

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

N746026694

FACILITY: FEV North America, INC.		SRN / ID: N7460
LOCATION: 4554 GLENMEADE LANE, AUBURN HILLS		DISTRICT: Southeast Michigan
CITY: AUBURN HILLS		COUNTY: OAKLAND
CONTACT: Gregory Furlong , Supervisor, Facility Operations & Environmental Co		ACTIVITY DATE: 08/01/2014
STAFF: Francis Lim	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Inspection		
RESOLVED COMPLAINTS:		

On August 1, 2014, I conducted an inspection at FEV, Inc. located at 4554 Glenmeade Lane, Auburn Hills. 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 conditions of Permit-to-Install No. 92-05D. During the inspection, staff was assisted by Mr. Greg Furlong, Facility Operations Supervisor.

FEV is an internal combustion engine test facility. Main type of test conducted at the site is for fuel and combustion efficiency. Other types of tests include emissions control systems test (dynamic catalyst aging); and component functional and durability testing, including noise, vibration, and harshness (NVH) testing of internal combustion engines. A kiln is used on site to simulate catalyst aging. Most tests are done with the catalytic converter installed in the engine. Clients include the US EPA, automotive companies and the military.

Facility has a Permit-to-Install No. 92-05D for 22 test cells and 13 storage tanks, issued on May 26, 2011. The permit has undergone several revisions. On November 6, 2009, PTI No. 92-05B was issued to add kerosene as a fuel in the engine testing operations. On January 5, 2011 PTI No. 92-05C was issued for an addition of compressed natural gas and liquefied petroleum gas as fuel and for an addition of a 15,000 gallon fuel storage tank. On May 26, 2011, PTI No. 92-05D was issued for modifications to Stack No. 5 (for Test Cell No. 9 and 10), increasing the volumetric flow rate to 30,000 acfm and increasing the stack diameter to 34 in. Mr. Furlong mentioned that the stack needed to be modified since it was creating back pressure on some engines during testing.

PTI No. 92-05D also contains facility wide limits to enable the facility to opt-out of the Renewable Operating Permit requirements.

Facility typically operates 24 hours per day, 5 days per week. Only 15 test cells have been installed, so far. Test Cell no. 15 was installed in April 2012. Mr. Furlong was cautioned that General Condition No. 2 states that the AQD has to authorize any additional test cell installation (even though they are permitted for 22 test cells) since the installation of all test cells have been interrupted for more than 18 months.

The facility is permitted for firing unleaded gasoline, diesel, methanol, ethanol, and natural gas. Currently, facility mostly uses gasoline, diesel, and gasoline/alcohol blends. Engine tests vary from a few hours duration to more than 24 hours. Two engines can be set up at a time, but only one engine can be tested at a time. In case an engine test cannot be completed because of some problems, the facility can test with the other engine that was already set up.

Military vehicles testing are closely monitored by ITAR (International Trade in Arms

Regulation). Mr. Furlong said that staff has to be cleared by ITAR in order to be involved in the testing of ITAR regulated engines. ITAR has strict restrictions regarding the showing of engines to the public, or else the facility will be fined heavily.

There are 13 fuel oil storage tanks, ranging in size from 500 gallons to 15,000 gallons. Some of the smaller tanks are contained in 2-compartment or 3-compartment tanks. Some of the tanks are not currently being used, although they are operational. The tanks are located in the covered tank farm. All tanks have relief valves that vent through the roof. Facility also operates four barrel lines where special fuel in 55-gallon drums is dispensed. The barrel lines are also located at the tank farm. The barrel lines can be used to purge the fuel lines.

During the inspection, staff reviewed fuel usage and emissions calculations. Facility has a spreadsheet of monthly and 12-month rolling material usage and monthly and 12-month rolling controlled and uncontrolled CO emissions. Since CO is the limiting emissions, only CO emissions calculations are required. In calculating emissions for uncontrolled testing, EPA emission factor is used. For controlled testing, Tier II engine test data is used. This test data is expressed as grams of pollutant per gallon of fuel.

There are no fuel meters that measure the fuel usage to individual test cells. There is a counter that monitors daily fuel usage for all test cells. The counters are read every morning. Daily usage is verified using a dipstick. Fuel delivery is logged.

Irrespective of type of testing or size of test engine, a single emission factor per fuel is used for uncontrolled testing and another emission factor per fuel is used for controlled testing.

In reviewing fuel usage data, staff noticed that fuel usage for uncontrolled testing is zero. Mr. Furlong said that only controlled testing has been done since last year. Testing has been done with the catalytic converter (control device) installed.

In estimating usage for compressed natural gas and liquefied petroleum gas, facility proposed to use gasoline gallon equivalence (GGE) instead of cubic meters. Conversion factor is 3.17 m³/GGE for compressed natural gas and 1.23 m³/GGE for liquefied petroleum gas.

PTI No. 92-05D **FGTESTCELLS**

Special Condition I.1. CO emissions limit is 45,600 lbs/day for all test cells. Staff reviewed 2013 and 2014 emissions records (see attached) and verified that CO daily emissions are well below limit. See attached records. NOTE: Monthly CO emissions are actually below the daily emissions limit.

Special Condition II.1. Usage limit for ethanol, methanol/gasoline blend and ethanol/gasoline blend combined usage for all uncontrolled test cells is 568 gallons per calendar day. For 2013 and until June 2014, facility has not operated the test cells uncontrolled. Usage limit for ethanol, methanol/gasoline blend and ethanol/gasoline blend combined usage for all controlled test cells is 2,842 gallons per calendar day. Staff conducted random check of records and verified limits were not exceeded. See attached daily fuel use summary record for June 2014.

Special Condition II.2. Usage limit for diesel, biodiesel, synthetic diesel, and kerosene combined usage for all uncontrolled test cells is 1,920 gallons per calendar day. For 2013 and until June 2014, facility has not operated the test cells uncontrolled. Usage limit for diesel, biodiesel, synthetic diesel, and kerosene combined usage limit for all controlled test cells is

6,817 gallons per calendar day. Staff conducted random check of records for 2013 and until June 2014 and verified limits were not exceeded. See attached daily fuel use summary record for June 2014.

Special Condition IV.1. Catalytic oxidizer is operated in a satisfactory manner in the controlled test cells.

Special Condition IV.2. Catalytic converter meets USEPA's Tier II vehicle emissions standards.

Special Condition VI.1. Required calculations are completed by the 15th day of the calendar month, for the previous calendar month. Facility keeps and maintains excellent records.

Special Condition VI.2. Fuel use monitoring plan was submitted to AQD on December 1, 2009.

Special Condition VI.3. Daily CO emissions calculations are based on calendar day fuel records.

Special Condition VI.4. Facility keeps calendar day fuel use records for uncontrolled and controlled testing in a satisfactory manner.

Special Condition VIII. Stack dimensions appear to be as specified in permit.

FGFACILITY

Special Condition I.1. For the entire facility, CO emissions limit is 89.9 tons per year, based on a rolling 12-month period. CO emissions are well below limit. For the period ending in June 2013, CO emissions are 10.64 tons per year based on a rolling 12-month period. For the period ending June 2013; CO emissions were 7.84 tons per year based on a rolling 12-month period.

Special Condition II.1. Usage limit for diesel, biodiesel, kerosene and synthetic diesel combined usage for all controlled and uncontrolled test cells is 516,000 gallons per 12-month rolling time period. Usage limit for diesel, biodiesel, kerosene and synthetic diesel combined usage for all uncontrolled test cells is 140,000 of the allowed 516,000 gallons per 12-month rolling time period. Facility has not operated the test cells in an uncontrolled manner in 2013 and until June 2014. Staff conducted random check of fuel use records and verified limits were not exceeded. See attached fuel records for the 12-month period ending in June 2013 and June 2014. **NOTE:** Uncontrolled diesel, biodiesel, kerosene, and synthetic diesel fuel usage is limited to 140,000 gallons to keep NOx emissions less than 90% of significance level.

Special Condition II.2. Usage limit for unleaded gasoline, methanol, ethanol, gasoline/methanol blend, compressed natural gas and liquefied petroleum gas usage for uncontrolled test cells is 10,000 gallons per 12-month rolling time period. Facility has not operated the test cells in an uncontrolled manner in 2013 and until June 2014. See attached records.

Special Condition VI.1. Required calculations are completed by the 15th day of the calendar month, for the previous calendar month. Facility keeps excellent records.

Special condition VI.2. Monthly and 12-month rolling CO emission calculation records are

kept in a satisfactory manner.

Special Condition VI.3. Monthly and 12-month rolling controlled and uncontrolled fuel use records are kept in a satisfactory manner.

PTI No. 15-08 and PTI No. 230-08

Facility was issued PTI No. 15-08 on February 5, 2008 for two large bore diesel engine test cells to be located at 4130 Luella Lane, Auburn Hills. FEV had some problems working out the details regarding the acquisition of the site. So FEV applied for another permit also for two large bore diesel engine test cells to be located at another site, on North Atlantic Drive. This permit, PTI No. 230-08 was issued on September 19, 2008.

Since the equipment covered by these two permits were never installed and it has been more than six years since the permits were issued, these two permits were requested to be voided.

NAME J. A. V. DATE 09-23-14 SUPERVISOR CTE