

State Registration Number
B4306

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-B4306-
2020

Gerdau Special Steel North America - Jackson Mill and TMS International LLC

State Registration Number (SRN): B4306

Located at

3100 Brooklyn Road, Jackson, Jackson County, Michigan 49203

Permit Number: MI-ROP-B4306-20XX

Staff Report Date: May 18, 2020

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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May 18, 2020 - STAFF REPORT

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Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act; and Michigan’s Administrative Rules for Air Pollution Control promulgated under Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source’s applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

Stationary Source Mailing Address:	Gerdau Macsteel 5591 Morrill Road Jackson, Michigan 49201
Source Registration Number (SRN):	B4306
North American Industry Classification System (NAICS) Code:	331110 (Gerdau), 562920 (TMS)
Number of Stationary Source Sections:	2
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201900127
Responsible Official Section 1:	Darrel Moore, VP/General Manager of Operations- Gerdau 517-764-3900
Responsible Official Section 2:	Jerimi Yost, Director Environmental Engineer-TMS 215-956-5 444
AQD Contact:	Mike Kovalchick, Senior Environmental Engineer 517-416-5025
Date Application Received:	July 25, 2019
Date Application Was Administratively Complete:	July 25, 2019
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	May 18, 2020
Deadline for Public Comment:	June 17, 2020

Source Description

Gerda Special Steel North America – Jackson Mill (GJ) is a Secondary Steel Producer (Mini-Mill) that employs about 400 people. It is located just outside the city of Jackson. Several residential homes and a preschool are located about 1000 feet to the south/southeast of the facility with highway US-127 just to the west and open/agricultural fields found to the north and east. The melt shop operates 5 to 6 days a week except Sundays, while the finishing shop operates 7 days a week. Typically, production occurs over three, 8-hour shifts. A heat typically lasts about an hour, and under normal operations, GJ can achieve 24-26 heats per day. Typical production as measured through the caster is 50 to 55 tons per hour. A “heat” refers to a batch of molten steel. In addition, “tap-to-tap” is used to define the start and end of a heat, which includes furnace charging, melting, refining, de-slagging, tapping (pouring of the molten steel to a ladle, etc.), and furnace turn-around. The facility primarily produces small bar steel having a diameter between 0.9 to 4.25 inches. (Note: Melting operations at this facility which account for the vast majority of the air emissions are slated to cease indefinitely beginning in June 2020 but permittee plans to maintain air permits for this equipment.)

Scrap is selected from the various piles found in the facility’s scrap yard and is loaded in a charge bucket. The charge bucket’s bottom opens to load 1 of the 2 Electric Arc Furnaces (EAF) with cold steel and the melting phase begins once the operator strikes an arc on the scrap as the EAF electrodes are lowered into the furnace. The furnace is charged again with additional cold steel. The EAFs alternate operations, as only 1 EAF is charged at a time.

Once the molten steel is to spec, tapping occurs when the EAF is tilted and the steel pours into a ladle to transfer the molten steel to the ladle metallurgy furnace (LMF) for additional fine refining / secondary addition of alloys, and then to the vacuum arc degasser (VAD) for the injection of argon to stir the molten steel for additional refinement and removal of entrained gases using a steam vacuum system. After melting in the EAF’s, approximately one percent by weight of carbon, manganese, silicon and a fraction of a percent of aluminum are added as alloys. Emissions from the EAFs, the LMF, and VAD are controlled by a positive pressure baghouse (DV-BH03).

Next, the 50-ton ladle is transported to the caster area. The ladles do not have covers at this facility. A 2 strand tundish feeds molten steel to a continuous caster. A conveyer transports the molten steel strands to a walking beam furnace for reheat. Then the strands go through 6 roughing mills, which slowly round out the strands. The finishing mills conduct additional rolling and fine adjusting, prior to being cut. The finishing department then polishes, inspects, and conducts heat treatment in the facility’s annealing furnaces. The final product is banded and shipped offsite.

The EAF’s were installed in 1973 and were first permitted under Permit to Install (PTI) No. 239-75. PTI No. 535-96 replaced 239-75 and allowed a production rate increase although the capacity of the EAFs was not increased. Side draft hoods and canopy hoods associated with the EAFs are connected by ducts to a spark-arrestor that subsequently connects to three separate fans, which are connected to the #3 bag house. The LMF is equipped with a hood that is fitted over a hot metal ladle. It is connected through ductwork to the #3 bag house. The VAD has a hood outside the vacuum chamber that collects fugitive emissions released when the vacuum chamber is opened after a ladle is degassed. This hood is connected by ductwork to the #3 baghouse. The Main EAF bag house (referred to as the #3 bag house or DV-BH03) ventilation system was upgraded December 2011. It was originally installed in July 2004. Capacity increased from 600,000 to 800,000 scfm. New fiberglass bags were installed in 2018. The bag house consists of ten compartments for a total of 264 bags per compartment. Three (3) ID fans capable of moving a total of 828,000 acfm provide suction for capturing and moving the dust laden gases through the fume control system. Note: As part of this project, the North roof monitor was closed. In 2018, a secondary baghouse was installed to capture fugitive emissions in the Melt shop coming from the EAF’s that were escaping through a roof monitor style vent located above the Castor process which was observed occurring during a USEPA inspection. This negative pressure pulse jet baghouse is referred to as DV-CASTBAG or the Caster baghouse. Installation of this baghouse was required by Consent Decree U.S. v

Gerda Specialty Steel, North America, Civil Action No. 18-12228 entered in 2018 between USEPA and Gerda. This new baghouse prevented fugitive emissions from the EAF's escaping out the nearby Caster roof monitor vent and resolved an opacity issue related to this problem.

A steel slag processing plant that is owned/operated by TMS International, LLC and is located directly adjacent to and just north of GJ has been added to this ROP renewal as it is been determined to be part of the same stationary source as GJ. TMS International, LLC has obtained PTI No. 146-18 for this plant which will be incorporated into the ROP renewal and placed in Section 2 of the ROP. (Note: Steel slag processing is slated to cease indefinitely beginning in June 2020, but permittee plans to maintain the air permit for this equipment.)

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2019**.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	437
Lead (Pb)	0.016
Nitrogen Oxides (NO _x)	55
Particulate Matter (PM)	6
Sulfur Dioxide (SO ₂)	30
Volatile Organic Compounds (VOCs)	13
Total Hazardous Air Pollutants (HAPs)*	Not reported**

* As listed pursuant to Section 112(b) of the federal Clean Air Act.

** This source is a true minor source of HAPs, thus no HAP emissions data is listed.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is located in Jackson County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR), Part 70, because the potential to emit of particulate matter, nitrogen oxides, and carbon monoxide exceeds 100 tons per year.

The stationary source is considered to be a minor source of HAP emissions because the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, is less than 10 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

EU-EAF1 and EU-EAF2 at the stationary source were subject to review under the Prevention of Significant Deterioration regulations of 40 CFR Part 52.21, because at the time of New Source Review permitting, the potential to emit of carbon monoxide was greater than 100 tons per year.

EU-EAF1 and EU-EAF2 at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Maximum Achievable Control Technology Standards for Area Sources Electric Arc Furnace Steel Making Facilities promulgated in 40 CFR Part 63, Subparts A and YYYYY.

EU-ENGINE1, EU-ENGINE2, EU-ENGINE3, EU-ENGINE4, EN-EUGINE5 and EU-ENGINE6 at the stationary source are subject to the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR Part 63, Subparts A and ZZZZ (RICE Area Source MACT). The ROP contains special conditions provided by Gerdau Special Steel North America – Jackson Mill for applicable requirements from 40 CFR Part 63, Subparts A and ZZZZ. The AQD is not delegated the regulatory authority for this area source MACT.

EU-TORCHCUT1, EU-TORCHCUT2, EU-TORCHCUT3, and EU-TORCHCUT4 were part of flexible group FG-TORCHCUT and are not included in the ROP renewal. They were included as part of PTI No. 174-18. This was a temporary permit to allow GJ to operate 4 natural gas torch cutting stations outside till March 31, 2019. The need for the PTI was the result of a Rule 201 violation for not having the stations previously permitted. The operation has now permanently ceased with the PTI voided.

EU-EAF1, EU-EAF2, FG-EAF/LMF/VAD and FG-SHOP emission units contain conditions that are subject to Consent Decree U.S. v Gerdau Specialty Steel, North America, Civil Action No. 18-12228 entered in 2018 between USEPA and Gerdau due to alleged violations of National Emission Standard for Hazardous Air Pollutants for Maximum Achievable Control Technology Standards for Area Sources Electric Arc Furnace Steel Making Facilities promulgated in 40 CFR Part 63, Subparts A and YYYYYY. This Consent Decree was incorporated into PTI No. 118-19 although there were no increases in production or emissions or the addition of new process equipment; therefore, a new source review was not conducted for this project. The following items differed from the Consent Decree vs the PTI and reasonings why:

- SC III. 1 for Paragraph 16c and 19a from Civil Action No. 18-12228 were added into the requirements which must be added to a MAP.
- SC IV 2 and VI. 6 for Paragraph 19a from Consent Decree U.S. v Gerdau Specialty Steel, North America, Civil Action No. 18-12228 was separated into two conditions because the first part is considered design/equipment parameters and the second half of the paragraph is for monitoring/recordkeeping. The language was changed for SC IV.3. from “Gerdau shall operate the Existing Baghouse in a pressure drop range of three inches to ten inches of water column” to “The permittee shall not operate FG-SHOP (Roof Monitor) unless a pressure drop between 3.0 and 10.0 inches of water column is maintained across DV-BH03.”
- SC VI.4 for Paragraph 16b from Consent Decree U.S. v Gerdau Specialty Steel, North America, Civil Action No. 18-12228 has a MAP approved on a specific date listed in the paragraph 16b. We revised the condition to say approved MAP so it would apply to the most recent approved MAP. This was also added to the condition for clarity “for inspections required in Table 3 of the Malfunction Abatement Plan and any additional inspections that may be performed on the equipment.”
- SC VI.6 for Paragraph 20 from Consent Decree U.S. v Gerdau Specialty Steel, North America, Civil Action No. 18-12228 was changed due to the company getting approval to use EU-EAF-02 if EU-EAF-01 is not operational. This change was approved from the USEPA.

A new piece of control equipment was added as a result of the Consent Decree. It is a negative pressure pulse jet baghouse referred to as DV-CASTBAG or the Caster baghouse. All requirements in the Consent Decree have been completed by GJ including the installation of this baghouse.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

The emission limitations for particulate matter (PM) and PM₁₀ included in FG-EAF/LMF/VAD at the stationary source are subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR

Part 64. These emission units have a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The table below outlines the emission units that are subject to CAM, including their emission limitation and the associated control device and monitoring methods.

Emission Unit/Flexible group ID	Pollutant/ Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM ? *
FG-EAF/LMF/VAD, FG-SHOP	PM/PM10: 0.0052 grain/dscf of exhaust gas	R 336.1331, 40 CFR 52.21(j), 40 CFR 63.10686(b)(1)	DV-BH03 and DV-CASTBAG	Stack testing every five years from the date of the last test to verify PM/PM10 emission rate.	FG-EAF/LMF/VAD	No
FG-EAF/LMF/VAD, FG-SHOP	PM/PM10: 24.7 pounds per hour	R336.1331, 40 CFR 52.21(j),	DV-BH03	Stack testing every five years from the date of the last test to verify PM/PM10 emission rate.	FG-EAF/LMF/VAD	No
FG-EAF/LMF/VAD, FG-SHOP	PM/PM10: 0.0052 grain/dscf of exhaust gas	R 336.1331, 40 CFR 52.21(j), 40 CFR 63.10686(b)(1)	DV-BH03 and DV-CASTBAG	<p>VE observation performed. If VE observed, USEPA Method 9 readings for 6 min.</p> <p>Differential pressure across baghouses; (3 to 10" wc) for DV-BH03, (0 to 10" wc) for DV-CASTBAG</p> <p>Daily Monitoring baghouse of fan</p>	FG-EAF/LMF/VAD	No

Emission Unit/Flexible group ID	Pollutant/Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM ? *
				operations of both baghouses		
FG-EAF/LMF/VAD, FG-SHOP	PM/PM10: 24.7 pounds per hour	R 336.1331, 40 CFR 52.21(j), 40 CFR 63.	DV-BH03 and DV-CASTBAG	VE observation performed. If VE observed, USEPA Method 9 readings for 6 min. Differential pressure across baghouses; (3 to 10" wc) for DV-BH03, (0 to 10" wc) for DV-CASTBAG Daily Monitoring of baghouse fan operations of both baghouses	FG-EAF/LMF/VAD	No

*Presumptively Acceptable Monitoring (PAM)

Visible emission observation checks are used as a performance indicator to monitor compliance with the 6% opacity limit for baghouse's DV-BH03 and DV-CASTBAG which control emissions from the two electric arc furnaces (EU-EAF-01, EU-EAF-02). Visible emissions from the baghouse stacks are indicative of whether the baghouses are being operated and maintained well. When the baghouses are operating properly, there will not be any visible emissions from the exhaust. Any increase in visible emissions indicates reduced performance of a particulate control device; therefore, the presence of visible emissions is used as a performance indicator.

Particulate performance stack testing will be conducted every 5 years for baghouse's DV-BH03 and DV-CASTBAG to show compliance with PTI limitations of 0.0052 grain/dscf of exhaust gas and the 24.7 pounds per hour particulate limit (DV-BH03 only). Previous stack testing conducted on both baghouses has shown compliance.

Differential pressure monitoring is used as a performance indicator to monitor proper operation of the baghouses. Baghouses are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in

emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emission. A pressure drop across the baghouse also serves to indicate that there is airflow through the control device.

Baghouse fans are monitored as a control device performance indicator. Baghouse fans induce draft which pulls emissions produced by the electric arc furnaces to the baghouses. For DV-BH03, it is important that at least two of the three baghouse fans are operating to prevent an emissions excursion. For DV-CASTBAG, it is equipped with a single baghouse fan and it must be operating to prevent an emissions excursion.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-Wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-Wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-B4306-2015 are identified in Appendix 6 of the ROP.

PTI Number			
24-06	535-96I	183-01	

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Non-applicable Requirements

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

Processes in Application Not Identified in Draft ROP

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EU-BLR001	Natural Gas Boiler (49 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-LD001	Natural Gas Ladle Dryer 1 (2 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-LD002	Natural Gas Ladle Dryer 2 (2 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-LDLPH001	Natural Gas Ladle Preheater 1(7 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EU-LDLPH002	Natural Gas Ladle Preheater 2(7 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-LDLPH003	Natural Gas Ladle Preheater 3(7 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-RH001	Natural gas Reheat Furnace (10 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-Chamfer	Chamfer Line with Baghouse	Rule 212(4)(e)	Rule 285(2)(l)(vi)(C)
EU-MocoOven	Natural gas Oven for Parts (~0.35 MMBTU/Hr)	Rule 212(4)(c)	Rule 282(2)(b)(i)

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by EGLE, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD’s proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Scott Miller, Jackson District Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

State Registration Number

B4306

RENEWABLE OPERATING PERMIT

June 23, 2020 - STAFF REPORT ADDENDUM

ROP Number

MI-ROP-B4306-
2020

Purpose

A Staff Report dated May 18, 2020, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

Responsible Official Section 1:	Darrel Moore, VP/General Manager of Operations-Gerdau 517-764-3900
Responsible Official Section 2:	Jerimi Yost, Director Environmental Engineer-TMS 215-956-5444
AQD Contact:	Mike Kovalchick, Senior Environmental Engineer 517-416-5025

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the May 18, 2020 Draft ROP

No changes were made to the draft ROP.