



REGION 5

CHICAGO, IL 60604

MEMORANDUM

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Grede Liberty, Wauwatosa, Wisconsin

FROM: Charles Zeman, Physical Scientist
AECAB (MN/OH)

THRU: Brian Dickens, Section Supervisor
AECAB (MN/OH)

TO: File

BASIC INFORMATION

Facility Name: Grede Liberty, LLC

Facility Location: 6432 W State St, Wauwatosa, WI, 53213

Date of Inspection: August 7, 2024

EPA Inspector(s):

1. Charles Zeman – Physical Scientist
2. Karyn DeFranco – Environmental Engineer
3. Meaghan Pashen – Environmental Engineer

Other Attendees:

1. Mike Latwesen – General Manager (Grede Liberty)
2. Raul Ruiz – Foundry Manager (Grede Liberty)
3. Mike Griffen – Environmental Engineer (Wisconsin DNR)

Contact Email Address: Mike Latwesen – mike.latwesen@grede.com

Purpose of Inspection: Clean Air Act compliance evaluation

Facility Type: Large Iron Foundry, Synthetic Minor

Facility Name: Grede Liberty, LLC
Facility Location: 6432 W State St, Wauwatosa, WI, 53213
Date of Inspection: August 7, 2024

Regulations Central to Inspection: The National Emissions Standard for Hazardous Air Pollutants (NESHAP) for Iron and Steel Foundry Area sources (Subpart ZZZZZ) and the facility's Federally Enforceable State Operating Permit (FESOP), including the obligation that "the permittee must operate a capture and collection system for each metal melting furnace at a new or existing iron and steel foundry unless that furnace is specifically uncontrolled as part of an emissions averaging group. Each capture and collection system must meet accepted engineering standards, such as those published by the American Conference of Governmental Industrial Hygienists."

Arrival Time: 10:30 am (CST)

Departure Time: 12:50 pm (CST)

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☒ Provided Small Business Resource Information Sheet
- ☐ Small Business Resource Information Sheet not provided.
- ☒ Provided CBI warning to facility

The following information was obtained verbally from Mike Latwesen and Raul Ruiz unless otherwise noted.

Company Ownership:

Grede Liberty, LLC was acquired by Gamut Capital Management in December, 2019 from American Axle & Manufacturing Holdings, Inc. (AAM).

Process Description:

Grede operates a large iron foundry in Wauwatosa, Wisconsin (Grede or the Facility) that manufactures primarily gray and ductile iron that is cast into automotive components. Production at the Facility is compartmentalized into the core room, mold/melt, and cleaning room.

Grede receives raw material as scrap steel, which is screened for quality by the vendor, and minor alloying reagents and inoculants including graphite, molybdenum, magnesium, cobalt, nickel, and copper. The facility prepares their own molds and cores from sand, binder, and a gaseous organic catalyst inside a cold box. Scrap steel is melted in an induction furnace and tapped to a large insulating ladle where molten iron is inoculated with magnesium ferrosilicon before transfer to the pour station. Castings are poured manually into the staged molds with cores that are conveyed through the facility. After cooling, sand is removed by shakeout and the castings are transferred to the cleaning room for finishing.

Staff Interview:

Grede has approximately 123 employees and operates nearly 24-hours per day from Sunday to Friday. EPA learned from the Wisconsin Department of Natural Resources (WDNR) that significant development of residential housing has occurred around the Facility over the past several decades, and that Grede has received odor complaints.

The core room is comprised of 5 Isocure curebox machines (cold boxes) where formed cores comprised of sand, heavy aromatic compounds, and isocyanate-functionalized prepolymers are permeated by a gaseous infusion of a cross-linking catalyst. The catalyst used is dimethyl propyl amine, switched from dimethyl ethyl amine in 2023. Section 419.08(2)(c) of the Wisconsin SIP requires a 90% reduction in volatile organic compounds (VOCs) emitted by core and mold manufacturing processes in iron and steel foundries. Catalyst exhaust from the cold boxes is routed to a sulfuric acid scrubber before venting to atmosphere, which achieved an average of 98.6% control efficiency in 2023.

The melt floor in the mold/melt room houses 3 induction furnaces with 10,000 lbs capacities, each. Furnaces are drained once per week for maintenance purposes. Scrap metal typically spends 8 minutes in a furnace before being tapped to the ladle with a 1,500 lbs capacity. Emission of particulate matter (PM) from this process is controlled by single baghouse. 40 CFR § 63.10895(c)(1) limits The Facility to 0.8 lbs of PM per ton of metal charged (lbs/ton). The most recent stack test performed on October 27, 2020 found an average PM emission factor of 0.034 lbs/ton. Grede does not utilize a bag leak detection system, instead electing to comply with 40 CFR § 63.10897(a)(1), which requires monthly visual inspections of the baghouse ductwork and semiannual inspection of the fabric filters.

All of The Facility's processes are limited to 20% opacity for visible emissions discharged to the atmosphere, as a 6-minute average, as indicated by their FESOP. 40 CFR § 63.10898(i) requires that performance tests of opacity be conducted at least once every 6 months. Grede does not have any staff trained on-site to evaluate opacity, but brings an external contractor to perform EPA Method 9 for opacity evaluations at 6 month intervals.

TOUR INFORMATION

EPA Toured the Facility: Yes

Data Collected and Observations: In the core room, a pungent chemical odor was present. At the sulfuric acid scrubber, which controls for catalyst exhaust, labeling indicated shutoff when pH > 4.5 and on weekends. The Magnehelic differential pressure (DP) gauge was reading 0.1 in. W.C., and pH = 3.9 was displayed on the monitor. Section 439.055(1)(e) of the Wisconsin SIP requires to the facility to maintain the scrubber at pH < 5.0 and within a 0.01 in. W.C. < DP < 1.0 in. W.C. range. A bucket of water-based refractory coating used for core processing was seen open to the atmosphere.

In the mold/melt room, all surfaces were coated in dust and soot. EPA observed molten metal being poured into molds, during which plumes of white smoke was emitted from the pour stations. The induction furnaces were located on an upper deck. When tapped to the ladle located on the lower deck, a violent reaction occurs with magnesium in the ladle, producing bright flashes and uncaptured smoke. The ladle continued to produce smoke as it was conveyed and transferred from the lower melt deck to the pour station.

Uncaptured emissions permeated the melt deck outside of the furnaces. When asked about the upper melt deck emissions capture system, Grede referred to an air duct with two rows of holes that ran along the building ceiling (Appendix A). EPA did not see any visible drafts indicating that emissions were being captured efficiently. Grede provided EPA with piping and instrumentation diagrams for the furnace ventilation system. 40 CFR § 63.10895(b) requires that Grede operate and maintain a capture and collection system that meets the standards of the American Conference of Governmental Industrial Hygienists. EPA observed the baghouse that controls for PM emissions from the induction furnaces and saw a Magnehelic DP reading of 5 in. W.C. with a 3 to 6 in. W.C. range. The Facility's FESOP requires the baghouse to be maintained within a 2 in. W.C. < DP < 8 in. W.C. range.

Photos and/or Videos: were taken during the inspection and are listed in Appendix A.

Field Measurements: were not taken during this inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- Material Safety Data Sheets for all organic compounds used by the facility, their use, and monthly throughput.
- Internal air emissions calculations from the past 2 years.
- Throughput and production data for each emission unit from the past 2 years.
- Most recent performance tests for each baghouse and scrubber.
- Documentation of the melt deck exhaust capture and ventilation system for each induction furnace, including piping and instrumentation diagrams, and indication of any building openings from which PM emissions may escape the facility.

Concerns: EPA expressed concern about the magnitude of uncaptured emissions seen on the upper and lower melt deck and lack of emission capture from charging, melting, alloying and tapping. EPA also expressed concern that there did not appear to be any visible pickup points or hoods associated with the charging, melting, alloying and tapping processes.

DIGITAL SIGNATURES

Report Author: Zeman,
Charles  Digitally signed by
Zeman, Charles
Date: 2024.09.30
10:38:13 -05'00'

Section Supervisor: BRIAN
DICKENS  Digitally signed by BRIAN
DICKENS
Date: 2024.09.30
12:00:02 -05'00'

APPENDICES

1. Appendix A: Digital Image Log and Digital Video Log

APPENDIX A: DIGITAL IMAGE LOG AND DIGITAL VIDEO LOG

Inspector Name: Karyn DeFranco **Archival Record Location:** [Inspection ERC Folder](#)

Image Number	File Name	Date and Time (incl. Time zone and DST)	Description of Image
1	IMG_0583.JPG	08/07/2024 12:14 pm CST	Melt Pour
2	IMG_0584.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
3	IMG_0585.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
4	IMG_0586.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
5	IMG_0587.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
6	IMG_0588.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
7	IMG_0589.JPG	08/07/2024 12:17 pm CST	Tapping from Furnace #3 to ladle
8	IMG_0590.JPG	08/07/2024 12:20 pm CST	Tapping from ladle to pour station
9	IMG_0591.JPG	08/07/2024 12:20 pm CST	Tapping from ladle to pour station
10	IMG_0592.JPG	08/07/2024 12:20 pm CST	Tapping from ladle to pour station
11	IMG_0593.JPG	08/07/2024 12:20 pm CST	Tapping from ladle to pour station
12	IMG_0594.JPG	08/07/2024 12:24 pm CST	Induction Furnace #3
13	IMG_0595.JPG	08/07/2024 12:24 pm CST	Induction Furnace #2
14	IMG_0596.JPG	08/07/2024 12:24 pm CST	Induction Furnace #1
15	IMG_0597.JPG	08/07/2024 12:25 pm CST	Induction Furnace #1
16	IMG_0598.JPG	08/07/2024 12:25 pm CST	Induction Furnace #1
17	IMG_0599.JPG	08/07/2024 12:25 pm CST	Induction Furnace #1
18	IMG_0600.JPG	08/07/2024 12:27 pm CST	Emissions capture system for the upper melt deck induction furnaces, as indicated by Grede
19	IMG_0601.JPG	08/07/2024 12:27 pm CST	Emissions capture system for the upper melt deck induction furnaces, as indicated by Grede
20	IMG_0602.JPG	08/07/2024 12:27 pm CST	Furnace #1 tapping
21	IMG_0603.JPG	08/07/2024 12:27 pm CST	Furnace #1 tapping
22	IMG_0604.JPG	08/07/2024 12:27 pm CST	Furnace #1 tapping
23	IMG_0605.JPG	08/07/2024 12:28 pm CST	Furnace #1 tapping
24	IMG_0606.JPG	08/07/2024 12:30 pm CST	Scrap piles used for charge
25	IMG_0607.JPG	08/07/2024 12:36 pm CST	Ladle transfer from melt deck
26	IMG_0608.JPG	08/07/2024 12:36 pm CST	Ladle transfer from melt deck