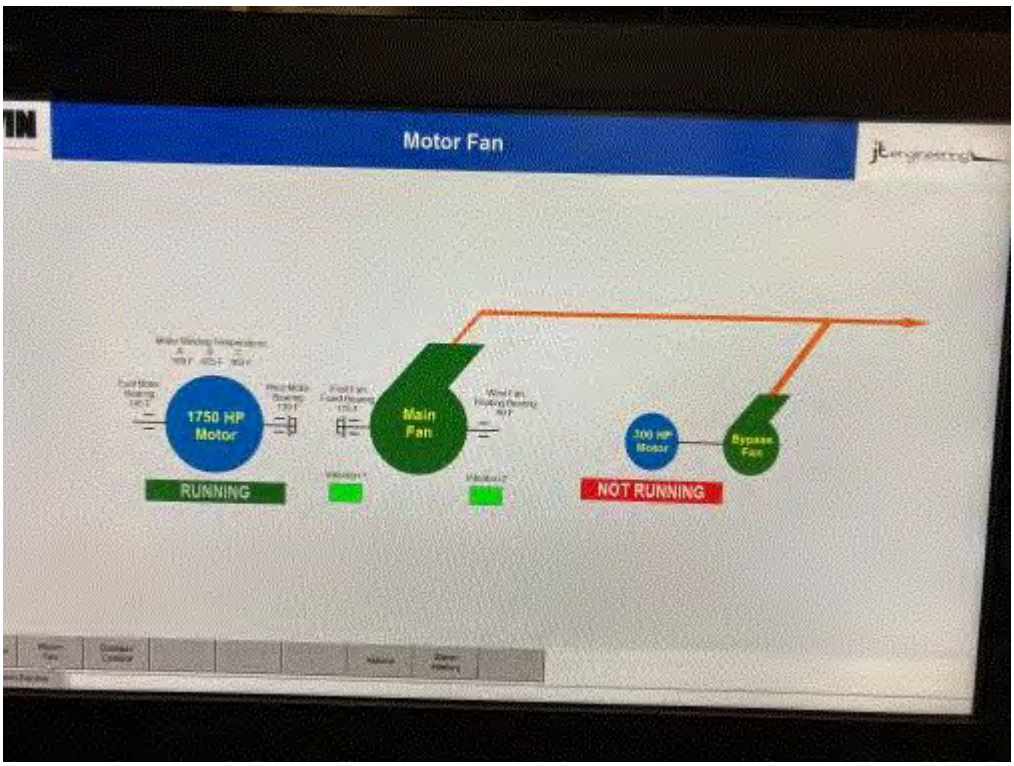

Image 13(EAF Control Room) : EAF Control screen view.

Image 14(EAF) : EAF half way through melt cycle.

NAME Mike Kovalchick DATE June 9, 2021 SUPERVISOR