

State Registration  
Number  
N5866

**RENEWABLE OPERATING PERMIT  
STAFF REPORT**

ROP Number  
MI-ROP-N5866-2019

**Metal Technologies – Ravenna Casting Center LLC**

State Registration Number (SRN): N5866

Located at

3800 Adams Road, Ravenna, Muskegon County, Michigan 49451

Permit Number: MI-ROP-N5866-2019

Staff Report Date: July 15, 2019

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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**RENEWABLE OPERATING PERMIT**

**July 15, 2019 - STAFF REPORT**

**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:	Metal Technologies–Ravenna Casting Center LLC 3800 Adams Road Ravenna, Michigan 49451
Source Registration Number (SRN):	N5866
North American Industry Classification System (NAICS) Code:	331511
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201800154
Responsible Official:	Dean Lynn, Plant Manager 231-853-0289
AQD Contact:	Eric Grinstern, Environmental Quality Specialist 616-558-0616
Date Application Received:	December 4, 2018
Date Application Was Administratively Complete:	December 4, 2018
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	July 15, 2019
Deadline for Public Comment:	August 14, 2019

## Source Description

Metal Technologies, Inc. - Ravenna Ductile Iron is located at 3800 Adams Road, Ravenna, Michigan. The area surrounding the facility is rural to the south, east and west with scattered residential homes. To the north is the town of Ravenna. The nearest residential house is located approximately 75 yards from the facility's property line.

This foundry's primary product is castings for small engines. The foundry operation consists of three electric induction furnaces supplying molten ductile iron to two green sand, DISAmatic molding lines. The operation begins with indoor storage bunkers that contain pig iron, scrap steel and foundry returns. A magnetic overhead hoist takes the materials from the bunkers to a natural gas-fired preheater. The preheater is used to dry the scrap and to elevate the temperature of the charge material to approximately 1500 degrees Fahrenheit. The preheated scrap metal is then delivered to one of three electric induction furnaces where the metal becomes molten and ready to pour. The preheaters and the electric induction furnaces are vented to a baghouse control system. Ferro magnesium silicon is added to a transfer ladle. The transfer ladle is then filled with molten metal from one of the induction furnaces. The ferro magnesium silicon and the molten metal react instantly to nodularize the carbon in the melted metal to produce ductile iron. This transformation is referred to as inoculation. The metal is transported by the transfer ladle to the pouring ladles on two DISAmatic molding lines. Each line consists of a moldmaking machine, a pouring area, a mold cooling tunnel and a shakeout conveyor. The mold sand from the two lines recycles through a single sand handling system, where the shakeout sand is cooled and screened prior to reintroduction into a muller for reuse in the moldmaking machines. In the muller, the return sand is mixed with water, bond and new sand, which makes up for losses in the sand handling process.

The sand binder system being used is called green sand, which consists primarily of bentonite clay and seacoal. To produce a mold, green sand from the muller is placed into a DISA mold machine. Molten metal is poured automatically from the pouring ladles into the complete mold. Filled molds then proceed from the pouring area along a cooling conveyor to the shakeout area where the castings are separated from the sand molds.

The finished castings are separated by hand from the gates and risers on the conveyor out of the shakeout operation. The castings are conveyed into tubs, which are moved by forklift to the cleaning area. The castings are put into one of three shotblast cabinets to remove sand and burrs from the casting. There is also a small tumbleblast machine, which is used for quality control checks. The cleaned castings then transfer along a conveyor to an inspection area where workers sort castings into bins for shipment or perform touch-up grinding to remove any additional burrs.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2018**.

### **TOTAL STATIONARY SOURCE EMISSIONS**

<b>Pollutant</b>	<b>Tons per Year</b>
Carbon Monoxide (CO)	108.97
Nitrogen Oxides (NO <sub>x</sub> )	7.33
Particulate Matter (PM)	18.10
Volatile Organic Compounds (VOCs)	12.63

The following table lists Hazardous Air Pollutant emissions as calculated for the year 2018 by the facility:

<b>Individual Hazardous Air Pollutants (HAPs) **</b>	<b>Tons per Year</b>
<b>Total Hazardous Air Pollutants (HAPs)</b>	<b>4.24</b>

The facility does not report individual calculated Hazardous Air Pollutant (HAPs)\*\* emissions for the year.

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

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 the eastern portion of Muskegon County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants. The western portion of Muskegon County is currently designated by the USEPA as a non-attainment area with respect to the 8-hour ozone standard.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit carbon monoxide exceeds 100 tons per year and the potential to emit of any single hazardous air pollutant regulated by the federal Clean Air Act, Section 112, is equal to or more than 10 tons per year and/or the potential to emit of all HAPs combined is more than 25 tons per year.

FG-SAND at the stationary source was 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-PREHEATER, EU-MELTING and EU-POURING at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Iron and Steel Foundries promulgated in 40 CFR Part 63, Subparts A and EEEEE.

When the facility's permits were modified in April 2000, a Best Available Control Technology (BACT) review for toxic air contaminants in accordance with Michigan Rules 224 and 225 was performed. The BACT analysis determined that the existing fabric filter baghouses for particulate matter provide control of the toxic air contaminants, which are metals. The volatile organic compounds and individual organic toxic air contaminants are at levels where add-on controls are not economically feasible. Additionally, a BACT analysis was performed for carbon monoxide. The analysis determined that controlling emissions of carbon monoxide from the facility was not economically feasible.

The AQD's Rules 287 and 290 were revised on December 20, 2016. FG-RULE287(2)(c) and FG-RULE290 are flexible group tables created for emission units subject to these rules. Emission units installed before December 20, 2016, can comply with the requirements of Rule 287 and Rule 290 in effect at the time of installation or modification as identified in the tables. However, emission units installed or modified on or after December 20, 2016, must comply with the requirements of the current rules as outlined in the tables.

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."

EU-PREHEATER and EU-INOCULATION do not have emission limitations or standards that are subject to the federal Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64, because the units do not have potential pre-control emissions over the major source thresholds. EU-PREHEATER is controlled by the East and West Melt Baghouses. The facility previously determined pre-control emissions of particulate matter to be below the 100 tpy threshold (EU-PREHEATER 48.5 tpy, EU-INOCULATION 24 tons) based on emission factors/test data.

The following Emission Units/Flexible Groups are subject to CAM:

Emission Unit/Flexible group ID	Pollutant/ Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM? *
EU-CLEAN	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 2.2 lbs. per hour/ 9.6 tpy	R336.1331 (1)(c)	West Blast Baghouse	Pressure Drop: 2-10 inches  Opacity Observations: If abnormal emissions are observed, Method 9 readings are performed	FG-CAMUNITS	No
EU-MELTING	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 2.5 lbs. per hour/ 10.95 tpy	R336.1331 (1)(c)	East and West Melt Baghouse	Pressure Drop: East Melt BH 2-10 inches West Melt BH 2-10 inches  Bag Leak Detection System: Baseline Range 2-10%  Opacity Observations: If abnormal emissions are observed, Method 9 readings are performed	FG-CAMUNITS	No
EU-POURING	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 26.0 lbs.	R336.1331 (1)(c)	East and West Sand Baghouse	Pressure Drop: East Sand BH 2-10 inches West Sand BH 2-10 inches  Bag Leak Detection System:	FG-CAMUNITS	No

Emission Unit/Flexible group ID	Pollutant/ Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM? *
	per hour/ 23.3 tpy			Baseline Range 2-10%  Opacity Observations: If abnormal emissions are observed, Method 9 readings are performed		
EU-COOLING	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 26.0 lbs. per hour/ 23.3 tpy	R336.1331 (1)(c)	East and West Sand Baghouse	Pressure Drop: East Sand BH 2-10 inches West Sand BH 2-10 inches  Bag Leak Detection System: Baseline Range 2-10%  Opacity Observations: If abnormal emissions are observed, Method 9 readings are performed	FG- CAMUNITS	No
EU-SHAKEOUT	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 26.0 lbs. per hour/ 23.3 tpy	R336.1331 (1)(c)	East and West Sand Baghouse	Pressure Drop: East Sand BH 2-10 inches West Sand BH 2-10 inches  Bag Leak Detection System: Baseline Range 2-10%  Opacity Observations: If abnormal emissions are observed, Method 9	FG- CAMUNITS	No

Emission Unit/Flexible group ID	Pollutant/Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM? *
				readings are performed		
EU-SANDSYSTEM	Particulate Matter/ 0.01 lb. per 1,000 pounds of exhaust gasses / 26.0 lbs. per hour/ 23.3 tpy	R336.1331 (1)(c)	East and West Sand Baghouse	Pressure Drop: East Sand BH 2-10 inches West Sand BH 2-10 inches  Bag Leak Detection System: Baseline Range 2-10%  Opacity Observations: If abnormal emissions are observed, Method 9 readings are performed	FG-CAMUNITS	No

\*Presumptively Acceptable Monitoring (PAM)

Melting, pouring, cooling, shakeout, sand system and finishing operations at gray or ductile iron foundries emit fine particles of sand, clay, and metal that are captured and controlled with fabric filter baghouses. The use of a bag leak detection system allows for the continuous monitoring of the relative particulate loading in the exhaust of a baghouse in order to detect bag leaks and other upset conditions.

Visible emissions were selected as a performance indicator because it is indicative of good operation and maintenance of the baghouse. When the baghouse is operating optimally, there will be little visible emissions from the exhaust. In general, an increase in visible emissions indicates reduced performance of the baghouse (e.g., loose or torn bags). Pressure drop was also selected because an increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, or the bags are becoming blinded. Decreases in pressure drop may indicate significant holes and tears or missing bags.

Implementation of the baghouse inspection and maintenance program provides assurance that the baghouse is in good repair and operating properly.

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-N5866-2014 are identified in Appendix 6 of the ROP.

PTI Number			
99-12	414-95A	416-95A	418-95A

**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**

There were no processes listed in the ROP Application as exempt devices under Rule 212(4). Exempt devices are not subject to any process-specific emission limits or standards in any applicable requirement.

**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 Heidi G. Hollenbach, Grand Rapids 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.

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**RENEWABLE OPERATING PERMIT**

ROP Number  
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2019

**August 15, 2019 - STAFF REPORT ADDENDUM**

**Purpose**

A Staff Report dated July 15, 2019, 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:	Dean Lynn, Plant Manager 231-853-0289
AQD Contact:	Eric Grinstern, Environmental Quality Specialist 616-558-0616

**Summary of Pertinent Comments**

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

**Changes to the July 15, 2019 Draft ROP**

No changes were made to the draft ROP.