

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

N732024478

FACILITY: MAHLE Industries, Inc.		SRN / ID: N7320
LOCATION: 23030 MAHLE DRIVE., FARMINGTN HLS		DISTRICT: Southeast Michigan
CITY: FARMINGTN HLS		COUNTY: OAKLAND
CONTACT: Annie Kushner , EHS/Quality Coordinator		ACTIVITY DATE: 03/11/2014
STAFF: Sebastian Kallumkal	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Onsite Inspection		
RESOLVED COMPLAINTS:		

On Tuesday, March 11, 2014, I conducted a targeted, unannounced inspection at MAHLE Industries, Inc. located at 23030 Mahle Drive in Farmington Hills, Michigan. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) Rules; and Permit-To-Install Number 295-03C.

I arrived at the facility at about 9:00 AM. I met Ms. Annie Kushner, EHS/Quality Coordinator (Ph: 248-735-3538; Fax: 248-735-3458) and Mr. Hal Johnson, Chief Engineer. I introduced myself and stated the purpose of the visit. During the pre-inspection meeting, Ms. Kushner stated that the facility had added another office building and the facility's address was changed from 23030 Haggerty Road to 23030 Mahle Drive.

Mr. Johnson explained that the facility is planning to install a new process (MaxCat Unit for catalyst aging process) to test for the aging of automotive catalytic convertors. The current industrial process is to run the catalytic convertors on actual automotive for many hours based on customer specifications. This process is time consuming and expensive. The proposed new process burns natural gas and other gases in a small furnace and vents the exhaust through the catalytic convertors. The exhaust from the catalytic convertors and the room air which would be used to cool the process equipment would be vented to the atmosphere through a stack. About 5 catalytic convertors can be tested at the same time with this process. The facility evaluated air permit applicability and it would submit an application to modify its current an air permit to include the new process. They want to modify the current PTI to keep its current emissions and usage limits. I mentioned the new Green House Gasses (GHG) regulations and they agreed to look into those regulations.

Next, Mr. Jeff King, Quality Specialist (Phone: 248 921 2397) joined the meeting. The facility employs about 150 people and it operates 1 Shift (8:00 AM until 5:00 PM), 5 days (Monday through Friday) per week. We further discussed the processes at the facility. MAHLE Industries, Inc. is a Tier One automotive industry supplier and is an R&D Head Quarters for Mahle North America. It is involved in the product development and testing of diesel and gasoline automotive engines. The facility designs and tests pistons, rods, air-intake systems, piston rings, cam shafts and other components of the engines. It uses five dynamometer test cells, under various loading conditions and utilizing various fuel formulations for engine testing (durability, friction, efficiency, etc.) for the development of new engines. It also conducts cause-analysis determinations on the parts after those have been tested.

The facility is not currently using fuels such as H2, LPG or CNG, even though it is permitted to use these fuels. The facility has two eddy current, water cooled (Engine 131 and Engine 135) and three electric dynamometers (Engine 132, Engine 133 & Engine 134). The facility uses Engine 133 (gasoline) and Engine 134 (diesel) to generate electricity (regenerative energy) during engine testing. Engine 135 is used for noise testing and is rarely used. Engine 131 is an eddy current engine and is also equipped with a motor.

MAHLE used to design and test carbon canisters which absorb gasoline vapors before they escape from automotive fuel tanks. This testing consists of saturating the carbon canisters with butane or gasoline vapors and quantitatively measuring the emission of gasoline and butane vapors from them. The facility has halted this operation since December 2012. They told me that the facility may restart the process in the future. Later Mr. King and Ms. Kushner accompanied me for an inspection of the facility.

We visited the five test cells. Four of the dynamometer cells are used to test various engine parts at variable speed and loads for a set period of time. The fifth test cell is used to conduct Noise Vibration Frequency (NVF) testing on engines and is used only a few times per year. The facility also conducts fatigue testing for individual parts.

None of the dynamometers were operating at the time of my inspection. Mr. King explained the testing performed in each cell. Later we visited the canister testing units. All the test equipment is still in the room. They want to keep those available for possible use in the future.

The facility also has a machine shop area which is used to perform minor modifications and alterations to metal parts. The machine shop area included a CNC (computer numeric control) machine; two manual milling machines, lathes, band saws and grinders. The facility also has a soda blaster to clean parts. The exhaust from the blaster is exhausted inside the building.

Following is a discussion of the facility's compliance with the permit requirements.

#### FG-TESTCELLS

**Special Condition I.1:** This condition sets a NOx emission limit of 0.138 lb per gallon of diesel used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.2:** This condition sets a NOx emission limit of 0.15 lb per gallon of liquefied petroleum gas (LPG), compressed natural gas (CNG), hydrogen, or E85/ethanol, or gasoline. AQD has not requested verification of this limit. This emission limit was not verified. The facility is not using LPG, CNG or Hydrogen fuel.

**Special Condition I.3:** This condition sets a NOx emission limit of 24.9 tons per 12-month rolling time period as determined at the end of each calendar month. As of February 2014, the 12-month rolling NOx emissions were 1.3 TPY. The highest emissions since January 2012 were 2.2 TPY in June 2012.

**Special Condition I.4:** This condition sets a CO emission limit of 0.0137 lbs per gallon of diesel used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.5:** This condition sets a CO emission limit of 2.5 lb per gallon of LPG used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.6:** This condition sets a CO emission limit of 2.1 lb per gallon of compressed natural gas (CNG) used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.7:** This condition sets a CO emission limit of 3.12 lb per gallon of E85/ethanol used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.8:** This condition sets a CO emission limit of 3.12 lb per gallon of gasoline used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.9:** This condition sets a CO emission limit of 3.12 lb per gallon of hydrogen used. AQD has not requested verification of this limit. This emission limit was not verified.

**Special Condition I.10:** This condition sets a CO emission limit of 89.9 tons per 12-month rolling time period as determined at the end of each calendar month. As of February 2014, the 12-month rolling CO emissions were 11.8 TPY and this is the highest emissions since January 2012.

**Special Condition II.1:** This condition limits the combined usage of gasoline and E85/ethanol in FG-TESTCELLS to 45,634 gallons per 12-month rolling time period as determined at the end of each month. As of February 2014, the 12-month rolling time period usage of these fuels (gasoline) in FG-TESTCELLS was 7,499 gallons and this is highest usage since January 2012.

**Special Condition II.2:** This condition limits the usage of diesel fuel in FG-TESTCELLS to 297,682 gallon per 12-month rolling time period as determined at the end of each month. As of February 2014, the 12-month rolling time period diesel fuel usage was 10,597 gallons. The highest 12-month usage was 28,424 gallons during July 2012.

**Special Condition II.3:** This condition limits the usage of liquefied petroleum gas (LPG) fuel in FG-TESTCELLS to 4,300 gallon per 12-month rolling time period as determined at the end of each month. The facility has not used any LPG fuel in 2010 and to present.

**Special Condition II.4:** This condition limits the usage of compressed natural gas (CNG) fuel in FG-TESTCELLS to 4,300 gallon per 12-month rolling time period as determined at the end of each month. The facility has not used any CNG fuel in 2010 and to present.

**Special Condition II.5:** This condition limits the usage of hydrogen fuel in FG-TESTCELLS to 4,300 gallon per 12-month rolling time period as determined at the end of each month. The facility has not used any LPG fuel in 2010 and to present.

**Special Condition VI.1** This condition requires the permittee to complete all required calculations in a format acceptable to the AQD District Supervisor by the 30<sup>th</sup> day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting, or notification special condition. The facility appears to be in compliance with this condition.

**Special Condition VI.2:** This condition requires that the permittee keep, in a satisfactory manner, monthly and previous 12-month NOx emission calculation records for FG-TESTCELLS, as required by SC I.3. Also requires that the permittee keeps all records on file for a period of at least five years and make them available to the Department upon request. The facility appears to be in compliance with these requirements based on the records provided.

**Special Condition VI.3:** This condition requires that the permittee keep, in a satisfactory manner, monthly and previous 12-month CO emission calculation records for FG-TESTCELLS, as required by SC I.10. Also requires that the permittee keeps all records on file for a period of at least five years and make them available to the Department upon request. The facility appears to be in compliance with these requirements based on the records provided.

**Special Condition VI.4:** This condition requires that the permittee keep, in a satisfactory manner, monthly gasoline, LPG, CNG, hydrogen, E85/ethanol and diesel use records for FG-TESTCELLS, as required by SCII-1 through SC II-5. Also requires that the permittee keeps all records on file for a period of at least five years and make them available to the Department upon request. The facility appears to be in compliance with these requirements based on the records provided.

### FG-CANISTER

**Special Condition II.1:** This condition limits the gasoline/Stoddard solvent usage for FG-CANISTER to 4,963 pound per 12-month rolling time period as determined at the end of each calendar month. As of July 2011, facility's Stoddard solvent usage is 0 lb based on a 12- month

rolling period. Stoddard solvent usage has been 0 lb since January 2006. The facility has not been using the canister testing using gasoline since 2011.

**Special Condition II.2:** This condition limits the total butane usage for FG-CANISTER to 4,635 pound per 12-month rolling time period as determined at the end of each calendar month. As of December 2012, facility's butane usage was 21.7 lb based on a 12- onth rolling period.

**Special Condition VI.1:** This condition requires the facility to keep, in a satisfactory manner, monthly and previous 12-month gasoline and butane use records for FG-CANISTER. Also further requires that all records shall be kept on file for a period of at least five years and made available to the department upon request. The facility has kept appropriate records while the canister tests were performed.

**Special Condition VIII-1:** This condition requires that the exhaust gases from FG-CANISTER be discharged unobstructed vertically upwards to the ambient air and specifies the stack dimensions. The facility has not been performing the tests since December 2012.

**Conclusion:** Based on this inspection, MAHLE Technology, Inc. appears to be in compliance with the conditions of PTI #295-03C and all other applicable air regulations. The records cited are attached to this report.

NAME S Kallumkal

DATE 3/13/14

SUPERVISOR CJE