

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION**

May 9, 2011

**PERMIT TO INSTALL**  
92-05D

**ISSUED TO**  
FEV, Inc.

**LOCATED AT**  
North American Technical Center  
4554 Glenmeade Lane  
Auburn Hills, Michigan

**IN THE COUNTY OF**  
Oakland

**STATE REGISTRATION NUMBER**  
N7460

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:

**April 26, 2011**

DATE PERMIT TO INSTALL APPROVED:

SIGNATURE:

DATE PERMIT VOIDED:

SIGNATURE:

DATE PERMIT REVOKED:

SIGNATURE:

## PERMIT TO INSTALL

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**Common Abbreviations / Acronyms**

<b>Common Acronyms</b>		<b>Pollutant/Measurement Abbreviations</b>	
AQD	Air Quality Division	BTU	British Thermal Unit
ANSI	American National Standards Institute	°C	Degrees Celsius
BACT	Best Available Control Technology	CO	Carbon Monoxide
CAA	Clean Air Act	dscf	Dry standard cubic foot
CEM	Continuous Emission Monitoring	dscm	Dry standard cubic meter
CFR	Code of Federal Regulations	°F	Degrees Fahrenheit
COM	Continuous Opacity Monitoring	gr	Grains
EPA	Environmental Protection Agency	Hg	Mercury
EU	Emission Unit	hr	Hour
FG	Flexible Group	H <sub>2</sub> S	Hydrogen Sulfide
GACS	Gallon of Applied Coating Solids	hp	Horsepower
GC	General Condition	lb	Pound
HAP	Hazardous Air Pollutant	m	Meter
HVLP	High Volume Low Pressure *	mg	Milligram
ID	Identification	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	NO <sub>x</sub>	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality (Department)	PM	Particulate Matter
MIOSHA	Michigan Occupational Safety & Health Administration	PM10	PM less than or equal to 10 microns diameter
MSDS	Material Safety Data Sheet	PM2.5	PM less than or equal 2.5 microns diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	pph	Pound per hour
NSPS	New Source Performance Standards	ppm	Parts per million
NSR	New Source Review	ppmv	Parts per million by volume
PS	Performance Specification	ppmw	Parts per million by weight
PSD	Prevention of Significant Deterioration	psia	Pounds per square inch absolute
PTE	Permanent Total Enclosure	psig	Pounds per square inch gauge
PTI	Permit to Install	scf	Standard cubic feet
RACT	Reasonably Available Control Technology	sec	Seconds
ROP	Renewable Operating Permit	SO <sub>2</sub>	Sulfur Dioxide
SC	Special Condition	THC	Total Hydrocarbons
SCR	Selective Catalytic Reduction	tpy	Tons per year
SRN	State Registration Number	µg	Microgram
TAC	Toxic Air Contaminant	VOC	Volatile Organic Compounds
TEQ	Toxicity Equivalence Quotient	yr	Year
VE	Visible Emissions		

\* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

### GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
  - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
  - b) A visible emission limit specified by an applicable federal new source performance standard.
  - c) A visible emission limit specified as a condition of this Permit to Install.
  
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**
  
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

**SPECIAL CONDITIONS**

**EMISSION UNIT SUMMARY TABLE**

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

<b>Emission Unit ID</b>	<b>Emission Unit Description (Process Equipment &amp; Control Devices)</b>	<b>Installation Date / Modification Date</b>	<b>Flexible Group ID</b>
EU-TANK1	Fuel storage tank with a capacity of 5,200 gallons	NA/September 2009/ December 2010	NA
EU-TANK2	Fuel storage tank with a capacity of 1,000 gallons	NA/September 2009/ December 2010	NA
EU-TANK3	Fuel storage tank with a capacity of 500 gallons	NA/September 2009/ December 2010	NA
EU-TANK4	Fuel storage tank with a capacity of 500 gallons	NA/September 2009/ December 2010	NA
EU-TANK5	Fuel storage tank with a capacity of 3,000 gallons	NA/September 2009/ December 2010	NA
EU-TANK6	Fuel storage tank with a capacity of 3,000 gallons	NA/September 2009/ December 2010	NA
EU-TANK7	Fuel storage tank with a capacity of 1,000 gallons	NA/December 2010	NA
EU-TANK8	Fuel storage tank with a capacity of 1,000 gallons	NA/December 2010	NA
EU-TANK9	Fuel storage tank with a capacity of 1,000 gallons	NA/ December 2010	NA
EU-TANK10	Fuel storage tank with a capacity of 1,500 gallons	NA/ December 2010	NA
EU-TANK11	Fuel storage tank with a capacity of 1,500 gallons	NA/ December 2010	NA
EU-TANK12	Fuel storage tank with a capacity of 15,000 gallons	NA/ December 2010	NA
EU-TANK13	Fuel storage tank with a capacity of 15,000 gallons	December 2010/NA	NA
EU-BARRELLINE7	Barrel line for use with fuel in 55-gallons drums	NA/ December 2010	NA
EU-BARRELLINE8	Barrel line for use with fuel in 55-gallons drums	NA/ December 2010	NA
EU-BARRELLINE9	Barrel line for use with fuel in 55-gallons drums	NA/ December 2010	NA
EU-BARRELLINE10	Barrel line for use with fuel in 55-gallons drums	NA/ December 2010	NA
EU-TEST-CELL1 through EU-TEST-CELL-22	22 dynamometer test cells firing unleaded gasoline, diesel, biodiesel, methanol, ethanol, synthetic diesel, kerosene, gasoline/methanol blend, gasoline/ethanol blend, compressed natural gas (CNG), and liquefied petroleum gas (LPG) operated both controlled and uncontrolled	NA/ December 2010	NA

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.

### 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>
FG-TESTCELLS	22 dynamometer test cells firing unleaded gasoline, gasoline/ethanol, gasoline/methanol, diesel, methanol, ethanol, kerosene, CNG, and LPG, operated both controlled and uncontrolled.	EU-TEST-CELL1 through EU-TEST-CELL22
FG-FACILITY	All equipment at the stationary source including equipment covered by other permits, grand-fathered equipment and exempt equipment.	NA

**The following conditions apply to: FG-TESTCELLS**

**DESCRIPTION:** 22 dynamometer test cells firing unleaded gasoline, gasoline/ethanol blend, gasoline/methanol blend, diesel, biodiesel, synthetic diesel, methanol, ethanol, kerosene, CNG, and LPG operated both controlled and uncontrolled.

**Emission Units:** EU-TEST-CELL1 through EU-TESTCELL-22

**POLLUTION CONTROL EQUIPMENT:** Catalytic converters or equivalent

**I. EMISSION LIMITS**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Testing / Monitoring Method</b>	<b>Underlying Applicable Requirements</b>
1. CO	45,600 lb/day	Calendar Day	FG-TESTCELLS	SC VI.2 - 4, See Emission Factors below	205(1)(a)(ii)(C), R 336.2804, 40 CFR 52.21 (d)
Emission factors for controlled CO emissions (lb per gallon): Unleaded Gasoline – 0.19 Diesel – 0.12 Biodiesel – 0.12 Methanol – 0.08 Ethanol – 0.11 Synthetic diesel – 0.12 Kerosene – 0.12 Gasoline/ethanol blend – 0.19 Gasoline/methanol blend – 0.19 CNG – 0.09* LPG – 0.04*			Emission factors for uncontrolled CO emissions. (lb per gallon): Unleaded Gasoline – 7.94 Diesel – 0.13 Biodiesel – 0.13 Methanol – 7.50 Ethanol – 7.50 Synthetic diesel – 0.13 Kerosene – 0.13 Gasoline/ethanol blend – 8.15 Gasoline/methanol blend – 8.15 CNG – 0.44* LPG – 0.21*		
* - The emission factors for CNG and LPG were converted to gasoline gallon equivalence (GGE) by using the lb/m <sup>3</sup> emission factors and GGE conversion factors of 3.17 m <sup>3</sup> /GGE for CNG and 1.23 m <sup>3</sup> /GGE for LPG. The emission factors in lb/m <sup>3</sup> are as follows: CNG Controlled – 0.028 lb/m <sup>3</sup> , LPG Controlled – 0.034 lb/m <sup>3</sup> , CNG Uncontrolled – 0.14 lb/m <sup>3</sup> , and LPG Uncontrolled – 0.17 lb/m <sup>3</sup> .					

**II. MATERIAL LIMITS**

1. The ethanol, methanol/gasoline blend, and ethanol/gasoline blend, usage combined for FG-TESTCELLS when operating uncontrolled shall not exceed 568 gallons per calendar day or the ethanol, methanol/gasoline blend, and ethanol/gasoline blend, usage combined for FG-TESTCELLS when operating with control shall not exceed 2,842 gallons per calendar day. **(R 336.1224, R 336.1225)**
2. The diesel, biodiesel, synthetic diesel, and kerosene usage combined for FG-TESTCELLS when operating uncontrolled shall not exceed 1,920 gallons per calendar day or the diesel, biodiesel, synthetic diesel, and kerosene usage combined for FG-TESTCELLS when operating with control shall not exceed 6,817 gallons per calendar day. **(R 336.1224, R 336.1225)**

**III. PROCESS/OPERATIONAL RESTRICTIONS**

NA

#### **IV. DESIGN/EQUIPMENT PARAMETERS**

1. The permittee shall not operate FG-TESTCELLS in a controlled manner unless the catalytic converter or equivalent is installed, maintained, and operated in a satisfactory manner on the controlled engines. **(R 336.1205(3), R 336.1224, R 336.1225, R 336.1910, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**
2. The catalytic converter or equivalent shall meet the U.S. EPA's Tier II vehicle emission standards for FG-TESTCELLS. **(R 336.1205(3), R 336.1224, R 336.1225, R 336.1901, R 336.1910, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a)(ii)(C), R 336.2804, 40 CFR 52.21 (d))**
2. The permittee shall submit to the AQD District Supervisor, for review and approval, a fuel use monitoring plan for FG-TESTCELLS. The permittee shall not operate FG-TESTCELLS unless the approved fuel use monitoring plan, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. **(R 336.1205(3), R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**
3. The daily CO emission rate shall be calculated based upon calendar day records for FG-TESTCELLS. The permittee shall use the fuel specific emission factors listed in SC I.1 to calculate the CO emissions for FG-TESTCELLS. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(1)(a)(ii)(C), R 336.2804, 40 CFR 52.21 (d))**
4. The permittee shall keep, in a satisfactory manner, calendar day controlled and uncontrolled fuel use records for each fuel separately in FG-TESTCELLS. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3), R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**

#### **VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTIONS**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/ Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV-01	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
2. SV-02	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
3. SV-03	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
4. SV-04	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
5. SV-05	34	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
6. SV-06	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
7. SV-07	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
8. SV-08	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
9. SV-09	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
10. SV-10	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
11. SV-11	20	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)

**IX. OTHER REQUIREMENTS**

NA

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

**The following conditions apply to: FGFACILITY**

**POLLUTION CONTROL EQUIPMENT:** Catalytic converter or equivalent

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	89.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3), R 336.2804, 40 CFR 52.21 (d)
Emission factors for controlled CO emissions (lb per gallon): Unleaded Gasoline – 0.19 Diesel – 0.12 Biodiesel – 0.12 Methanol – 0.08 Ethanol – 0.11 Synthetic diesel – 0.12 Kerosene – 0.12 Gasoline/ethanol blend – 0.19 Gasoline/methanol blend – 0.19 CNG – 0.09* LPG – 0.04*			Emission factors for uncontrolled CO emissions. (lb per gallon): Unleaded Gasoline – 7.94 Diesel – 0.13 Biodiesel – 0.13 Methanol – 7.50 Ethanol – 7.50 Synthetic diesel – 0.13 Kerosene – 0.13 Gasoline/ethanol blend – 8.15 Gasoline/methanol blend – 8.15 CNG – 0.44* LPG – 0.21*		
* - The emission factors for CNG and LPG were converted to gasoline gallon equivalence (GGE) by using the lb/m <sup>3</sup> emission factors and GGE conversion factors of 3.17 m <sup>3</sup> /GGE for CNG and 1.23 m <sup>3</sup> /GGE for LPG. The emission factors in lb/m <sup>3</sup> are as follows: CNG Controlled – 0.028 lb/m <sup>3</sup> , LPG Controlled – 0.034 lb/m <sup>3</sup> , CNG Uncontrolled – 0.14 lb/m <sup>3</sup> , and LPG Uncontrolled – 0.17 lb/m <sup>3</sup> .					

**II. MATERIAL LIMITS**

1. The permitted controlled fuels and uncontrolled diesel, biodiesel, kerosene, and synthetic diesel usage combined for FGFACILITY shall not exceed 516,000 gallons per 12-month rolling time period as determined at the end of each calendar month. The permitted uncontrolled diesel, biodiesel, kerosene, and synthetic diesel usage combined for FGFACILITY shall not exceed 140,000 gallons of the allowed 516,000 gallons per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(3), R 336.1225)**
2. The unleaded gasoline, methanol, ethanol, gasoline/methanol blend, gasoline/ethanol blend, CNG, and LPG usage combined for FGFACILITY when operating uncontrolled shall not exceed 10,000 gallons per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(3), R 336.1225)**

**III. PROCESS/OPERATIONAL RESTRICTIONS**

NA

**IV. DESIGN/EQUIPMENT PARAMETERS**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 15<sup>th</sup> day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(3))**
2. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling CO emission calculation records for FG-FACILITY. The permittee shall use the fuel specific emission factors listed in SC I.1 to calculate the CO emissions for FG-FACILITY. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3))**
3. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling controlled and uncontrolled fuel use records for FGFACILITY. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3), R 336.1225)**

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTIONS**

NA

**IX. OTHER REQUIREMENTS**

NA

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).