

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-24-062
Meritor Heavy Vehicle Braking Systems (U.S.A), Inc.
115 Ogles Avenue
Franklin, KY 42134
November 20, 2024
Amy K. Tempus-Doom, P.E., Reviewer

SOURCE ID:	21-213-00015
AGENCY INTEREST:	3983
ACTIVITY:	APE20240001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3321, Gray and Ductile Iron Foundries

Single Source Det. Yes No If Yes, Affiliated Source AI:

Source-wide Limit Yes No If Yes, See Section 4, Table A

28 Source Category Yes No If Yes, Category: Iron and steel mills

County: Simpson

Nonattainment Area N/A PM₁₀ PM_{2.5} CO NO_x SO₂ Ozone Lead

PTE* greater than 100 tpy for any criteria air pollutant Yes No

If yes, for what pollutant(s)?

PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 250 tpy for any criteria air pollutant Yes No

If yes, for what pollutant(s)?

PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) Yes No

If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP Yes No

*PTE does not include self-imposed emission limitations.

Description of Facility:

Meritor Heavy Breaking Systems (U.S.A.), Inc. (Meritor) is an existing source located in Franklin, KY. The facility manufactures heavy vehicle brake drums with varying thicknesses and stopping distances. The plant consists of three air make-up units, one washing/rinsing unit that contains three baths, two electric arc induction furnaces, two electric pressure pour holding furnaces, a finishing/machining department, a shot-blast unit, one paint spray booth, and an emergency generator.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-24-062

Activity: APE20240001

Received: September 10, 2024

Application Complete Date(s): ???

Permit Action: Initial Renewal Significant Rev Minor Rev Administrative

Construction/Modification Requested? Yes No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action Yes No

Description of Action:

Meritor submitted an application to renew their conditional major permit. In the application, no changes were requested.

In the renewal permit, the Division made the following changes:

- Updated 40 CFR 63, Subpart ZZZZZ regulatory language to match the current final rule.
- Updated 40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ regulatory language to remove references to the vacatur for emergency demand response and to match the current final rules.
- Updated permit language generally to be consistent and clear.

F-24-062 Emission Summary		
Pollutant	2023 Actual ¹ (tpy)	PTE F-24-062 (tpy)
CO	0.03	6.42
NOx	0.22	9.70
PT	6.22	459.9 ²
PM ₁₀	6.22	386.7 ²
PM _{2.5}	6.11	337.7 ²
SO ₂	0.00013	0.045
VOC	6.37	55.19 ³
Lead	0.08	0.026
Greenhouse Gases (GHGs)		
Carbon Dioxide	27	8993
Methane	0.0005	0.17
Nitrous Oxide	0.00009	0.017
CO ₂ Equivalent (CO ₂ e)	27	9002
Hazardous Air Pollutants (HAPs)		
Manganese and Compounds	0.033	1.90
Combined HAPs:	0.039	3.23 ³

¹Note: The Actual emissions listed here do not include corrections made in this renewal to miscalculated emission factors in the emissions inventory.

²Note: The pre-control potential emissions are listed here, however, the permit includes federally enforceable requirements limiting the PTE for the source to less than the major source threshold for Title V and PSD.

³Note: The listed VOC and HAP PTE is less than the major source threshold for Title V and PSD, however, the limits are maintained in the permit to provide the source with operational flexibility in the paints and raw materials they can select in the future.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Group 1 – Foundry Operations				
EU04 (100): Scrap and Charge Handling, EU05 (200): Induction Furnace 1, EU06 (210): Induction Furnace 2, EU07 (220): Transfer to Ladle, EU09 (240): Pouring and Cooling, EU12 (-): Shotblast, EU16 (-): Holding Pressure Pour Furnace, and EU17 (-): Backup Pressure Pour Furnace				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	<ul style="list-style-type: none"> • For $P \leq 0.5$ tons/hr: 2.34 lbs/hr • For $P \leq 30$ tons/hr: $E = 3.59P^{0.62}$ 	401 KAR 59:010, Section 3(2)	See comments.	Monthly emission calculations, monitoring, and recordkeeping; EU12 assumed in compliance when fabric filter is operating and maintained according to manufacturer’s specifications.
Opacity	<20%	401 KAR 59:010, Section 3(1)	-	Weekly qualitative observations and recordkeeping.

Initial Construction Date: 11/25/1996 for all except Pressure Pour Furnaces (EU16 and EU17) constructed on 2/18/2003.

Process Description:
 Scrap and charge is stored indoors until it is ready to be loaded into the electric induction furnaces. The induction furnaces melt the iron supplied from the scrap and charge handling and then transfer the molten metal to the campaigning (operating) pressure pour furnace. Each electric pressure pour furnace campaigns for 12 months before being ramped down for maintenance. During the swap, the non-campaigning pressure pour furnace is ramped up by adding hot metal gradually until the desired operating temperature is reached and the refractory lining is stabilized. Once the standby furnace has finished ramping to stability, the active furnace is taken offline and put on standby for the duration of the next campaign. The metal in the holding pressure pour furnace to be kept at temperature until it is ready to pour. When ready, the molten metal is poured into molds and cooled. Once removed from the mold, the drum goes through the shot blast to prepare it for painting in the paint spray booth.

Maximum Capacities:

- 68853.6 tpy for EU04, EU07, EU09, EU16, and EU17, each;
- 34426.8 tpy for EU05 and EU06, each;
- 86724 tpy for EU12.

Control Devices:

- EU05 and EU06 are controlled by a shared baghouse with a 95% control efficiency;
- EU12 is controlled by a separate baghouse with a 95% control efficiency.

Applicable Regulations:
401 KAR 59:010, New process operations: This regulation is applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.
401 KAR 63:002, Section 2(4)(bbbbb), 40 C.F.R. 63.10880 to 63.10906, Tables 1 to 4 (Subpart ZZZZZ), National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources: This regulation is applicable to new and existing iron and steel foundries that are area sources of HAPs.

Emission Group 1 – Foundry Operations

EU04 (100): Scrap and Charge Handling, EU05 (200): Induction Furnace 1, EU06 (210): Induction Furnace 2, EU07 (220): Transfer to Ladle, EU09 (240): Pouring and Cooling, EU12 (-): Shotblast, EU16 (-): Holding Pressure Pour Furnace, and EU17 (-): Backup Pressure Pour Furnace

Comments:

EU04 – Emission factors for this unit were determined from AP-42 Table 12.10-7. The process occurs inside the building, so a building control efficiency of 70% for particulate emissions is assumed.

EU05 & 06 – Emission factors for these units were determined from metal MSDS, a lab sample of baghouse dust on 12/17/2019, and AP-42 Table 12.10-3 and Table 12.10-5. The induction furnaces are connected to a baghouse with 95% guaranteed control efficiency which ultimately vents through the facility roof. It is assumed that 15% of the emissions are uncaptured by the baghouse system, and that uncaptured particulate emissions are further controlled by the building enclosure.

EU07 – Emission factors for this unit were determined from a lab sample of baghouse dust on 12/17/2019. The process occurs inside the building, so a building control efficiency of 70% for particulate emissions is assumed.

EU09 – Emission factors for this unit were determined in the same way as those of EU07, except for the PM/PM10/PM2.5 emission factors, which were derived from AP-42 Table 12.10-7. The process occurs inside the building, so a building control efficiency of 70% for particulate emissions is assumed.

EU12 – Emission factors for this unit were determined based on maximum shot usage, baghouse dust testing results, and manufacturer guaranteed control efficiency. This unit is equipped with a baghouse, so a capture efficiency of 100% and control efficiency of 95% are guaranteed by the manufacturer.

EU16 & 17 – Emission factors for these units were determined from metal MSDS and a lab sample of baghouse dust on 12/17/2019. The particulate emission factors for these points were assumed to be similar to the ladle transfer emission factors because of the similarity in function. The pressure pour furnaces are enclosed by the building, providing a building control efficiency for particulate emissions.

EU13 (530): Paint Spray Booth

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	For $P \leq 0.5$ tons/hr: 2.34 lbs/hr	401 KAR 59:010, Section 3(2)	See comments.	Assumed in compliance when fabric filter is installed and properly maintained.
Opacity	<20%	401 KAR 59:010, Section 3(1)	-	Weekly qualitative observations and recordkeeping.

Initial Construction Date: 9/8/1997

Process Description:

After the foundry operations produce a drum, the drum may then be painted in the paint spray booth. Once coated, the final drum is stored until ready to ship. Currently, the facility is using two primary paints with product numbers N8584 and N9988. N8584 has slightly lower VOC content and higher particulate content than N9988. The Kremlin spray guns are HVLP guns capable of spraying 6.1 gallons of paint per hour with a #12 tip and pump pressure of 400 psi. The transfer efficiency of the gun is approximately 75-80%. The paint spray booth controls particulate emissions through the use of a panel filter. The pre-filters are changed each shift and the pleated filters are changed weekly. Additionally, the paint spray booth is equipped with a Magnehelic pressure gauge for monitoring pressure drop.

EU13 (530): Paint Spray Booth

Maximum Capacity: 6.1 gal/hr.
 Control Devices: Panel filter.

Applicable Regulations:

401 KAR 59:010, *New process operations*: This regulation is applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

401 KAR 63:020, *Potentially hazardous matter or toxic substances*: This regulation is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.

Comments:

Emission factors for this unit were determined based on the MSDS for paint. A material balance was used to calculate the emission factors for each component of the paints. The paints currently used in this process do not contain any of the target HAP compounds in 40 CFR 63, Subpart HHHHHH. The filter equipped to the booth provides a 99% control efficiency for particulate matter and metal HAPs.

Emission Unit EU22 (-) Emergency Generator

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NOx	2.0 g/HP-hr 160 ppmvd at 15% O ₂	40 CFR 60.4233(e)	See comments.	Purchasing a certified SI RICE and conducting maintenance according to manufacturer specifications.
CO	4.0 g/HP-hr 540 ppmvd at 15% O ₂	40 CFR 60.4233(e)	See comments.	Purchasing a certified SI RICE and conducting maintenance according to manufacturer specifications.
VOC	1.0 g/HP-hr 86 ppmvd at 15% O ₂	40 CFR 60.4233(e)	See comments.	Purchasing a certified SI RICE and conducting maintenance according to manufacturer specifications.

Initial Construction Date: 5/2021

Process Description:

The emergency generator is used at the facility to supply power to critical operations in the event of power supply issues at the facility. The unit is a Generac Model SG150 spark ignition emergency generator. This generator is a 4-stroke, rich-burn engine with a displacement of less than 30 liters per cylinder.

Maximum Rating: 232 HP

Fuel: Natural Gas

Control Devices: None

Emission Unit EU22 (-) Emergency Generator

Applicable Regulations:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This regulation is applicable to stationary RICE at major and area sources of HAP emissions.

401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This regulation is applicable to each stationary SI ICE that commenced construction after January 1, 2009 for emergency engines with a maximum engine power greater than 25 HP.

Comments:

Emission factors were determined for the emergency generator from AP-42 Table 3.2-2. The emergency generator only burns natural gas. Emissions were calculated using 500 hours/year to account for emergency operation.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
12	Dust Hog	PM	401 KAR 59:010	Initial	Method 5	12.89 lbs/hour	0.058 lbs/hour	13095 dscfm 7.86 tons/hour	CMN20090001	2/19/2009
	Dust Hog	Lead	401 KAR 63:021	Initial	Method 12	0.85 lbs/hour	0.00006 lbs/hour	13095 dscfm 7.86 tons/hour	CMN20090001	2/19/2009

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of PM emissions	To preclude major source status for PM under 401 KAR 52:020	Source-wide
90 tpy of PM10 emissions	To preclude major source status for PM10 under 401 KAR 52:020	Source-wide
90 tpy of VOC emissions	To preclude major source status for VOC under 401 KAR 52:020	Source-wide
9.0 tpy of individual HAP emissions	To preclude major source status for HAP under 401 KAR 52:020	Source-wide
22.5 tpy of combined HAP emissions	To preclude major source status for HAP under 401 KAR 52:020	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, <i>New process operations.</i> This regulation is applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.	EU 04, 05, 06, 07, 09, 12, 13, 16, & 17
401 KAR 63:020, <i>Potentially hazardous matter or toxic substances.</i> This regulation is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality, commenced on or after April 9, 1972.	EU 13
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), <i>National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.</i> This regulation is applicable to stationary RICE at major and area sources of HAP emissions.	EU 22
401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), <i>Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.</i> This regulation is applicable to each stationary SI ICE that commence construction after January 1, 2009 for emergency engines with a maximum engine power greater than 25 HP.	EU 22
401 KAR 63:002, Section 2(4)(bbbb), 40 C.F.R. 63.10880 to 63.10906, Tables 1 to 4 (Subpart ZZZZ), <i>National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources.</i> This regulation is applicable to new and existing iron and steel foundries that are area sources of HAPs.	EU 04, 05, 06, 07, 09, 12, 16, & 17

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 52:020 , <i>Title V permits</i> , This regulation is applicable to sources required to obtain a Title V permit, including major sources. By taking federally enforceable limits below the major source thresholds, this regulation is precluded and instead 401 KAR 52:030 applies.	Facility-wide

Table D - Summary of Non-Applicable Regulations:

N/A

Air Toxic Analysis

401 KAR 53:010, *Ambient air quality standards*

The Division has performed refined air dispersion modeling on November 26, 2019 for lead emissions based upon the process rates, emission factors, control efficiencies, stack height, and other pertinent information provided in the application and supplemental information submitted by the source, including baghouse dust sample data submitted on 12/19/2019. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with 401 KAR 53:005 and the AAQS in 401 KAR 53:010.

401 KAR 63:020, *Potentially hazardous matter or toxic substances*

The Division has performed refined air dispersion modeling on November 16, 2019 of potentially hazardous matter or toxic substances (2-Butoxy Ethanol, Cobalt and Compounds) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
S-97-005	State Origin	105-3740-0015	11/25/1996	1/22/1997	Initial Construction/Operating Permit	N/A
F-98-005	Initial Conditional Major	F244	9/8/1997	7/2/1998	Sets Limits for HAPs Below Major Source Threshold and Ownership Change	N/A
F-98-005 R1	Admin Amendment	G134	6/2/1999	6/7/1999	Ownership Change	N/A
F-98-005 R2	Significant Revision	G490	5/31/2000	11/2/2000	Changes to Permitted Emission Units EU05, 06, 07, 08, 11, and 12	N/A
F-03-007	Renewal	APE20050002	2/4/2003	6/4/2003	Changed Monitoring and Recordkeeping Requirements for EP04-09, Added and Edited Insignificant Activities	N/A
F-08-008	Renewal	APE20070001	4/15/2008	9/15/2008	Changed to a Non-HAP Paint, Removed EP08 and Added EP17, Edited Insignificant Activities, Added ZZZZZ	N/A
F-08-008 R1	Significant Revision	APE20080001	2/5/2009	7/2/2009	Removed 63:010 from EP07 and 09, Added HAP Language to EP12, Removed Lead Limits	N/A
F-13-029	Renewal	APE20130001	5/31/2013	9/13/2013	Added Limits for VOC and PM/PM10	N/A
F-19-035	Renewal	APE20190001	4/11/2019	3/7/2020	Added ability to operate both furnaces simultaneously, incorporated 502(b)(10)	N/A

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
					changes, added and edited insignificant activities.	
F-19-035 R1	Minor Revision	APE20210001	5/10/2021	7/6/2021	Replacement of EU 14 with EU 22	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

None.

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM ₁₀	– Particulate Matter equal to or smaller than 10 micrometers
PM _{2.5}	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO ₂	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds