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

P041229297

FACILITY: POWERTRAIN INTEGRATION		**SRN / ID:** P0412
LOCATION: 32505 INDUSTRIAL DRIVE, MADISON HTS		**DISTRICT:** Southeast Michigan
CITY: MADISON HTS		**COUNTY:** OAKLAND
CONTACT: Brad Shantry , Operations Manager		**ACTIVITY DATE:** 04/21/2015
STAFF: Erik Gurshaw	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: 2015 FCE Inspection		
RESOLVED COMPLAINTS:		

SRN: P0412
COMPANY: Powertrain Integration
COMPANY ADDRESS: 32505 Industrial Dr.; Madison Heights, MI 48071
PURPOSE OF INSPECTION: Targeted
CONTACT PERSON: Mr. Brad Shantry, Operations Manager (Ph: 248-577-0010; Cell: 248-556-6205; Fax: 248-589-7883; E-mail: bshantry@powertrainintegration.com)
COMPANY PHONE NUMBER: 248-577-0010

INTRODUCTION

On April 21, 2015, AQD staff, Erik Gurshaw, conducted a targeted, unannounced inspection at Powertrain Integration located at 32505 Industrial Dr. in Madison Heights, 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; Permit to Install (PTI) Number 76-13 for 3 dynamometer test cells and a hot test station; and Consent Order (CO) Number 37-2014. The Consent Order reinforces the terms and conditions of the PTI and allows for stipulated penalties if the company is found to be in violation of its PTI.

COMPANY OVERVIEW

Upon arriving at the site, AQD staff introduced themselves and stated the purpose of the visit to Mr. Brad Shantry, Operations Manager. Mr. Shantry indicated that Powertrain Integration operates from Monday through Friday from 6:00 AM until 7:00 PM and occasionally on Saturday when necessary. 35 people are currently employed at the facility. Powertrain Integration is a research, design, and development facility for prototype engines produced by General Motors. Specifically, the facility services and conducts limited dynamometer testing on 6-liter prototype engines and assembles and conducts durability and endurance dynamometer testing on 8-liter prototype engines. Since the AQD's January 8, 2013, inspection, the facility added a hot test cell for the quality assurance testing of 8-liter engines after they have been assembled.

PROCESS DESCRIPTION

The 6-liter engines received by Powertrain Integration are serviced prior to being sent to Freightliner, Inc. The engines are then sold to Freightliner, Inc. for use in medium duty trucks. Freightliner is currently the company's only customer for 6-liter engines, but Mr. Shantry said that other companies are interested in purchasing the engines. The 6-liter engines are serviced by removing each engine's flex plate and installing plugs and caps on all of their openings. Limited dynamometer testing also takes place on the 6-liter engines. Endurance/durability dynamometer testing of the 8-liter engines occurs at the facility in one of two dyno test cells (three dynamometers are in the company's PTI, but only two have been installed). The facility also modifies prototype parts and fixtures for the 8-liter engines in a lathe, a Bridgeport mill machine; a hand brake press, two welding machines, and a bandsaw. All of the metalworking machines vent to the general plant environment and are, therefore, exempt from Rule 201 pursuant Rule 285(l)(vi)(B). The welding machines are exempt from Rule 201pursuant Rule 285(i). The facility develops software for the computer systems of the 8-liter engines

based on the results of the dyno testing. The 8-liter engines either undergo endurance dyno testing until they stop working or are sent to other dyno testing facilities in the area to undergo emissions testing. The dyno test cells and the hot test cell exhaust to a single stack located on the roof of the facility. The hot test cell allows 8-liter engines to be started, idled, and have their RPMs increased without subjecting them to torque. Testing in the hot test cell is accomplished by starting each engine with a starter motor and running it for approximately 1 minute while various engine parameters are being monitored by a computer. The facility is permitted to use compressed natural gas (CNG), liquid petroleum gas (LPG), and unleaded gasoline in the dyno test cells and hot test cell, but it has only used LPG since the issuance of the PTI. Mr. Shantry said that the company intends to begin using unleaded gas in the dynos within the next few months, however. LPG is stored in a 1300 gallon tank located in a tank west of the facility. The LPG storage tank is exempt from Rule 201 pursuant Rule 284(b). The facility also has a "Safety-Kleen Model 30.3 R" parts washer. The parts washer appeared to be properly operated and maintained during the inspection and uses "Safety-Kleen Premium Gold Solvent" cleaning solvent consisting entirely of mineral spirits.

COMPLIANCE DETERMINATION

The inspection indicated the following with respect to compliance with PTI #76-13:

FGTESTCELLS

FGTESTCELLS consists of the two dynamometers and the hot test cell. The company has only burned LPG in the dynos and the hot test cell since the issuance of the PTI so it is in compliance with the condition that only LPG, CNG, and unleaded gasoline be burned in FGTESTCELLS. The company is maintaining records to show that less than 315 gallons of LPG is burned per 8-hour shift and that less than 31.5 gallons out of the 315 allotted gallons per 8-hour shift is being burned uncontrolled in the dynos (without a catalytic converter). Since the company has not used unleaded gasoline since the issuance of the PTI, the 105,000 gallon per 12-month rolling time period and 25,000 gallon per month unleaded gasoline usage limit is not applicable to its current operations. A device to monitor and record the natural gas usage in FGTESTCELLS on a continuous basis has been installed, but the company has not burned CNG in the dynos and hot test cell since the issuance of the PTI.

BTEC, Inc. conducted emission testing on the engines on July 1, 2014, and determined that the formaldehyde emission rate from the dyno test cells burning LPG uncontrolled was 0.0000220 lb/GGE (where GGE represents Gallon Gas Equivalent). This is well below the 0.00593 lb/GGE formaldehyde emission limit established for the uncontrolled burning of LPG in the dynos. Since the facility burns liquid LPG in the dynos, the GGE is equivalent to the amount of gallons of LPG burned in the dynos. If the facility was burning gaseous LPG, however, a conversion factor of 1.23 cubic meters/GGE would have to be used to convert the emission factor to GGE. The burning of uncontrolled LPG represents the worst case formaldehyde emission scenario out of the fuels permitted to be used in the dynos. Therefore, if stack testing indicated that the facility passed its permitted formaldehyde emission limit while burning LPG uncontrolled, it would pass the emission limits for burning CNG, unleaded gasoline, and LPG controlled by default. The company uses the emission factor established during the stack test to calculate formaldehyde emissions from FGTESTCELLS.

The facility provided daily 8-hour shift emission calculations for formaldehyde from June 18, 2014, through March 31, 2015. The 8-hour shift emission records show that formaldehyde emissions from the dynos and hot test cell have been far below the 0.68 lb/8-hour shift limit established in the PTI. The facility is recording daily, monthly, and 12-month rolling LPG fuel usage records as required by its PTI. From June 18, 2014, through March 31, 2015, the company used 25,429 gallons of LPG in the dyno test cells and the hot test cell. Since the company uses liquid LPG in its dynos, no conversion to GGE had to be made in its fuel usage records. A 76 ton per 12-month rolling time period CO emission limit is established for FGTESTCELLS. Records provided by the company indicate that 397.38 pounds of CO was emitted from the dynos and test cells from June 14, 2014, through March 31, 2015. This a well below the 76 ton per 12-month rolling time period CO emission limit established in the PTI. The facility is calculating formaldehyde emissions per each 8-hour shift, monthly, and 12-

month rolling time period. Records from June 14, 2014, through March 31, 2015, indicate that 0.56 pounds of formaldehyde was emitted from FGTESTCELLS. This is well below the 620 pound (0.31 ton) per 12-month rolling formaldehyde emission limit established in the PTI. FGTESTCELLS vent to a single stack on the roof of the building and the stack appears to satisfy the dimensions established in the PTI.

FGFACILITY

In addition to FGTESTCELLS, the company has several natural gas fired heaters which are used to heat the building. Combined CO emissions from the natural gas fired heaters and FGTESTCELLS need to be below 85 tons per 12-month rolling time period for the facility to be in compliance with its permitted facility-wide CO emission limit. CO emission records for the entire facility from June 14, 2014, through March 31, 2105, indicate that 602.3 pounds of CO were emitted from the natural gas fired heaters and FGTESTCELLS. This is well below the 85 tons per 12-month rolling time period emission limit established in the PTI.

CONCLUSION

The facility is in compliance with its PTI and all other applicable air rules and regulations. The following records for FGTESTCELLS from June 14, 2014, through March 31, 2014, are on the CD attached to this report: 8-hour shift formaldehyde and CO emission records; 8-hour shift LPG uncontrolled usage records; 8-hour shift LPG controlled usage records; 8-hour shift fuel usage records in the hot test cell; monthly formaldehyde and CO emission records; 12-month rolling CO emission records; 12-month rolling formaldehyde emission records; and monthly and 12-month rolling fuel usage records.

NAME Erik Gurshaw DATE 5/4/15 SUPERVISOR CJE