

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

N722833046

FACILITY: Global Engine Manufacturing Alliance (GEMA)		SRN / ID: N7228
LOCATION: 5800 N. ANN ARBOR RD, DUNDEE		DISTRICT: Jackson
CITY: DUNDEE		COUNTY: MONROE
CONTACT: Scott Goeglein , Environment Health and Safety Lead		ACTIVITY DATE: 01/20/2016
STAFF: Michael Gabor	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Full Compliance Evaluation (FCE) and Inspection (PCE) of FCA (Fiat Chrysler Automobiles) Group US LLC, DBA – Dundee Engine Plant, formally GEMA. Major / ROP Source.		
RESOLVED COMPLAINTS:		

**Major / ROP Source. Full Compliance Evaluation (FCE) and Inspection (PCE) of FCA (Fiat Chrysler Automobiles) US LLC – Dundee Engine Plant (formally GEMA), located at 5800 North Ann Arbor Road, Dundee, Michigan 48131.**

**State Registration Number (SRN): N7228**

#### Facility Contacts

**Scott Goeglein (SG), Environment Health and Safety Lead, 734-529-9226, [scott.goeglein@fcagroup.com](mailto:scott.goeglein@fcagroup.com).**

**Amber Mitchell (AM), Environmental Specialist, 734-529-9715, [amber.mitchell@fcagroup.com](mailto:amber.mitchell@fcagroup.com).**

**Ben Bosah (BB), Air Compliance Engineer, 248-512-4232, [chukwuemeka.bosah@fcagroup.com](mailto:chukwuemeka.bosah@fcagroup.com).**

#### Purpose

On January 20, 2016, I conducted a scheduled, announced inspection of the FCA (Fiat Chrysler Automobiles) US LLC – Dundee Engine Plant (DEP) facility located in Dundee, Michigan (Monroe County) at 5800 North Ann Arbor Road. The purpose of the inspection was to determine the facility's compliance status with applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, and the conditions of DEP's Renewable Operating Permit (ROP) number MI-ROP-N7228-2013, issued January 18, 2013. This facility was last inspected on August 6, 2014.

#### Facility Location

The facility is located within the city limits of Dundee. It is immediately surrounded by commercial / industrial / agricultural sources.

### Arrival & Facility Contacts

Visible emissions or odors were not observed upon my approach to the facility via Ann Arbor Road. I arrived at approximately 8:20 am, proceeded to the facility office to request access for an inspection, provided my identification, and asked if SG was available. I viewed a safety training video and was then escorted by SG to his office. A pre-inspection conference was held with SG, AM, and BB, during which a copy of the Michigan Department of Environmental Quality (MDEQ) brochure: *Rights and Responsibilities Environmental Regulatory Inspections* was provided. I did invite DEP to complete the customer service survey upon receipt of my inspection report. I informed SG, AM, and BB of my intent to conduct a facility inspection and to review the various records required by their permit. The DEP representatives extended their full cooperation during the inspection, accompanied me during the full duration of the inspection, and fully addressed my onsite questions.

### Facility Background

Initially the plant was called the Global Engine Manufacturing Alliance (GEMA), and was a joint venture between Mitsubishi Motors Corporation, Hyundai Motor Company and DaimlerChrysler Corporation (groundbreaking occurred in 2003). In 2009 bankruptcy was declared and GEMA was partially acquired by FCA. Full acquisition by FCA recently occurred. SG introduced AM as a new Michigan Air Emissions Reporting System (MAERS) contact. See the attached facility factsheet that was obtained from their website for additional background information.

The facility consists of two parallel engine manufacturing plants (North and South) with engine assembly occurring in the middle of the facility. The engine parts are machined, processed, etc. along the facility's perimeter and gradually move towards the center. The finished engines are loaded on racks and are shipped by truck or rail to the designated automotive assembly plant. The aluminum engine blocks, engine heads and crank shafts arrive pre-cast. These components are machined and assembled with other pre-fabricated engine components to complete an engine.

Currently, the North Plant assembles the Tigershark and World Gas engines; with each having several platforms / variations (e.g. 2.0-liter or 2.4-liter). In addition, on the North Plant side, DEP machines engine heads, cranks, and blocks and then assemble the engine components.

Currently, the South Plant assembles the Fully Integrated Robotized Engine (FIRE) engine. In addition, on the South Plant side, DEP machines engine heads, cranks, and blocks and then ship them to their sister plant in Trenton, MI to assemble. DEP is expected to no longer assemble the FIRE engine in the future and to be assigned a new engine line.

A sample of the different engine types are tested on the onsite dynamometers. The hot test engine test stands are designed to complete more intrinsic testing of the engines. Generally, a minimum of 3% of engines are

tested, while the facility is currently testing 12% of the assembled engines.

Last year's volume included 823,000 "engine components," of which 200,000 were parts sent to Trenton, MI for final assembly and 623,000 were fully assembled engines. DEP generally operates two, ten hour shifts, six days a week and employs approximately 752 persons. DEP is the highest producing and most efficient of all FCA assembly plants.

On January 19, 2016, the Air Quality Division (AQD) received an application from the DEP for an Administrative Amendment to their ROP for a company name change from Global Engine Manufacturing Alliance (GEMA) to FCA (Fiat Chrysler Automobiles) US LLC – Dundee Engine Plant.

The DEP 2014 Michigan Air Emissions Reporting System (MAERS) reported the following emissions for pollutants having facility-wide limits: 112,095.17 pounds / 56 tons CO, 14,508.81 pounds / 7.25 tons NOx, and 17,846.83 pounds / 9 tons PM10 primary. Reported emissions are well below the permit-specified, facility-wide limits of 196.8 tons per year (tpy) for CO, 63.6 tpy for NOx, and 38.5 tpy for PM.

#### Regulatory Applicability

The facility is a Major / ROP source for CO emissions. The facility is regulated by ROP number MI-ROP-N7228-2013 and is also subject to Title 40 of the Code of Federal Regulations (CFR), Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and to Title 40 of CFR, Part 63, Subpart CCCCC, NESHAP for Area Source Gasoline Dispensing Facilities. Compliance determinations were not made regarding both NESHAP standards, as the state of Michigan has not obtained delegation authority for these standards. The facility reports its emissions to MAERS and is designated as a Fee Category I source.

#### Emission Unit (EU) / Flexible Group (FG) Details

##### EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-DRYMACHINE	Various machining	January 2005	FG-FACILITY

	operations including grinding, boring, etc. The processes are maintained with PM filtration systems.		
EU-WETMACHINE	Various machining operations including grinding, boring, etc. utilizing various cutting oils and coolants. The processes are maintained with oil mist collectors.	January 2005/ February 2010/ March 2011	FG-FACILITY
EU-DYNO1	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-DYNO2	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-DYNO3	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-DYNO4	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-DYNO5	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-DYNO6	Engine dynamometer test cell burning unleaded gasoline	May 2010/ March 2011	FG-DYNOS FG-FACILITY
EU-HOT_TEST1 and EU-HOT_TEST2	Two engine test stands; each engine burns natural gas	January 2005	FG-HOT_TEST FG-FACILITY
EU-FIRE_PUMP1	Diesel fueled SI Emergency fire pump	2003	FG-EMERG-RICE, FG-FACILITY
EU-FIRE_PUMP2	Diesel fueled SI Emergency fire pump	2003	FG-EMERG-RICE, FG-

<b>EU-EM_GEN1</b>	<b>Natural gas CI Emergency Generator</b>	<b>2003</b>	<b>FACILITY FG- FG- FACILITY EMERG-RICE,</b>
<b>EU-EM_GEN2</b>	<b>Natural gas CI Emergency Generator</b>	<b>2003</b>	<b>FG-EMERG- RICE, FG- FACILITY</b>
<b>EU-EM_GEN3</b>	<b>Natural gas CI Emergency Generator</b>	<b>2003</b>	<b>FG-EMERG- RICE, FG- FACILITY</b>
<b>EU-EM_GEN4</b>	<b>Natural gas CI Emergency Generator</b>	<b>2003</b>	<b>FG-EMERG- RICE, FG- FACILITY</b>
<b>EU-ADHESIVE</b>	<b>Loctite RTV adhesive</b>	<b>January 5, 2005</b>	<b>R290, FG- FACILITY</b>
<b>EU- GASDISPENSE</b>	<b>Unleaded Gasoline Dispensing Storage Tank for dynamometers</b>	<b>June 1, 2010</b>	<b>FG- GASDISPENSE</b>

**FLEXIBLE GROUP SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

<b>Flexible Group ID</b>	<b>Flexible Group Description</b>	<b>Associated Emission Unit IDs</b>
<b>FG-DYNOS</b>	<b>Six engine dynamometer test cells burning unleaded gasoline</b>	<b>EU-DYNO1 EU-DYNO2 EU-DYNO3 EU-DYNO4 EU-DYNO5</b>

		<b>EU-DYNO6</b>
<b>FG-HEATERS</b>	<b>Air handling units, heaters, ovens, and hot water boilers; each burning natural gas fuel</b>	<b>NA</b>
<b>FG-HOT_TEST</b>	<b>Two engine test stands; each engine burns natural gas</b>	<b>EU-HOT_TEST1</b> <b>EU-HOT_TEST2</b>
<b>FG-FACILITY</b>	<b>All equipment at the facility. This also includes exempt equipment and equipment covered by other permits.</b>	
<b>FG-EM-RICE</b>	<b>Two diesel fired emergency CI fire pumps and 4 natural gas fired SI emergency generators</b>	<b>EU-FIRE_PUMP1</b> <b>EU-FIRE_PUMP2</b> <b>EU-EM_GEN1</b> <b>EU-EM_GEN2</b> <b>EU-EM-GEN3</b> <b>EU-EM-GEN4</b>
<b>FG-RULE 290</b>	<b>Loctite RTV adhesive application</b>	<b>EU-ADHESIVE</b>
<b>FG-GASDISPENSE</b>	<b>On-site gasoline storage tank for storing gasoline dispensed into test engines operated on dynamometers.</b>	<b>EU-GASDISPENSE</b>

**Pre-Inspection Meeting**

The pre-inspection began with a background summary of the DEP, which was provided by SG, BB, and AM. The summary included DEP’s history, operational characteristics, and product lines, as summarized above.

I asked whether ADC experienced any recent issues or changes facility wide or with any of their air pollution control equipment. DEP staff replied that no issues were noted and I did recognize DEP’s satisfactory track record for past communications with the AQD. I also asked if DEP had any immediate plans to modify their permit and / or a process line or to obtain a new permit / construct a new process. SG replied that DEP may be

receiving a new process in the future and that they would be sure to modify their ROP, etc. as needed.

I also inquired about the DEP's past ROP Certifications, including the past three Semi-Annual and Annual submittals, which all reported zero deviations. Specifically, I inquired how DEP maintains an operation that consistently operates without deviation(s). BB informed me that the air pollution control (APC) components are interlocked with the assembly line. If the APC equipment malfunctions, etc. the assembly line automatically stops operation. I did remind DEP staff to be sure to report deviations from any of their ROP conditions, if any occur in the future.

Together with DEP staff, we reviewed the Special Conditions (SCs) of ROP MI-ROP-N7228-2013. I also requested the records indicated below, under the *Recordkeeping Review* section, for January 2015 through December 2015. Specific points of discussion are documented under this section or under the *Onsite Inspection Narrative* section.

SG confirmed that the Preventative Maintenance Plans (PMPs) (attached with the submitted recordkeeping items and previously submitted to the AQD on December 4, 2014) are used to maintain compliance with EU-DRYMACHINE SC IV.1 and EU-WETMACHINE SCs III.1 and IV. 1 and no changes have been made to either PMP. In addition, SG confirmed that DEP employs a central, computer based system, Total Maintenance System, to track all maintenance related actions and records.

I inquired how the facility monitors gasoline usage in order to demonstrate compliance with the material limits imposed by FG-DYNOS SC II. CG confirmed that each of the six dynamometers is equipped with a flow meter and that gasoline usage is also validated against gasoline supply records. I also requested photographs demonstrating compliance with the stack restrictions, per FG-DYNOS SC VIII, specified for the six stacks associated with the dynamometers. The height of the building was also requested in order to be used as a reference to estimate whether the minimum 32 feet height above ground requirement stipulated by SC VIII is satisfied.

Next, I inquired how the facility monitors natural gas usage in order to demonstrate compliance with the material limit imposed by FG-HEATERS SC II and per SC VI.2. CG confirmed that a facility wide natural gas meter is utilized and that usage is also validated against supplier invoices, etc.

I inquired how the facility monitors natural gas usage in order to demonstrate compliance with the material limit imposed by FG-HOT TEST SC II and per SC VI.2. CG confirmed that each of the two engine test stands is equipped with a natural gas flow meter.

The facility also has onsite six emergency RICE, which are on the roof, and are a part of FG-EMERG-RICE. I requested a photograph to be taken as an example of the non-resettable hour meter required by SC IV.1. SG provided a photograph prior to my departure (attached). DEP staff confirmed that they are following and

complying with the requirements of NESHAP subpart ZZZZ.

I also informed DEP staff that I had no additional comments / questions regarding the facility's 2014 MAERS submittal, which used test data, mass balance, and MAER's and permit-specified emissions factors.

### Onsite Inspection Narrative

#### **EUWETMACHINE**

DEP staff and I then proceeded to conduct an onsite tour to observe the overall facility process (the machining of engine parts and engine assembly) and specific EUs covered by their ROP. I first observed the South Plant Filtration Gallery (a second filtration gallery is located on the North Plant side), which houses coolant filtration equipment that purifies and recirculates the coolant / oil / lubricant utilized by EUWETMACHINE. Thirteen mist eliminators that vent to the outdoors, are used to control emissions from this process. They are spread out across the facility, but are mainly concentrated in both the South and North Plant Filtration Galleries. Several oil mist collectors that vent to the interior of the plant are also utilized by EUWETMACHINE, but are exempt because they do not vent to the outdoors / atmosphere, per Rule 285(I)(vi)(B).

This emission unit entails the wet machining of the major engine components, where coolant is centrally plumbed to enclosed stations where grinding, boring or drilling occurs. The emissions are calculated based upon the number of hours of operation, the airflow exhausted through the system and the emission factor in the permit. The shavings and liquid are collected and transported via underground piping to one of the two Filtration Galleries. Purified coolant is plumbed back to the wet machining stations. The collected coolant sludge is transported offsite for processing, while the metal shavings are collected and sent offsite for recycling, etc.

While in the South Plant Filtration Gallery, I observed oil mist collector 66HAAA233594. The mist collector's hours meter read 398,889.75 hours and I observed set points for the alarm to activate when the second and third stage filtration static pressure is outside of the 3 and 5 and 1.2 and 4.2 inches of water ranges, respectively. In addition, I observed no visible opacity from any interior components or evidence of liquid leaks from this unit or from any of the remaining 12 oil mist collectors that were observed during the inspection.

In addition, all of the observed oil mist collectors operated within the set points indicated on the static pressure gauge, except for one. One mist collector indicated a value of zero on its static pressure gauge because the associated segment of the assembly line was also shutdown. I also observed a document attached to each mist eliminator, used by the facility, to track maintenance, etc. (e.g. dates of last filter bag change out) according to their PMP, per SC III.1, and to track compliance with SC IV.1. Finally, I observed an exhaust stack from each mist eliminator that discharged the exhaust gasses unobstructed vertically upwards, through the roof, to the ambient air, per SC VIII.



## **EUDRYMACHINE**

This emission unit entails the dry machining of the major engine components. The “dry” reference is due to the permit-specified APC equipment required to control the PM, which is generated during the grinding, boring and drilling processes. The actual activity is enclosed in a booth to improve PM capture and to maintain the controlled environmental conditions within the plant. The particulate emissions are captured and ducted to one of three central PM filtration systems. The particulate waste is collected in a 55-gallon drum. The emissions are calculated based upon the number of hours of operation, the airflow exhausted through the system and the emission factor in the permit.

I observed dust collector CD2C-AAA233561, which has an alarm set point above 4 inches of water, which sounds to indicate the need to replace the filter bags. I observed no visible opacity from any interior components or evidence of air leaks from this unit or from any of the remaining 2 dust collectors that were observed during the inspection. In addition, all of the observed dust collectors operated within the set points indicated on the static pressure gauge.

I also observed a document attached to each dust collector, used by the facility, to track maintenance, etc. (e.g. dates of last filter bag change out) according to their PMP and to track compliance with SC IV.1. Finally, I observed an exhaust stack from each dust collector that discharged the exhaust gasses unobstructed vertically upwards, through the roof, to the ambient air, per SC VIII.

## **FG-HOT TEST**

These emission units are used to perform intrinsic diagnostic engine testing beyond what can be accomplished in the engine dynamometers. Natural gas is used for the fuel in these two test stations. I observed both engine test stations, including the gas flow meter installed on each, per SC VI. 2. The gas flow meter on engine test stations 1 and 2 read 2,287 x 100 cubic feet and 2,075 x 100 cubic feet, respectively, at the time of inspection.

## **FG-DYNOS**

These emission units are individual test cells where engines are tested for performance under controlled operating scenarios. There are a total of six engine dynamometers and unleaded gasoline is used to fuel the engines. The emissions are calculated based on the pound per gallon emission factors and the amount of fuel combusted. One dyno station was unoccupied, and while inside, I noted the ductwork that was associated with the stack. Photographs of the six stacks, one stack is required for each dyno (per SC VIII), were requested.

level gas tank alarm.

**FG-RULE 290**

These emission units are robotic adhesive application stations, where depending upon the type of engine, a specific adhesive is applied in very small quantities. I observed these emission units spread out across engine assembly area (central plant location).

**Final Assembly**

The final portion of the inspection involved touring the final engine assembly line, where all of the previously machined components (engine heads, cranks, and blocks) are conveyed to the center of the facility and assembled. Additional components, such as pistons, wire harnesses, switch plates, etc. are also installed to complete the engine.

**Post-Inspection Meeting**

We returned to SG's office and held a brief post-inspection meeting. I informed DEP staff that I did not have any immediate concerns at that time. I also informed the plant manager, Tania Pratinicki Young, that I did not have any immediate compliance concerns. I thanked SG, AM, and BB for their cooperation and assistance, and departed the facility at approximately 12:45 pm.

**Recordkeeping Review**

Below is a summary of the records I requested, as specified by the following permit SCs or records requested to demonstrate compliance with a specific SC for the period of January 2015 through December 2015. Records were requested by COB January 27, 2016. A summary email of my records request was sent to DEP staff on January 21, 2016 (attached).

EU or FG Designation	Record Request per Permit SC(s) for January 2015 through December 2015	Comments	Substantial Compliance (Yes or No) / Comments

<b>EU-DRYMACHINE</b>	<b>IV.1</b>	<b>Requested examples of maintenance records to demonstrate compliance with proper operation of the PM filtration systems.</b>	<b>Yes / Records suggest consistent maintenance activities.</b>
<b>EU-WETMACHINE</b>	<b>IV.1</b>	<b>Requested examples of maintenance records to demonstrate compliance with proper operation of the oil mist collectors.</b>	<b>Y / Records suggest consistent maintenance activities.</b>
<b>FG-DYNOS</b>	<b>II.1</b>	<b>Requested records to demonstrate compliance with the 68 gallon per hour limit.</b>	<b>Y / Highest per hour usage occurred on 2/5/15 at 24.4 gallons per hour.</b>
	<b>VI.2.a. through d.</b>	<b>Requested records to demonstrate compliance with SC I.2, 158.18 tpy CO emission limit per 12-month rolling time period and SC II.2, 101,400 gallon gasoline material limit, per 12-month rolling time period.</b>	<b>Y / 12-month rolling CO emissions of 65.38 tpy and 12-month rolling gasoline usage of 41,907 was reported. Records of monthly CO emissions and monthly gasoline usage, and days of operation were also provided.</b>
<b>FG-HEATERS</b>	<b>VI.3</b>	<b>Requested records to demonstrate compliance with SC II.1, 911 material limit, per 12-month rolling time period.</b>	<b>Y / 12-month rolling natural gas usage of 25.005 million cubic feet was reported.</b>
<b>FG-HOT TEST</b>	<b>VI.3</b>	<b>Requested records to demonstrate compliance with SC II.1, 2 million cubic feet natural gas material limit, per 12-month</b>	<b>Y / 12-month natural gas usage of 0.048 million cubic feet was</b>

		<b>rolling time period.</b>	<b>reported.</b>
<b>FG-FACILITY</b>	<b>VI.2</b>	<b>Requested records to demonstrate compliance with SC I.1, 38.5 tpy PM emission limit, per 12-month rolling time period.</b>	<b>Y / 12-month rolling PM emissions of 9.49 tpy was reported.</b>
	<b>VI.3</b>	<b>Requested records to demonstrate compliance with SC I.2, 63.6 tpy NOx emission limit, per 12-month rolling time period.</b>	<b>Y / 12-month rolling NOx emissions of 7.61 tpy was reported.</b>
	<b>VI.4</b>	<b>Requested records to demonstrate compliance with SC I.3, 196.8 tpy CO emission limit, per 12-month rolling time period.</b>	<b>Y / 12-month rolling CO emissions of 66.44 tpy was reported.</b>
<b>FG-RULE 290</b>	<b>VI.1. a. through e.</b>	<b>Requested records to demonstrate compliance permit to install exemption Rule 290.</b>	<b>Y / Records attached. The highest total monthly VOC emissions occurred in August 2015, 82.608 pounds (non-cariogenic compounds). Total annual VOC emissions: 854.3 pounds.</b>
	<b>VI.2. a.</b>	<b>Requested records to demonstrate compliance permit to install exemption Rule 290.</b>	<b>Y / Records attached.</b>

In addition, I requested 1.) the approximate height of the building (SG confirmed a height of 31' 7" feet) and 2.) that the DEP provide pictures of the two remaining stacks associated with the dynos in order to demonstrate compliance with SC VIII. The photographs provided during the inspection are of three stacks labeled C2R, CRK7L, C2L, and a fourth one without a visible label (attached).

CG provided requested recordkeeping items on January 27, 2016. I followed up by email on January 28, 2016 (attached), to request records to demonstrate compliance with the 68 gallon per hour limit (SC II.1), and records to demonstrate compliance with FG-RULE 290 SC VI.1.c. and VI.2.a. Incorrect stack pictures were provided during the site visit and actual pictures were provided with their January 27, 2016, recordkeeping submittal (attached). SG confirmed on January 27, 2016, by email, that stacks 5 and 6 are 32 feet above ground and provided pictures of stacks 1 through 4 (attached), which also appear to be in compliance with SC FG-DYNOS SC.VII.

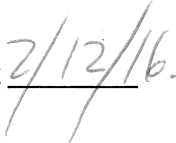
#### Compliance Summary

Based upon the visual observations and the review of the records, DEP appears to be in substantial compliance with the requirements of their ROP. Throughout the entire onsite inspection and subsequent recordkeeping review, the staff of DEP extended their full cooperation. Overall, I observed a well-organized and maintained operation that also exhibited dedicated attention to environmental compliance.

NAME



DATE



SUPERVISOR

