

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

N119225416

FACILITY: DENSO Manufacturing Michigan, Inc.		SRN / ID: N1192
LOCATION: One Denso Rd., BATTLE CREEK		DISTRICT: Kalamazoo
CITY: BATTLE CREEK		COUNTY: CALHOUN
CONTACT: Jody Smith, Advanced Environmental Engineer		ACTIVITY DATE: 06/03/2014
STAFF: Rex Lane	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Self-Initiated Inspection		
RESOLVED COMPLAINTS:		

On June 3, 2014, AQD staff (Rex Lane) conducted an unannounced scheduled inspection of Denso Manufacturing Michigan, Inc. (DENSO) located in Battle Creek, Calhoun County. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) MI-ROP-N1192-2003B, ten active Permits to Install (PTIs) that have not yet been incorporated into their existing ROP, and all applicable state and federal air regulations. The following will summarize plant operations and facility compliance status.

Staff arrived at the facility at approximately 9 a.m. with their supervisor, Ms. Mary Douglas. Staff gave 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. Ms. Smith met AQD staff out in the reception area shortly thereafter along with Ms. Smith's supervisor, Mr. Michael Myszka and staff again stated the purpose of their visit and provided Ms. Smith with a copy of the new Environmental Inspections brochure. We had an overview discussion of plant operations, were issued visitor badges and then proceeded to a conference room to review ROP and PTI recordkeeping requirements prior to taking a tour of the facility.

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, coating, plastic injection molding and manual assembly to produce these automotive components. DENSO has been in operation at this location since 1986 and employs approximately 2,800 associates. They currently operate two production shifts per day on a staggered basis approximately 8 – 10 hours in length. They generally operate five days per week, but operate six or seven days per week on some production lines due to 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 to a lesser extent from 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 continues to evaluate the use of a newer oil application technology or switching to lower VOC content oil to further reduce oil usage and overall VOC emissions.

Since the last AQD inspection (8/1/12), the facility has removed permitted equipment including R520, R620, R620A, C631 and C631A and is slated to remove oven degreaser C481 in a few weeks. Since issuance of MI-ROP-N1192-2003B, the following equipment has been removed from FGAL-RDTR-LINE (R411A, R413, R511A, R514, R520, R620, and R620A) and FGEVAPORATOR-LINE (C29, C29A, C30, C32, C631A and C481) which has created a number of obsolete permit conditions. Additional obsolete permit conditions were created when the use of chromic acid was discontinued on the surface coating process in FGEVAPORATOR-LINE. The facility is in the process of filing air use permit applications for the Heater Core and Radiator manufacturing areas that will address conflicting and redundant conditions that exist between the ROP and associated PTIs. Once draft PTI conditions are agreed upon and permits are issued for the Heater Core and Radiator manufacturing areas, the facility will submit an air use permit application for the Evaporator manufacturing areas. Based on this information, staff did not evaluate stack height and diameter requirements during this inspection.

Staff requested and was provided with an updated exhaust stack inventory spreadsheet (attached). The primary manufacturing areas are Condenser, Evaporator, Radiator and Heater and their associated active PTIs are listed below:

**Condenser:**

FGCONDENSER-LINE (MI-ROP-N1192-2003B)

PTI No. 277-04D

**Evaporator:**

FGEVAPORATOR-LINE (MI-ROP-N1192-2003B)

PTI Nos. 327-08, 267-07A, 7-06E, 192-04A and 98-03B

**Radiator:**

FGAL-RDTR-LINE (MI-ROP-N1192-2003B)

PTI Nos. 70-07, 174-05 and 296-03A

**Heater Core:**

FGAL-HTR-LINE (MI-ROP-N1192-2003B)

PTI No. 19-04

There are a number of ROP and PTI permit 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 last test was performed in November 2013.

The permittee is required to calibrate each temperature monitoring device on the thermal oxidizers at least once per calendar year. **AQD comment:** Staff reviewed 2013 and 2014 maintenance calibration records for each thermal oxidizer. The 2013 calibration dates are listed in the attached oxidizer spreadsheet and 2014 calibration records were added for some thermal oxidizers during the post-inspection review period.

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. **AQD comment:** Staff reviewed 2013 maintenance tests of the visual and audio alarms and 2013 alarm records. The only thermal oxidizers alarms in 2013 occurred on H451 for burner misfires and these events, although frequent, were only minutes in duration. The 2014 alarm record sheets are maintained at the control panels for each thermal oxidizer.

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 destruction efficiency (94 or 95% depending on the oxidizer). **AQD comment:** Compliant. Thermal oxidizer temperatures were recorded for all operating lines during the inspection and show compliance with their respective permit limit (see attached oxidizer spreadsheet for values). All thermal oxidizers have undergone performance testing to verify compliance with their respective destruction efficiency limit.

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 two associate entry/exit 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. During the pre-inspection review, Ms. Smith provided a brief demonstration of their electronic MSDS program for all chemical used at the facility.

AQD comments below related to compliance with ROP and PTI 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) for April 2014 will be provided in brackets [] for associated permit conditions.

#### MI-ROP-N1192-2003B:

##### Table B (Source-wide)

Condition II.B – Through April 2014, stationary source VOC emissions were approximately 49% [109.8 tpy] of the 225 ton/year limit on a 12-month rolling average.

III.A.3.1 – Facility is using the most recent uncollected VOC emission rates in their emission calculations.

III.A.3.2 – Facility is maintaining records as required for FGFACILITY.

#### FGRule290

DENSO has designated over 50 different Rule 290 emission groups that are based on process groups rather than the traditional emission unit designation used by most facilities. 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. DENSO currently doesn't use any materials that contain chemicals with a screening level between 0.04 and 2.0 micrograms/m<sup>3</sup> which would restrict uncontrolled VOC emissions to less than 20 lbs./month. Staff reviewed electronic monthly VOC emissions for 2014 and the highest process code emission rate noted was approximately 250 lbs./month and typical process code emissions were less than 100 lbs./month. Therefore, the facility is currently in compliance with Rule 290.

#### FGRULE287C

II.A – Facility is limited to a maximum 200 gallons of coating per month, minus water, per emission unit. Currently, there is only one Rule 287(c) emission unit in use at the facility. Staff reviewed 2014 emission records and the highest monthly value noted was 21% (42 gal.) of the allowed maximum. Recorded coating usage includes all coating applications done outside of the booth (e.g. yellow safety lines on floor and railings) so actual emissions are overstated from actual conditions.

#### 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. The remaining cold cleaners are aqueous degreasers that use a heated solution of bacteria, alkaline soap and water. Initially, it was presumed that these cleaners would not be subject to Part 7 rules because they do not contain any organic solvents. However, based on manufacturer's formulation data for the product and follow up laboratory analysis showed that it contains about 5% VOC, by weight. Therefore, the Bio-Circle cleaner units are also subject to Part 7 rules. Per Rule 707(3)(a), the Bio-Circle cleaner units are required to have a mechanically assisted cover because the unit solution is heated. The units are fitted with a lid that remains closed when not in use but the manufacturer has not designed a mechanically assisted cover for their units. On 4/2/14, staff notified Ms. Smith via email that the facility should report this as a deviation on their future semi-annual ROP certification reports.

#### FGAL-HTR-LINE

II.B.1 through III.B.12.4 – Required emission testing was completed between March and May 2006. Facility has certified compliance with associated emission limitations in II.B.1 through II.B.3.5.

FGAL-RDTR-LINE and PTI No. 70-07

II.B.1 through III.B.9.4 - Required emission testing was completed between March 2006 and May 2007. Facility has certified compliance with associated emission limitations in II.B.1 through II.B.2.7.

FGCONDENSER-LINE

II.B.1 through III.B.9.4 – Required emission testing was completed between March and May 2006. Facility has certified compliance with associated emission limitations in II.B.1 through II.B.1.5.

FGEVAPORATOR-LINE

The permittee has removed multiple emission units (C29, C29A, C30, C32, C631 and C631A) associated with the flexible group table and ceased the use of chromic acid in the surface coating machines associated with the Evaporator production lines. Therefore, they are multiple permit conditions that are no longer applicable to this flexible group including I.C.1 through I.C.5; II.B.1 through II.B.3.2; III.A.1; III.A.3.1 and V.1 through V.5. Prior to eliminating the chromic acid surface coating process, the facility completed hexavalent chrome emission testing between 8/6/03 and 11/22/03 and certified compliance with associated emission limitations.

PTI No. 327-08 (Evaporator – Surface Treatment)

I.1-2: The facility maintains records showing compliance with the 10.0 tpy and 2,000 lbs./month VOC limit for C832, C833, C834 and C933. For April 2014, highest observed VOC emission rate was 7.02 tpy for C832 and highest monthly rate over the last twelve months was in June 2013 for C832 (1870 lbs./month).

I.1 – 2: The facility maintains records showing compliance with the 446 lbs./yr. limits for polyvinyl alcohol (PVA) [151.4 lbs.] and modified PVA [35.5 lbs.] from FGSURFACECOAT.

I.1 – The facility maintains records [8.97 tpy] showing compliance with the 30.0 tpy VOC limit for FG-EXEMPTLINES.

PTI No. 267-07A (Evaporator Oven Degreasers C902, C924)

I.1 – The facility maintains records showing compliance with the 10.37 tpy VOC limit for C902 [6.70 tpy] and the 16.22 tpy VOC limit for C924 [9.27 tpy].

PTI No. 7-06E (RSEvaporator Line # 5)

I.1 – The facility maintains records showing compliance with the 21.6 tpy VOC limit for EU-EVALINE5 [3.64 tpy].

PTI No. 192-04A (RSEvaporator Line # 2)

I.1 – 2: To date, facility has not been required to perform PM-10 testing to verify compliance with the associated emission limits for C884 or C852.

I.1: The facility maintains records showing compliance with the < 36.0 tpy VOC limit for FG-RSEvapLine2 [19.18 tpy].

II.1-2: The facility maintains usage records showing compliance with the material usage limit for machining oil [27,574 lbs.] and brazing flux [63,909 lbs.] on FG-RSEvapLine2.

PTI No. 98-03B (RSEvaporator Line # 1)

I.1 – The facility maintains records showing compliance with the 63.3 tpy VOC limit for FG-825EVAPLINE [3.10 tpy].

II.1 – The facility maintains usage records showing compliance with the 62.05 tpy machining oil limit for FG-825EVAPLINE [14.0 tpy].

II.2 – The facility hasn't used a brazing flux with a VOC content > 1%, by weight, on FG-825EVAPLINE since late 2011.

II.3 – The facility maintains flux usage records showing compliance with the 169.0 tpy flux (VOC content < 1%, by weight) use limit for FG-825EVAPLINE [70.2 tpy].

V.1 – The permittee completed performance testing to verify hydrogen fluoride (HF) emission rates from C825 in November 2011. No emission limitation for HF was established for C825.

#### FGAL-RDTR-LINE:

##### PTI No. 174-05 (Radiator Line 2)

I.1 - The facility maintains records showing compliance with the 2.78 tpy VOC limit for EU140 [0.59 tpy].

##### PTI No. 296-03A (Radiator Line 5)

I.1a-b – The facility maintains records showing compliance with the < 36.0 tpy VOC limit for FG-RadLine5 [7.77 tpy] and the 7.3 tpy VOC limit for R940 [1.39 tpy].

I.2 – The facility maintains usage records showing compliance with the 142.2 tpy machining oil limit [21.64 tpy].

#### FGCONDENSER-LINE:

##### PTI No. 277-04D (EU-CONDMF3; EU-CONDMF41; EU-CONDMF42)

##### EU-CONDMF3:

I.1 – The facility maintains records showing compliance with the 28.4 tpy VOC limit [6.18 tpy].

II.1 –The facility maintains usage records showing compliance with the 45.6 tpy machining oil limit [8.65 tpy].

III.1 – Facility has submitted the required malfunction abatement plan (MAP) which was approved by the AQD in January 2014.

##### EU-CONDMF41:

I.1 – The facility maintains records showing compliance with the 19.0 tpy VOC limit [10.36 tpy].

II.1 –The facility maintains usage records showing compliance with the 32.8 tpy machining oil limit [25.3 tpy].

III.1 – Facility has submitted the required MAP which was approved by the AQD in January 2014.

##### EU-CONDMF42:

I.1 – The facility maintains records showing compliance with the 19.7 tpy VOC limit [11.27 tpy].

II.1 –The facility maintains usage records showing compliance with the 31.9 tpy machining oil limit [15.8 tpy].

III.1 – Facility has submitted the required MAP which was approved by the AQD in January 2014.

#### FGAL-HTR-LINE:

##### PTI No. 19-04 (Heater Core Line # 2)

I.1 – The facility maintains records showing compliance with the 3.3 tpy VOC limit for H751 [1.32 tpy].

#### 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 buyer. According to production records reported in their 2013 MAERS report, the overall process emitted 682 lbs. VOC which is well below Rule 278 exclusionary emission criteria. Therefore, the process is currently exempt from permitting under Rule 286(b).

The facility has two 20.92 MMBtu/hr. rated natural gas only fired boilers which supply steam load to the evaporator surface treatment process. The boilers are exempt from NSPS, Subpart Dc requirements based on their 1985 installation date. The boilers are also exempt from boiler MACT Part 63, Subpart JJJJJ per 40 CFR 63.11195(e) because they only fire natural gas.

The facility has six stationary emergency generators and two fire pumps fired by either diesel fuel or natural gas (see table below). Five emergency generators and the two diesel fire pumps were installed prior to 2006 and are considered to be existing engines and subject to 40 CFR Part 63 (MACT), Subpart ZZZZ. FAG # 7 was installed after 2006 and is considered to be a new engine that is subject to 40 CFR Part 60, Subpart JJJJ. The facility has installed non-resettable hour meters on each generator and fire pump and maintains records of operating hours and type of operation (i.e. readiness testing, emergency use, etc.). The facility has contracted with an outside vendor to perform required maintenance work. Staff did not evaluate compliance with 40 CFR Part 63, Subpart ZZZZ since our agency has not sought delegation for this area source MACT standard.

Generator ID/ Location	Fuel	Brake Horsepower	Install Date	Manufacturers (Engine/Generator)
FAG #1 / Powerhouse	Diesel	134 hp	1985	Cummins
FAG #2 / Powerhouse	Diesel	61 hp	1986	Cummins
FAG #3 / Powerhouse	Diesel	66 hp	1987	Cummins
FAG #4 / Office Roof	Natural Gas	202 hp	1999	Cummins
FAG #6 / Outside J-20	Natural Gas	176 hp	2001	Ford
FAG#7/Roof	Natural Gas	44 hp	2011	General Motors
Fire Pump # 1/ Pumphouse #1	Diesel	231 hp	1985	Caterpillar
Fire Pump # 2/ Pumphouse # 2	Diesel	208 hp	1993	Cummins

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

At the time of this inspection, the facility appears to be in compliance with all state and federal air regulations and MI-ROP-N1192-2003B and respective active PTIs identified above.

NAME RIL DATE 6/9/14 SUPERVISOR MA 6/9/2014