

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N119244161

FACILITY: DENSO Manufacturing Michigan, Inc.		SRN / ID: N1192
LOCATION: One Denso Road, BATTLE CREEK		DISTRICT: Kalamazoo
CITY: BATTLE CREEK		COUNTY: CALHOUN
CONTACT: Jody Smith , Advanced Environmental Engineer		ACTIVITY DATE: 04/17/2018
STAFF: Rex Lane	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Self Initiated Inspection		
RESOLVED COMPLAINTS:		

On April 17, 2018, MDEQ-AQD staff (Rex Lane and Cody Yazzie) conducted an unannounced air quality inspection of Denso Manufacturing Michigan, Inc. (DENSO) located at One Denso Road, Battle Creek, Michigan. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) MI-ROP-N1192-2017a and Permit to Install (PTI) No. 138-17 (Notification of Change Application No. 201700162, received 12/19/17), and all applicable state and federal air regulations. The following will summarize plant operations and facility compliance status.

Staff arrived at the facility at 9:15 a.m. and provided the receptionist a business card, stated the purpose of the visit and requested that she contact Ms. Jody Smith, Advanced Environmental Engineer, Safety and Environmental Department. The receptionist gave staff visitor badges and visitor safety cards to review and sign. Ms. Smith and Mr. Michael Myszka, Section Leader, Environmental and Production Engineering, arrived and we went to a conference room and staff again stated the purpose of their visit. We discussed several topics including: an April 12, 2018 letter from Denso indicating Denso Air Systems Michigan, Inc. recently joined Denso's Thermal Systems North American Center (aka "TAC") on 4/1/18, therefore, an ROP modification application will be filed within one year to add Denso Air Systems as Section 2 of Denso's ROP; staff asked and Denso indicated that they are not planning to test any thermal oxidizers under the ROP in 2018; a new PTI application will be submitted this fall to replace C825 (EU-EVAP1); equipment installation status of EU-EVAPSP4 (press machine being installed now but flux equipment will be installed this fall) and need to update the facility's Malfunction Abatement Plan (MAP) dated July 2017 once emission unit installation is completed; and potential issues related to future evaporative oil loss testing using the current test procedure on their newer furnaces (GIC in Condenser; GSR in Radiator) since there is no way to remove parts exiting the oven degreaser before it goes through the brazing furnace.

DENSO is an OEM supplier of condensers, evaporators, radiators and heater core components that are used in HVAC systems by various automotive manufacturers. The facility utilizes a variety of processes including stamping, rolling, fluxing, brazing, powder coating, plastic injection molding and manual assembly to produce and assemble these automotive components. DENSO has been in operation at this location since 1986 and employs approximately 3,300 associates. They currently operate two production shifts per day on a staggered basis approximately 8 – 10 hours in length. They operate five days per week but may operate six to seven days per week on some production lines based on customer demand.

The facility is a major source of volatile organic compounds (VOCs) based primarily on the use of machining oils during the component and core assembly manufacturing process and flux application during the core assembly process. Facility wide VOC emissions have been trending downward over time due to installation of more efficient machining oil distribution system on all machines in the component and core assembly areas. The facility is a synthetic minor source of hazardous air pollutants (HAPs) under MI-ROP-N1192-2017a.

The primary manufacturing areas are Condenser, Evaporator, Radiator and Heater and their associated emission units are listed below:

Condenser:

EU-CONDMF3, EU-CONDMF41, EU-CONDMF42, EU-CONDGIC2

Evaporator:

EU-EVAP1, EU-EVAP2, EU-EVAP4, EU-EVAP5, EU-EVAPSP4 (PTI No. 138-17)

Radiator:

EU-RDR1, EU-RDR2, EU-RDR3, EU-RDR5

Heater Core:

EU-HTR1, EU-HTR2

There are several ROP conditions across the four main manufacturing areas that have identical or nearly redundant requirements. For sake of brevity, these requirements are summarized below and associated AQD comments are based on pre-inspection review, inspection observations or post-inspection review:

The permittee is required to perform annual evaporative oil loss testing on all four main manufacturing areas. **AQD comment:** Facility has complied with this requirement on an annual basis and the most recent test report was submitted in December 2017.

The permittee is required to calibrate each temperature monitoring device on the thermal oxidizers at least once per calendar year. **AQD comment:** Staff reviewed calibration stickers located near each control device for all thermal oxidizers except C550A which was not running today and undergoing maintenance and C467A where the line is in the process of being removed. All thermocouples were last calibrated between 9/16/17 and 9/24/17.

The permittee is required to keep a record of each occurrence that the automatic alarm system on the oven degreasers is activated. This record shall include the date and time of the occurrence and the duration of the occurrence. The alarm is triggered if the combustion temperature drops below the listed permit limit (either 1292 or 1400 degrees F) for more than 59 minutes in duration. The low temperature audio/visual alarm on all thermal oxidizers controls is checked for functionality on a quarterly basis by maintenance. **AQD comment:** Staff reviewed 2018 alarm records sheets that are kept by the control panels for each thermal oxidizer. The alarm log for the thermal oxidizer for oven degreaser C452A had several alarms noted and the remaining units had zero alarms recorded for 2018.

The permittee shall not operate the oven degreaser unless the thermal oxidizer is operating properly. Proper operation means maintaining a minimum temperature (1292 or 1400 degrees F, depending on the oxidizer), minimum retention time (0.3 or 0.5 seconds), and a VOC destruction efficiency (94 or 95% depending on the oxidizer) or a VOC outlet concentration limit is met. **AQD comment:** During the inspection, all operating thermal oxidizers had combustion temperatures above their respective operating limits. See attached table for list of thermal oxidizer temperatures recorded during this inspection.

Under FG-FACILITY, Condition IX.1, the permittee is required to maintain video surveillance and regular guard patrols to prevent unauthorized individuals from loitering in the employee parking lots extending to approximately 150 meters east of the plant. **AQD comment:** Compliant. Mr. Myszka stated that there are numerous security cameras around the facility and that security patrols the facility grounds and roof top once per shift. The facility is fenced to prevent unauthorized access (outside of main reception area) and the employee entry points are equipped with security turnstiles.

The permittee shall maintain a current listing from the manufacturer of the chemical composition (MSDS, formulation data, etc.) of each material used, including the weight percent of each component. **AQD comment:** Compliant. The facility has an electronic MSDS/SDS program for all chemicals used at the facility.

The permittee is required to submit a Malfunction Abatement Plan (MAP) or all thermal oxidizer and powdered flux dust collection system control devices in use at the facility. **AQD comment:** Compliant. A revised MAP was submitted in July 2017 and was approved by the AQD on 9/5/17.

AQD comments below related to compliance with ROP permit conditions are based on information gathered during the pre-inspection review, records reviewed during the on-site inspection, inspection observations and material usage and emission records provided by Ms. Smith during or following the inspection. Material usage and VOC emission records based on a 12-month rolling average tons per year (tpy) will be provided in brackets [] for associated permit conditions. The highest 12-month rolling average value over the previous fifteen months will be listed in the inspection report.

EU-HTR1:

Condition I.1: The facility maintains records showing compliance with the 12.0 tons/year (tpy) VOC limit [5.11 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 39.3 tpy limit [16.7 tpy; 02/17].

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser H451 on 4/4/06 and demonstrated compliance with design/equipment parameter limits. This thermal

oxidizer will be required to be re-tested within the next four years under the current ROP.

EU-HTR2:

I.1: The facility maintains records showing compliance with the 10.3 tons/year (tpy) VOC limit [3.90 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 33.7 tpy limit [14.22 tpy; 02/17].

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser H751 on 8/11/15 and demonstrated compliance with design/equipment parameter limits.

EU-CONDMF3:

I.1: The facility maintains records showing compliance with the 28.4 tons/year (tpy) VOC limit [5.68 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 45.6 tpy limit [10.7 tpy; 02/17].

V.1 – The facility has not yet conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C452A. This thermal oxidizer will be required to be tested within the next four years under the current ROP.

EU-CONDMF41:

I.1: The facility maintains records showing compliance with the 19.0 tons/year (tpy) VOC limit [9.82 tpy; 03/18].

I.2 through I.7: The AQD has not requested particulate matter testing under Condition V.4 for the flux cartridge dust collection system to date. The dust collection system is also equipped with a pressure differential gauge. The cartridge dust collection system is included in the facility's MAP and is inspected on a semi-annual basis and the filters were recently replaced.

II.1 – The facility maintains oil use records showing compliance with the 32.8 tpy limit [21.5 tpy; 02/18].

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C550A on 6/2/04 and demonstrated compliance with design/equipment parameter limits. This thermal oxidizer will be required to be re-tested within the next four years under the current ROP.

EU-CONDMF42:

I.1: The facility maintains records showing compliance with the 19.7 tons/year (tpy) VOC limit [4.95 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 31.9 tpy limit [11.0 tpy; 02/17].

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C467A on 4/6/06 and demonstrated compliance with design/equipment parameter limits. This equipment is in the process of being removed from the facility.

EU-CONDGIC2:

I.1: The facility maintains records showing compliance with the 30.5 tons/year (tpy) VOC limit [10.76 tpy; 02/18].

I.2 through I.7: The AQD has not requested particulate matter testing under Condition V.4 for the flux cartridge dust collection system to date. The dust collection system is also equipped with a pressure differential gauge. The cartridge dust collection system is included in the facility's MAP and is inspected on a semi-annual basis and the filters were recently replaced.

II.1 – The facility maintains oil use records showing compliance with the 70.3 tpy limit [24.6 tpy; 02/17].

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C1150A on 11/13/15 and demonstrated compliance with design/equipment parameter limits.

EU-EVAP1:

I.1: The facility maintains records showing compliance with the 36.0 tons/year (tpy) VOC limit [2.5 tpy; 08/17].

II.1 – The facility maintains oil use records showing compliance with the 31.1 tpy limit [13.5 tpy; 08/17].

II.3 – The facility maintains flux usage records showing compliance with the 169.0 tpy limit [79.8 tpy; 02/17]. The facility currently does not use flux with > 1.0% VOC by weight under Condition II.2.

V.1 – The facility last conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C801 and C825A on 09/14/16 and 09/13/16, respectively, and demonstrated compliance with design/equipment parameter limits.

EU-EVAP2:

I.1: The facility maintains records showing compliance with the 36.0 tons/year (tpy) VOC limit [14.8 tpy; 03/17].

II.1 – The facility maintains oil use records showing compliance with the 23.4 tpy limit [17.1 tpy; 01/17].

II.2 – The facility maintains flux usage records showing compliance with the 55.2 tpy limit [28.7 tpy; 01/17]. The facility currently does not use flux with < 1.0% VOC by weight under Condition II.3.

V.1 – The facility has not yet conducted a VOC destruction efficiency (DE) test on the thermal oxidizer controls for oven degreaser C884. This thermal oxidizer will be required to be tested within the next four years under the current ROP.

EU-EVAP4:

I.1: The facility maintains records showing compliance with the 21.6 tons/year (tpy) VOC limit [14.45 tpy; 09/17].

II.1 – The facility maintains oil use records showing compliance with the 26.6 tpy limit [14.0 tpy; 09/17].

II.3 – The facility maintains flux usage records showing compliance with the 169.0 tpy limit [55.5 tpy; 10/17]. The facility currently does not use flux with > 1.0% VOC by weight under Condition II.2.

EU-EVAP5:

I.1: The facility maintains records showing compliance with the 21.6 tons/year (tpy) VOC limit [11.6 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 21.6 tpy limit [9.7 tpy; 09/17].

EU-RDR1:

I.1: The facility maintains records showing compliance with the 19.0 tons/year (tpy) VOC limit [9.22 tpy; 02/18].

II.1 – The facility maintains oil use records showing compliance with the 38.7 tpy limit [17.5 tpy; 02/18].

II.2 – The facility maintains weld tube mill machining oil (Bonderite) records showing compliance with the 882 gallons/year limit [673.8 gallons; 02/18].

II.3 – The facility maintains tube mill machining oil (Dairoll) records showing compliance with the 282 gallons/year limit [92.5 gallons; 02/17]. Note: Dairoll oil usage was discontinued in September 2017 as required by Condition IX.1.

EU-RDR2:

I.1: The facility maintains records showing compliance with the 22.3 tons/year (tpy) VOC limit [7.47 tpy; 02/17].

II.1 – The facility maintains oil use records showing compliance with the 44.9 tpy limit [16.3 tpy; 01/18].

II.2 – The facility maintains weld tube mill machining oil (Bonderite) records showing compliance with the 882 gallons/year limit [673.8 gallons; 02/18].

II.3 – The facility maintains tube mill machining oil (Dairoll) records showing compliance with the 282 gallons/year limit [92.5 gallons; 02/17]. Note: Dairoll oil usage was discontinued in September 2017 as required by Condition IX.1.

EU-RDR3:

I.1: The facility maintains records showing compliance with the 22.4 tons/year (tpy) VOC limit [3.45 tpy; 03/18].

II.1 – The facility maintains oil use records showing compliance with the 53.7 tpy limit [8.3 tpy; 03/18].

II.2 – The facility maintains weld tube mill machining oil (Bonderite) records showing compliance with the 882 gallons/year limit [673.8 gallons; 02/18].

II.3 – The facility maintains tube mill machining oil (Dairoll) records showing compliance with the 282 gallons/year limit [92.5 gallons; 02/17]. Note: Dairoll oil usage was discontinued in September 2017 as required by Condition IX.1.

EU-RDR5:

I.1: The facility maintains records showing compliance with the 26.5 tons/year (tpy) VOC limit [12.73 tpy; 01/18].

II.1 – The facility maintains oil use records showing compliance with the 53.3 tpy limit [27.1 tpy; 01/18].

II.2 – The facility maintains weld tube mill machining oil (Bonderite) records showing compliance with the 882 gallons/year limit [673.8 gallons; 02/18].

II.3 – The facility maintains tube mill machining oil (Dairoll) records showing compliance with the 282 gallons/year limit [92.5 gallons; 02/17]. Note: Dairoll oil usage was discontinued in September 2017 as required by Condition IX.1.

FGCOLDCLEANERS:

The facility maintains nine cold cleaners in the manufacturing and maintenance areas of the plant. One cold cleaner located in the Heater Core area uses Cedar draw Oil and is subject to Part 7 rules. Staff provided Ms. Smith with some replacement instructional stickers. The remaining cold cleaners use a product called Bio-Circle CB 100. According to Section 9 of the SDS, the product contains zero grams of VOC per liter, therefore, the remaining cold cleaners are not currently subject to Part 7 rules. If the facility were to switch to another solvent that contained $\geq 5\%$ VOC by weight, the cold cleaners would then become Part 7 rule subject.

FG-RULE290:

The facility currently has 78 Rule 290 emission units for VOC only. These process groups are primarily located in the equipment testing and final assembly areas of the facility. Material throughput (e.g. inks, alcohols, Loctite, etc.) and associated emissions are track by specific process codes and emissions are then designated to process groups. The facility emits only one carcinogenic VOC, methylene chloride which is in an acrylic adhesive used in small quantities (e.g. quart size cans) on a sporadic basis by maintenance to join piping. Staff reviewed 2018 emission records while on-site and the highest observed Rule 290 VOC emission rate for January, February and March was 182, 236 and 231 pounds/month, respectively. Most Rule 290 emission units are emitting less than 50 pounds VOC/month based on a brief review of emission records.

FG-MACT-ZZZZ \leq 500HP (EU-FAG#1, EU-FAG#2, EU-FAG#3, EU-FAG#5, EU-FAG#6, EU-FIRE PUMP # 1 and # 2):

The facility contracts maintenance of the diesel and natural gas fired emergency generators and fire pumps to an outside vendor (Cummins). The vendor changes the oil and oil filter in each generator and inspects the air filter on an annual basis with the last maintenance completed in June 2017. Each generator is equipped with a non-resettable hour meter and the facility maintains operation records by type (i.e. emergency, non-emergency (readiness testing). Hour meter readings were recorded during the inspection and a table containing the current readings is attached to this report.

FG-NSPS-JJJJ (EU-FAG#7):

The facility has previously provided the manufacturer's emission certificate that shows EU-FAG#7's compliance with 40 CFR Part 60, Subpart JJJJ emission limitations for natural gas fired emergency generators based on its 2011 installation date. See above paragraph for maintenance information.

FGSURFACECOAT (EU-C832; EU-C833; EU-C834; EU-C933):

Each emission unit (see above) within FGSURFACECOAT has a 10.0 ton per twelve month rolling average limit for VOC and a 2,000 pound/month VOC emission limit. Staff reviewed emission records for the previous fifteen months and the highest twelve month rolling average noted was 3.0 tons/year (EU-C834) and the highest monthly value noted was 538 pounds/month (EU-C933). FGSURFACECOAT also has a combined 30.0 ton per twelve month rolling average for VOC and the highest average noted was 9.05 tons [03/17].

FGFACILITY:

I.1: The facility maintains records showing compliance with the < 9.0 tons/year (tpy) individual HAP limit [6.52 tpy; hydrofluoric acid is highest individual HAP emitted from the facility].

I.2 – The facility maintains records showing compliance with the < 22.5 tpy combined HAP limit [7.1 tpy; combined HAPs].

I.3: The facility maintains records showing compliance with the < 225 tons/year (tpy) VOC limit [133.72 tpy; 02/17].

I.4 – The facility maintains records showing compliance with the 30.0 tpy limit for all metallic surface coating lines operating under Rule 336.1621(10) [9.05 tpy; 03/17].

Miscellaneous Equipment Review:

The facility has multiple plastic injection machines that produce primarily polypropylene, polyethylene and nylon components for HVAC parts. Mold cleaner and mold release agents are used on these lines along with various solid fillers that impart desired characteristics requested by the customer. According to production records reported in their 2017 MAERS report, the overall process emitted 700 lbs. VOC which is well below Rule 278 exclusionary emission criteria. Therefore, the process is currently exempt from permitting under Rule 286(2)(b).

The facility has two 20.92 MMBtu/hr. rated natural gas only fired boilers (i.e. powerhouse) which supply steam load to the evaporator surface treatment process and building service heat. The boilers are exempt from NSPS, Subpart Dc requirements based on their October 1985 installation date. The boilers are also exempt from boiler MACT Part 63, Subpart JJJJJ per 40 CFR 63.11195(e) based on being designated as existing boilers that only fire natural gas. The facility has four other natural gas fired hot water boilers installed between 1985 and 1987 that are less than 10 MMBtu/hour each and forty-one natural gas fired air handling units each less than 0.3 MMBtu/hour. The powerhouse boilers, hot water boilers and air handling units are all exempt at the time of installation from air use permitting under Rule 282(2)(b)(i).

The facility has a spray can puncturing machine in the Heater Core area. This equipment is exempt for air use permitting requirements per Rule 287(2)(b).

Other Inspection Notes:

Stack and vent restrictions were not evaluated during this inspection.

PTI No. 138-17 compliance was not evaluated during this inspection since the facility is currently installing the machine press and the flux dust collector system will not be installed until later this calendar year.

Inspection Summary:

At the time of the inspection, the facility appears to be in compliance with all state and federal air regulations and MI-ROP-N1192-2017a. -RIL

NAME RIL

DATE 4/19/18

SUPERVISOR m24/20/2018