

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

N586656566

FACILITY: METAL TECHNOLOGIES, INC., RAVENNA DUCTILE IRON		SRN / ID: N5866
LOCATION: 3800 Adams Road, RAVENNA		DISTRICT: Grand Rapids
CITY: RAVENNA		COUNTY: MUSKEGON
CONTACT: Dan Plant , Corporate Environmental Manager		ACTIVITY DATE: 01/28/2021
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Off-site Inspection		
RESOLVED COMPLAINTS:		

METAL TECHNOLOGIES, INC. - RAVENNA DUCTILE IRON (N5866)

FACILITY DESCRIPTION

The facility is a ductile iron foundry that primarily casts automotive and small engine parts. Melting is performed in three electric induction furnaces with charge material that has been processed through a preheater. The molten metal is poured into green sand molds. The facility uses cores that are purchased. Emissions from the melting, pouring, cooling, finishing and sand handling operations are controlled by baghouses.

REGULATORY ANALYSIS

The facility is a Title V subject source (ROP No. MI-ROP-N5866-2019) because emissions of CO are greater than the major source threshold and because the single and combined HAP PTEs exceed major source thresholds. The facility is subject to the Iron and Steel Foundry NESHAP, Subpart EEEEE. NESHAP subject emission units are EU-PREHEATERS, EU-MELTING, and EU-POURING. The facility was also subject to PSD based on CO emissions. The emission units EU-CLEAN, EU-MELTING, EU-POURING, EU-COOLING, EU-SHAKEOUT and EU-SANDSYSTEM are subject to CAM requirements.

COMPLIANCE EVALUATION

This was an off-site inspection due to COVID-19. Compliance records were requested and reviewed prior to a virtual plant tour. The facility provided the most recent 12 months of records for conditions requiring monthly and 12-month records. For all other records the facility was requested to provide records for the previous two months. For bag leak detection records, the facility was requested to provide alarms and responses for the past 2 months. For semi-annual opacity records the facility was requested to provide the last two test records.

The virtual inspection was conducted via Microsoft TEAMS on January 28, 2021. During the virtual inspection the facility was represented by Dan Plant, Director of Environmental Engineering.

EU-CLEAN

Emission unit includes cast finishing operations, including (4) shotblasters, (1) tumblaster, (16) grinders and miscellaneous inspection/cleaning stations. All processes are captured and ducted to the West Blast Baghouse (SV-CLEAN-03).

This unit is subject to CAM for particulate matter.

Emission/Material Limits

Restricts the emissions of PM and opacity. Compliance with the emission limits for particulate and opacity are demonstrated through baghouse monitoring and compliance testing. Compliance is also demonstrated via monthly emission records that are calculated utilizing emission factors from testing and material usage/production rates.

The facility conducted emissions testing on September/October 2019, at which time compliance with the particulate and opacity limits was demonstrated.

PM Limit: 0.01 lb/1,000 lb of exhaust gas

PM test result: 0.000745 lb/1,000 lb of exhaust gas

PM Limit: 2.2 lb/hr

PM test result: 0.188 lb/hr

PM Limit: 9.6 tpy

PM emissions: 0.434 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

Opacity Limit: 5%

Opacity test result: 0%

Baghouse monitoring is accomplished via the following permit requirements: daily VE observations, semi-annual Method 9 readings, operation of the baghouse within PM plan specified pressure drop range, operating in accordance with a PM plan for the baghouse. Additionally, the baghouse is equipped with a bag leak detection system, which is not required by permit.

Review of facility records showed compliance with the above requirements. (Records Attached)

Pressure drop established range: 2 to 10", recorded readings: 3.8 to 6.4"

Daily VE Readings: Records document no emissions

Semi-annual Method 9 readings: March 5, 2020: 0%, August 27, 2020: 0%

The pressure drop observed during the virtual inspection was 6.5", the bag leak detector reading was 35-51, and no opacity was observed.

The facility stated that the dirty side of the baghouse is scheduled to be rebuilt this summer. The rebuild will include bag replacement. The rebuilding of a portion of the baghouse is exempt from the need to obtain a permit to install under Rule 285(2)(d).

Process/Operational Restrictions/Design Parameters/Records

The permit requires instrumentation to continuously measure the pressure drop across the baghouse and to record the reading once per day. The facility is in compliance with this condition, based on records reviewed.

Testing/Sampling

Testing was conducted in September/October 2019, at which time compliance was demonstrated for particulate matter and opacity

Monitoring/Recordkeeping

Records of the hours of operation and calculated particulate emission rates were supplied by the facility (attached).

Reporting

Review of the most recent annual and semiannual ROP certification reports as well as CAM certification, showed that they were submitted by the deadline and that no deviations were reported.

Stack/Vent Restrictions

The stack associated with the West Blast is required to be a maximum of 60 inches in diameter and have a minimum height of 65 feet. Visual evaluation of the stack during previous inspections showed that it appeared to meet the required dimensions.

FG-MELTING

Flexible group that consists of metal processing operations that have combined emission limits. Includes: EU-PREHEATERS, EU-MELTING and EU-INOCULATION.

Emission/Material Limits

Restricts the emission of PM, CO, VOC, NO_x, Lead, Total Chromium and Opacity. Compliance with the emission limits is demonstrated through baghouse monitoring and compliance testing. Compliance is also demonstrated via monthly emission records that are calculated utilizing emission factors from testing and material usage/production rates.

The facility conducted emissions testing on September/October 2019, at which time compliance with the emission limits was demonstrated.

PM Limit: 0.01 lb/1,000 lb of exhaust gas
PM test result: 0.00171 lb/1,000 lb of exhaust gas

PM Limit: 2.5 lb/hr
PM test result: 0.408 lb/hr

PM Limit: 10.95 tpy
PM emissions: 0.895 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

CO Limit: 15.1 lb/hr
CO test result: 4.27 lb/hr

CO Limit: 42.8 tpy
CO emissions: 8.63 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

VOC Limit: 4.4 lb/hr
VOC test result: 2.55 lb/hr

VOC Limit: 10.8 tpy
VOC emissions: 5.15 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

NOX Limit: 3.1 lb/hr
NOX test result: 0.0245 lb/hr

NOX Limit: 13.2 tpy
NOX emissions: 0.50 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

Lead Limit: 0.07 lb/hr
Lead test result: 0.00374 lb/hr

Lead Limit: 0.16 tpy
Lead emissions: 0.008 tpy (12 month rolling ending 11/2020, based on stack testing emission factor)

Total Chromium Limit: 0.000876 lb/hr
Total Chromium test result: 0.000556 lb/hr

Opacity Limit: 5%
Opacity test result: 0%

Baghouse monitoring is accomplished via the following permit requirements: daily VE observations, semi-annual Method 9 readings, operation of the baghouse within PM plan specified pressure drop range, operation of a bag leak detection system, operating in accordance with a PM plan for the baghouse. Review of facility records showed compliance with the above requirements.

Records of the hours of operation, material charge rates to the furnace were supplied by the facility (attached). Review of the facility records shows compliance with the charge limits of 27 ton per hour and 132,000 ton per year. Actual 12-month total melt was 64,684 tons (ending in November 2020), Average tons per hour high, on a monthly basis, occurred in March 2020: 15.84 tons/hr.

Pressure established drop range: W.Melt East 1-10", recorded readings: 3.6 to 4.7"
W.Melt West 2-10", recorded readings: 3.4 to 4.7"
E. Melt (Inoc.) 1-8", recorded readings: 2.8 to 3.8"

Daily VE Readings: records document no emissions
Semi-annual Method 9 readings: March 5, 2020: 0%, August 27, 2020: 0%

During the virtual inspection the following readings were observed:

W.Melt East: pressure drop: 4.4", bagleak detector: 8
W.Melt West: pressure drop: 4.3", bagleak detector: 6
E. Melt (Inoc.): 3.7"
No visible emissions were observed during the inspection.

Process/Operational Restrictions/Design Parameters/Records

As part of demonstrating proper operation of the baghouse, the O&M plan requires monitoring and recording of the pressure drop. The facility supplied pressure drop records, as requested.

Monitoring/Recordkeeping

Records of the hours of operation and calculated particulate emission rates were supplied by the facility. (attached) Review of the previous 12-months (ending November 2020) records show compliance with the pound per hour and ton per year emission limits.

Testing/Sampling

Testing was conducted in September/October 2019, test results showed compliance with the ROP emission limits.

Reporting

Review of the most recent annual and semiannual ROP certification reports as well as CAM certification, showed that they were submitted by the deadline and that no deviations were reported.

Stack/Vent Restrictions

During previous inspections, visual evaluation of the stacks (SV-MELT-01 and SV-INOCULATION-05) showed that they appeared to meet the required dimensions.

FG-SAND

Flexible group that consists of sand related processes, including EU-COOLING, EU-SHAKEOUT, EU-POURING and EU-SANDSYSTEM.

Emission/Material Limits/Records

Compliance with the emission limits is demonstrated through baghouse monitoring and compliance testing. Compliance is also demonstrated via monthly emission records that are calculated utilizing emission factors from testing and material usage/production rates.

The facility conducted emissions testing on September/October 2019, at which time compliance with the emission limits was demonstrated. Testing did document an exceedance of PM emissions during the initial round of testing.

The facility corrected an issue with the baghouse and retested. Compliance was documented with the retest. A VN was issued on November 1, 2019 to address the exceedance.

	<u>Limit lb/hr</u>	<u>Limit ton/yr</u>	<u>Test data lb/hr</u>	<u>Calc. Ton/yr</u>
PM	6.0	26.3	4.65	10.895
CO	98.5	270	35.2	85.546
VOC	4.0	12	----	3.936
Total Cr	0.00168	---	0.000915	---

PM Limit: 0.01 lb/1,000 lb of exhaust gas
 PM test result: 0.00962 lb/1,000 lb of exhaust gas

Note: VOC emissions are calculated using a CERP emission factor (0.1217 lb/ton), as allowed for by the ROP.

Baghouse monitoring is accomplished via the following permit requirements: daily VE observations, semi-annual Method 9 readings, operation of the baghouse within PM plan specified pressure drop range, operating in accordance with a PM plan for the baghouse. Additionally, the baghouse is equipped with a bag leak detection system.

Review of facility records showed compliance with the above requirements.

Pressure established drop range: East Sand 2-10", recorded readings: 3.5 to 4.8"
 West Sand 2-10", recorded readings: 3.1 to 4.8"
 Daily VE Readings: No Emissions

Semi-annual Method 9 readings: March 5, 2020: 0%, August 27, 2020: 0%

During the virtual inspection the following readings were observed:

East Sand: pressure drop: 4.3", bagleak detector: 0
 West Sand: pressure drop: 4.6", bagleak detector: 5
 No visible emissions were observed during the inspection.

Review of the previous 12-months of data showed compliance with the 600,000 ton per year sand limit. The facility records showed a 12-month usage of 279,758 tons.

Testing/Sampling

The facility conducted emissions testing on September/October, 2019, at which time compliance with the emission limits was demonstrated.

Reporting

Review of the most recent annual and semiannual ROP certification reports as well as CAM certification, showed that they were submitted by the deadline and that no deviations were reported.

Stack/Vent Restrictions

During previous inspections visual evaluation of the stack (SV-SAND-02) showed that they appeared to meet the required dimensions.

FG-CAMUNITS

Flexible group consisting of the emission units subject to CAM requirements. Emission units include: EU-CLEAN, EU-MELTING, EU-POURING, EU-COOLING, EU-SHAKEOUT and EU-SANDSYSTEM are subject to CAM requirements.

Process/Operational Restrictions/Design Parameters/Records

For EU-CLEAN, requires instrumentation to continuously measure the pressure drop across the baghouse and to record the reading once per day. The facility is in compliance with this condition based on records reviewed.

For EU-MELTING, EU-POURING, EU-COOLING, EU-SHAKEOUT and EU-SANDSYSTEM, requires the operation and maintenance of bag leak detection systems. The facility has installed and is operating bag leak detection systems.

Testing/Sampling

For all CAM subject emission units, requires semi-annual Method 9 readings to demonstrate compliance with the opacity limit. Review of the Method 9 readings for the past year showed no exceedances of the opacity limit. (Records attached)

Monitoring/Recordkeeping

For all CAM subject emission units, requires daily non-certified visual inspections for opacity. Review of the daily records for visual opacity inspection showed that no opacity issues were noted. (Records attached)

NESHAP REQUIREMENTS – SUBPART EEEEE

FG-MACT EEEEE

Flex group covers the Iron and Steel Foundry NESHAP requirements.

EU-PREHEATER - Scrap Preheater EU-MELTING – Melting Furnaces EU-POURING – Metal Pouring

Emission/Material Limits

Compliance with the particulate matter limit is primarily demonstrated through compliance testing every 5 years and proper operation of the capture and control systems. Testing was performed in September/October 2019, at which time compliance was demonstrated.

Melting/Preheater PM Limit:	0.005 gr/dscf
Melting/Preheater PM test result:	0.000467 gr/dscf

The scrap preheater and melting have separate emission limits. Melting and preheating are ducted to the same baghouse at RDI and the facility demonstrates compliance with the gr/dscf limit from the combined emissions. The scrap preheater is also subject to a VOC limit, however, the VOC limit is not applicable if a facility utilizes a direct flame unit that contacts the charge material. The facility has a direct flame unit.

Pouring PM Limit:	0.010 gr/dscf
Pouring PM test result:	0.00507 gr/dscf

Fugitive Opacity Limit:	20%
Fugitive Opacity result:	3.16%

Design/Equipment Parameters

The NESHAP requires the capture and control system to be installed, operated and maintained in accordance with an approved O&M plan. The facility has an approved O&M plan that addresses capture and control O&M. The facility provided baghouse inspection records for October and November for the two baghouses controlling NESHAP subject emission units (sand system dust collector and the melt baghouse).

As part of the last compliance inspection an evaluation of the capture system was conducted regarding compliance with the NESHAP.

The facility conducts opacity readings from the general exhaust vents over the melt deck. The March 2020 readings documented a 6-minute opacity average of 2.5%. The August 2020 readings had 6-minute average high of 0%. These reads are indicators of good capture at the melt furnaces. During the virtual inspection, brief observation of the area of the general exhaust vents should no visible emissions.

Testing/Sampling

Testing was performed in September/October 2019, at which time compliance was demonstrated. In addition to performance testing, Method 9 readings are required no less than every 6-months. Review of the test results show compliance with the opacity limit.

Monitoring/Recordkeeping

The facility is using a bag leak detection system to monitor the relative change in PM loading. The facility provided system alarms and corrective actions for the previous two months. The records showed two alarms for the sand system dust collector which were addressed by cleaning the probe. The facility documented five alarms for the melt dust collector. Theses alarms were also addressed by checking the probe and stack. All bag leak detection alarms for the time period evaluated were "false alarms".

Reporting

Review of the most recent NESHAP certification report showed that it was submitted by the deadline. The facility previously documented that the required fugitive VE readings for the first half of 2019 were conducted late.

FG-RULE287(2)(c)

Emission units exempt from Rule 201 with coating usage under 200 gallons/month.

The facility provided material usage records for rust inhibitor. The facility records document a monthly high usage amount of 110 gallons.

Conclusion

Based on this inspection, the facility is in compliance with applicable air quality rules and regulations at this time.

NAME Eric Grinstern

DATE 1/29/2021

SUPERVISOR HH