

State Registration Number
B1991

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-B1991-2021a

General Motors, LLC - Saginaw Metal Casting Operations

State Registration Number (SRN): B1991

Located at

1629 North Washington Street, Saginaw, Saginaw County, Michigan 48601

Permit Number: MI-ROP-B1991-2021a

Staff Report Date: April 12, 2021

Amended Date: November 29, 2021

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

ROP Number
MI-ROP-B1991-2021

APRIL 12, 2021 - 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:	General Motors, LLC - Saginaw Metal Casting Operations 1629 North Washington Street Saginaw, Michigan 48601
Source Registration Number (SRN):	B1991
North American Industry Classification System (NAICS) Code:	331524
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	202000053
Responsible Official:	John Lancaster, Plant Director 989-757-1433
AQD Contact:	Gina McCann, Senior Environmental Quality Analyst 989-439-2282
Date Application Received:	March 18, 2020
Date Application Was Administratively Complete:	March 18, 2020
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	April 12, 2021
Deadline for Public Comment:	May 12, 2021

Source Description

General Motors, LLC - Saginaw Metal Casting Operations (GM SMCO), is located at 1629 North Washington Street, Saginaw, Michigan. The facility operates an aluminum casting foundry to produce engine blocks and heads, and other components for the automotive market. The facility is permitted for a green sand aluminum line, precision sand aluminum line, and semi-permanent molding aluminum lines. The site has pre-machining, sand handling and casting, aluminum melting, pouring, cooling, and cast finishing. There are also several backup generators utilized in emergency situations.

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)	26.16
Lead (Pb)	NA
Nitrogen Oxides (NO _x)	34.29
Particulate Matter (PM)	54.71
Sulfur Dioxide (SO ₂)	4.44
Volatile Organic Compounds (VOCs)	45.79

*NA - None reported

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 in Saginaw County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified 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 nitrogen oxides, carbon monoxide, volatile organic compounds (VOC) and particulate matter (PM) exceeds 100 tons per year and the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act, is equal to or more than 10 tons per year and/or the potential to emit of all HAPs combined is equal to or more than 25 tons per year.

No emission units at the stationary source are currently subject to the Prevention of Significant Deterioration regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451, because at the time of New Source Review permitting the potential to emit of each criteria pollutant was less than 250 tons per year. Permit to Install (PTI) No. 36-12I removed Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT) Underlying Applicable Requirements (UARs).

The facility has undergone changes in production activity since the last ROP issuance in 2015. FG-6ML-ALMELT was updated to clarify the furnaces are being used as back up equipment. EU-SANDSEP was removed from the facility and reflected in PTI No. 36-12H. During the permit process, the facility demonstrated EU-SPMALUMINUM was able to meet emission limits pre-control device, therefore; PTI No.36-12I removed the fabric filter requirements.

The facility signed Consent Order AQD No. 53-2014 on October 23, 2014, to resolve reported emission limit exceedances for particulate matter and VOCs based on emission test report results. The Consent Order was terminated on December 7, 2017, at the request of the facility, because the terms of the agreement had been met.

EU-PATTERNSHOP, EU-FIREPUMP1, and EU-FIREPUMP2 at the stationary source are subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ. EU-Z02EG001, EU-Z03EG001, EU-Z06EG001, EU-Z07EG001 are subject to the NSPS for Stationary Spark Ignition Internal Combustion Engines as found at 40 CFR Part 60, Subpart JJJJ.

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-FINISH, EU-PSANDPROCESS, EU-SPMPROCESSAND, and EU-SPMCOREROOM 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 unit(s) does/do not have potential pre-control emissions over the major source thresholds.

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-PSANDCORE ROOM	VOCs/ 8.10 pph	R 336.1702	25,000 scfm cyclone & packed tower acid Scrubber	Pressure drop across the scrubber; range between 0.1-6 inches of water column Liquid flow; range >190 gpm pH; measure <4.5	EU-PSANDCOREROOM	No
EU-PSANDCAST LINE	PM/ 2.85 pph PM ₁₀ / 5.55 pph PM _{2.5} / 5.55 pph VOCs (from shakeout activities)/ 4.07 pph	R 336.1702 R 336.1331(1)(c) 40 CFR 52.21(c) & (d)	30,000 scfm Fabric filter 60,000 scfm RTO	Pressure drop; range between 1.0-7.0 inches of water column Temperature on RTO; 3-hour rolling average greater than 1440 °F	EU-PSANDCASTLINE	No

Emission Unit/Flexible group ID	Pollutant/Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM?*
EU-PSANDSCCS H	PM/ 2.36 pph PM ₁₀ / 4.73 pph PM _{2.5} / 4.73 pph	R 336.1331(1) (c) 40 CFR 52.21(c) & (d)	35,000 scfm cartridge collector	Pressure drop; Hourly average between 0.1- 10.0 inches of water column	EU- PSANDSCC SH	No
EU-SPMCORER OOM	SO ₂ / 5.49 pph	40 CFR 52.21(c) & (d)	20,000 scfm cyclone & packed tower caustic scrubber	Pressure drop; Hourly average 0.1-12"WC pH Hourly average measure >7.5 Liquid flow- hourly average >390 gpm	EU- SPMCORER OOM	No
EU-SPMCASTLI NE	PM/ 7.07 pph PM ₁₀ / 7.07 pph PM _{2.5} / 7.07 pph	R 336.1331(1) (c) 40 CFR 52.21(c) & (d)	(3) 60,000 scfm fabric filters	Pressure drop; continuously only on production days between 0.1-10 "WC	EU- SPMCASTLI NE	No
EU-SPMCASTLI NE4	PM/ 6.02 pph PM ₁₀ / 3.63 pph PM _{2.5} / 3.63 pph	R 336.1331(1) (c) R 336.1205(1)(a) 40 CFR 52. 21(c) & (d)	(2) 30,000 scfm fabric filters	Pressure drop; between 0.1-10" WC	EU- SPMCASTLI NE4	No

*Presumptively Acceptable Monitoring (PAM)

Visible emissions were selected as a performance indicator because it is indicative of good operation and maintenance of a baghouse. When the baghouse is operating properly, there will not be any visible emissions from the exhaust. Any increase in visible emissions indicates reduced performance of the baghouse, therefore, the presence of visible emissions is used as a performance indicator.

In general, baghouses are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operations 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 emissions. A pressure drop across the baghouse also serves to indicate that there is airflow through the

control device. Baghouse pressure drop was selected as an indicator ranges based on site experience with baghouse operations, and these indicator ranges are specified under applicable emission unit's permit monitoring and recordkeeping requirements. Actual operating experience for each baghouse supports the continued use of the ranges. Additionally, compliance stack testing results support the ranges.

The RTO combustion chamber temperature was selected because it is indicative of the VOC destruction occurring within the RTO and is a widely accepted method of monitoring. If the chamber temperature decreases, the complete combustion may not occur, reducing the destruction efficiency. Therefore, the requirement to monitor temperature and maintain appropriate records is a justification for assuring VOC destruction efficiency.

The liquid flow and pH were selected as indicative of VOC and SO₂ destruction occurring in both the acid and caustic scrubbers, respectively. Stack testing results support the destruction efficiency for each CAM subject scrubber and the compliance stack testing results support the ranges cited in the special conditions of the ROP.

The decision to test an emission unit was made considering multiple factors, such as previous stack test results, control type, and CAM applicability. Further information regarding decisions on testing is in a separate spreadsheet attached to the technical review notes.

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-B1991-2015 are identified in Appendix 6 of the ROP.

PTI Number		
100-73	553-86A	412-97D
101-73	68-90	42-02
102-73	455-91	109-03
103-73	456-91	110-03
307-74	457-91	192-08
24-75	458-91	148-00
96-84	368-94A	186-01
191-84		

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-FACILITYNG	Miscellaneous natural-gas fired equipment <50 MMBTU/hour	Rule 212(4)(c)	Rule 282(2)(b)(i)
EU-BULKSTORAGE	One-1,000 gallon gasoline storage tank	Rule 212(4)(d)	Rule 284(2)(g)(i)
EU-BULKSTORAGE	Acid scrubber waste tanks <40,000 gallons	Rule 212(4)(d)	Rule 284(2)(h)
EU-BULKSTORAGE	One-nitrogen and one-argon fixed pressurized vessels	Rule 212(4)(d)	Rule 284(2)(i)
EU-PORTABLECUTTING	Portable torch cutting equipment used for non-production	Rule 212(4)(e)	Rule 285(2)(j)(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 Chris Hare, Bay City 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

JUNE 24, 2021 - STAFF REPORT ADDENDUM

ROP Number

MI-ROP-B1991-2021

Purpose

A Staff Report dated April 12, 2021, 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:	John Lancaster, Plant Director 989-757-1433
AQD Contact:	Gina McCann, Senior Environmental Quality Analyst 989-439-2282

Summary of Pertinent Comments

Comments received from US EPA and AQD Responses:

EPA Comment No. 1

In EU-PREMACHINING and EU-MACHASM, both 2,000 scfm and 2,000 cfm are used to quantify the exhaust for machines in these emission units. While I understand the technical distinction between these two units of measurement, could you describe the functional or operational differences?

AQD Response No. 1

There are no differences in the exhaust between EU-PREMACHINING and EU-MACHASM. The localized exhaust from each machine has a mist eliminator to remove excess moisture from the exhaust stream before release into the general in-plant environment. The exhaust rate in the descriptions is for standard conditions or standard cubic feet per minute (scfm).

EPA Comment No. 2

Throughout multiple emission units (EU-PSANDPROCESS, EU-PSANDCORERROOM, EU-SPMPROCESSSAND, EU-SPMCORERROOM, EU-SPMCASTLINE, EU-SPMCASTLINE4), it states that the permittee shall not operate the emission units unless the control equipment is installed, maintained, and operated in a **satisfactory manner**, without ever defining what satisfactory manner entails. Satisfactory manner is defined in some of the emission units, and even within the same emission unit, but not in others. Could there be specificity added to those conditions by referencing the MAP, permit conditions found in the monitoring and recordkeeping requirements in those sections, or clearly define what satisfactory manner means?

AQD Response No. 2

The specific language or conditions in the renewable operating permit (ROP) for these emission units were from the Title I, New Source Review permits that were incorporated into this ROP. These conditions will remain in the ROP as the State of Michigan, Air Pollution Control Rules do not allow

changes to conditions from new source review permits. However, the requirement for a malfunction abatement plan (MAP) can be added for each emission unit including the monitoring necessary to show that the emission unit is operating in a satisfactory manner. Many of these emission units have the requirement to maintain a malfunction abatement plan for the control devices and also have additional monitoring requirements to ensure proper operation of control devices such as requirements pursuant to the federal Compliance Assurance Monitoring (CAM) rule, 40 CFR Part 64. EU-PSANDPROCESS has monitoring requirements for the associated baghouses under condition IV.1. EU-PSANDCOREROOM has monitoring conditions under IV. DESIGN/EQUIPMENT PARAMETER(S) and VI. MONITORING/RECORDKEEPING ensuring proper operation of control devices. EU-SPMPROCESSSAND has a requirement for a malfunction abatement plan that addresses proper operation of control devices. EU-SPMCOREROOM has a requirement for a malfunction abatement plan that addresses proper operation of control devices. There are also monitoring requirements for proper operation of the control devices found under VI. MONITORING/RECORDKEEPING. EU-SPMCASTLINE has conditions under IV. DESIGN/EQUIPMENT PARAMETER(S) and VI. MONITORING/RECORDKEEPING ensuring proper operation of control devices. EU-SPMCASTLINE4 has monitoring conditions under VI. MONITORING/RECORDKEEPING ensuring proper operation of control devices. No changes to the renewable operating permit were made.

EPA Comment No. 3

In EU-PSANDCASTLINE, under Pollution Control Equipment, shouldn't the 60,000 scfm RTO be included under the Pouring and Cooling section as well?

AQD Response No. 3

The pollution control equipment description states: "Pouring and cooling emissions are controlled through a 30,000 scfm cartridge collector followed by a 60,000 scfm regenerative thermal oxidizer. Shakeout emissions are heated by the duct burner and controlled through a 30,000 scfm fabric filter collector then routed to the 60,000 scfm RTO it shares with the pouring and cooling activities." The description then goes on to state what pieces of control equipment are subject to the Compliance Assurance Monitoring Rule, 40 CFR Part 64. No changes to the renewable operating permit were made.

EPA Comment No. 4

In EU-SPMALUMINUM, under Section II, what are the units for the Flux usage rate? (pounds per year?)

AQD Response No. 4

The flux usage rate is pounds per 12 month rolling time period. Special condition VI.1.f. identifies monthly and 12-month rolling time period records of flux usage in pounds to be kept. No changes to the renewable operating permit were made.

EPA Comment No. 5

EU-SPMCASTLINE and EU-SPMCASTLINE-4 seems to be missing the provision about verifying emission rates by request from the AQD Supervisor found in the other emission units under Section 5. Is there a reason that these emission units do not have this provision?

AQD Response No.5

Under Section V. TESTING/SAMPLING, "Upon request" testing condition for VOCs, NOx, and CO for EU-SPMCASTLINE was added to the renewable operating permit. EU-SPMCASTLINE4 already had the upon request testing condition in the renewable operating permit. General Condition 13 of the renewable operating permit gives the Air Quality Division authority to ask for emissions testing. These emission units previously had emissions testing performed and the results were less than 50% of the emission limits for these emission units. The AQD believes there should not be significant differences in emissions based on the fact that there has been no change in the materials or process since testing. Also, the particulate matter control devices are subject to monitoring pursuant to CAM, 40 CFR Part

64. The NOx hourly emission rates for these units are either based on AP-42 factors for natural gas combustion or previous performance test data. There are no control devices associated with NOx control.

EPA Comment No. 6

For emission units with NOx hourly limits, under Section VI of the permit, there does not seem to be any recordkeeping requirements for those hourly limits. Is this because they are using standard emission factors for natural gas combustion?

AQD Response No.6

Several emission units are using standard emission factors to verify compliance with hourly NOx limits and do not have low NOx burners or control equipment. Several other emission units have had previous emission testing for NOx and the test results were well below 50% of the applicable NOx limits. Most of these emission units have very low NOx limits. The AQD feels without changes in the processes or fuels, the NOx emissions should not change. Also, the AQD has authority to ask for emission testing, if necessary, based on General Condition 13 of the renewable operating permit. No changes to the renewable operating permit were made.

EPA Comment No. 7

In FG-6ML-ALMELT under Section III, there are requirements that the permittee shall only actively add flux to one of the aluminum furnaces during any one-hour period... and the permittee shall not dross more than 180 hours per year. However, under the monitoring and recordkeeping requirements under Section VI, these requirements do not seem to have any associated monitoring or recordkeeping requirements.

AQD Response No.7

A condition was added under VI. Monitoring/Recordkeeping, 5., to record the date and time of flux addition to each furnace.

Changes to the April 12, 2021 Draft ROP

Changes to the draft ROP in response to No.1

The pollution control equipment descriptions for both emission units were revised from cfm to scfm.

Changes to the draft ROP in response to No.5

Added: "Upon request" testing condition for VOCs, NOx, and CO for EU-SPMCASTLINE.

Changes to the draft ROP in response to No.7

The following condition was added under VI.5.

The permittee shall record the date and time of flux added to Aluminum Reverberatory Furnace #1 (West) and Aluminum Reverberatory Furnace #2 (East). (R 336.1213(3))

No changes were made in response to EPQ comments 2, 3, 4, or 6.

State Registration Number

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RENEWABLE OPERATING PERMIT

**NOVEMBER 29, 2021 - STAFF REPORT FOR RULE
216(2) MINOR MODIFICATION**

ROP Number

MI-ROP-B1991-2021

Purpose

On August 17, 2021, the Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), approved and issued Renewable Operating Permit (ROP) No. MI-ROP-B1991-2021 to General Motors, LLC - Saginaw Metal Casting Operations pursuant to Rule 214 of the administrative rules promulgated under Act 451. Once issued, a company is required to submit an application for changes to the ROP as described in Rule 216. The purpose of this Staff Report is to describe the changes that were made to the ROP pursuant to Rule 216(2).

General Information

Responsible Official:	John Lancaster, Plant Director 989-757-1433
AQD Contact:	Caryn Owens, Senior Environmental Engineer 231-878-6688
Application Number:	202100203
Date Application for Minor Modification was Submitted:	October 14, 2021

Regulatory Analysis

The AQD has determined that the change requested by the stationary source meets the qualifications for a Minor Modification pursuant to Rule 216(2).

Description of Changes to the ROP

Minor Modification Number 202100203 was to incorporate PTI 36-12L into the ROP, which was to modify the existing VOC emission limits in EU-PSANDCASTLINE and EU-PSANDSCCSH (now EU-PSANDSH). The Emission Unit changed from EU-PSANDSCCSH to EU-PSANDSH due to the company routing the existing conveyors in EU-PSANDSCCSH to EU-PSANDCASTLINE, since EU-PSANDCASTLINE is controlled by an RTO which has a 95% VOC control efficiency.

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements associated with the emission unit(s) involved with the change as of the date of approval of the Minor Modification to the ROP.

Action Taken by EGLE

The AQD proposes to approve a Minor Modification to ROP No. MI-ROP-B1991-2021, as requested by the stationary source. A final decision on the Minor Modification to the ROP will not be made until any affected states and the United States Environmental Protection Agency (USEPA) has been allowed 45 days to review the proposed changes to the ROP. The delegated decision maker for the AQD is the District Supervisor. The final determination for approval of the Minor Modification will be based on the contents of

the permit application, a judgment that the stationary source will be able to comply with applicable emission limits and other requirements, and resolution of any objections by any affected states or the USEPA.