

EMISSIONS ACTIVITY CATEGORY FORM STATIONARY INTERNAL COMBUSTION ENGINE

This form is to be completed for each stationary reciprocating or gas turbine engine. State/Federal regulations which may apply to stationary internal combustion engines are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

New Permit Renewal or Modification of Air Permit Number (e.g. P001) _____

2. Maximum Operating Schedule: _____ hours per day; _____ days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. _____

3. Engine type: Gas turbine Reciprocating

4. Purpose of engine: Driving pump or compressor Driving electrical generator

5. Normal use of engine: Emergency only Non-emergency

6. Engine Manufacturer: _____ Model No: _____

7. Engine exhaust configuration:
(for turbines only)

simple cycle (no heat recovery)
 regenerative cycle (heat recovery to preheat combustion air)
 cogeneration cycle (heat recovered to produce steam)
 combined cycle (heat recovered to produce steam which drives generator)

8. Input capacities (million BTU/hr): Rated: _____ Maximum: _____
Normal: _____

Supplemental burner (duct burner) input capacity, if equipped (million BTU/hr):

Rated: _____ Maximum: _____ Normal: _____

9. Output capacities (Horsepower): Rated: _____ Maximum: _____ Normal: _____

(Kilowatts): Rated: _____ Maximum: _____ Normal: _____

(lbs steam/hr)*: Rated: _____ Maximum: _____ Normal: _____

**required for cogeneration or combined cycle units only*

10. Type of ignition: non-spark (diesel) spark

11. Type of fuel fired (check all that apply):

- single fuel
- dual fuel
- No. 2 oil, low-sulfur
- No. 2 oil, high-sulfur
- gasoline
- other, explain _____
- natural gas
- diesel
- propane
- landfill gas
- digester gas

12. Complete the following table for all fuels identified in question 11 that are used for the engine and any supplemental (duct) burners, if equipped:

Fuel	HeatContent (BTU/unit)	wt.%	wt.%	Fuel Usage		
		Ash	Sulfur	Estimated Maximum Per Year	Normal Per Hour	Max. Per Hour
Nat. gas	BTU/cu ft		gr/scf	cu ft	cu ft	cu ft
No. 2 oil	BTU/gal			gal	gal	gal
Gasoline	BTU/gal			gal	gal	gal
Diesel	BTU/gal			gal	gal	gal
Landfill/digester gas	BTU/cu ft		ppm	cu ft	cu ft	cu ft
Other (show units)						
<i>List supplemental (duct) burner fuel and information below (show units):</i>						

13. Type of combustion cycle (check all that apply):

- 2-stroke
- rich-burn
- carbureted
- other, explain _____
- 4-stroke
- lean-burn
- fuel injected

14. Emissions control techniques (check all that apply):

- prestratified charge
- catalytic oxidation (CO)
- air/fuel ratio
- 2-stage rich/lean combustion
- water/steam injection
- other, explain _____
- nonselective catalytic reduction (NSCR)
- selective catalytic reduction (SCR)
- injection timing retard (ITR)
- 2-stage lean/lean combustion
- preignition chamber combustion (PCC)

For each emissions control technique checked above, explain what pollutants are controlled by each technique: _____

INSTRUCTIONS FOR COMPLETION OF THE EMISSIONS ACTIVITY CATEGORY FORM FOR STATIONARY INTERNAL COMBUSTION ENGINES

GENERAL INSTRUCTIONS:

Provide complete responses to all applicable questions. If an item does not apply to the emissions unit, write in "Not Applicable" or "NA." If the answer is not known, write in "Not Known" or "NK." If you need assistance in understanding a question after reading the instructions below, contact your Ohio EPA District Office or Local Air Agency for assistance. Submittal of an incomplete application will delay application review and processing. In addition, the application may be returned as incomplete if all applicable questions are not answered appropriately.

APPLICABLE REGULATIONS

The following State and Federal Regulations may be applicable to stationary internal combustion engines. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

Federal: 40 CFR 60, (NSPS) Subpart A (General Provisions), Subpart GG (Stationary Gas Turbines), Subparts Da, Db, and Dc (Steam Generating Units)
40 CFR 63, (NESHAPS/MACT) Subpart A (General Provisions), Subpart YYYY (Combustion Turbines), Subpart DDDDD (Steam Generators), Subpart ZZZZ (Reciprocating Internal Combustion Engines).

State: OAC rule 3745-31-02 (Permit to Install)
OAC rule 3745-35-02 (Permit to Operate)
OAC rule 3745-17-11(B)(4) - Particulate emission limits
OAC rule 3745-18-06(F) - Sulfur dioxide emission limits

If you would like a copy of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website at <http://www.epa.state.oh.us/dapc/regs/regs.html>. Federal regulations may be viewed and downloaded at <http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.htm>.

CALCULATING EMISSIONS:

Manufacturers of some types of emissions units and most types of control equipment develop emissions estimates or have stack test data which you can request. Stack testing of the emissions may be done. Emissions unit sampling test data may be either for this emissions unit or a similar one located at the facility or elsewhere. You may develop your own emission factors by mass balance or other knowledge of your process, if you can quantify inputs and outputs accurately. You may be able to do this on a small scale or over a short period of time, if it is not practical during regular production. If you have control equipment, you may be able to quantify the amount of pollutants collected over a known time period or production amount. Any emission factor calculation should include a reference to the origin of the emission factor or control efficiency.

USEPA has developed emission factors for many types of emissions units and published them in a document titled "Compilation of Air Pollutant Emission Factors, AP-42", available from the following website: <http://www.epa.gov/ttn/chief/ap42/index.html> See Chapters 3.1, 3.2, 3.3 and 3.4 depending on the type of engine.

SPECIFIC INSTRUCTIONS:

1. Indicate whether this is an application for a new permit or an application for permit renewal. If applying for a permit renewal, provide the 4-character OEPA emissions unit identification number.
2. Provide the maximum number of hours per day and days per year the stationary internal combustion engine is expected to operate. The following are examples of why the maximum number of hours per day may be less than 24 or the maximum number of days per year may be less than 365 (this list is not all-inclusive):
 - The facility can only operate during daylight hours.
 - The process can only operate within a certain range of ambient temperatures.
 - The process is limited by another operation (i.e., a bottleneck).
5. Emergency use engines normally operate less than 500 hours per year. "Non-emergency" denotes the engine can be used at any time. OAC rule 3745-31-03 contains permit exemption provisions for emergency use generators and other small internal combustion engines.
7. For turbines only. Describe method of recovering exhaust heat, if applicable.
8. Provide the manufacturer's rated, maximum and normal heat input capacities in million BTU (British Thermal Unit) per hour. Also specify the input capacities of any supplemental (duct) burners according to the manufacturer's specifications. For turbines, the maximum heat input capacity should be determined at an ambient temperature of no greater than 0 degrees Fahrenheit.
9. Provide the output capacities in units appropriate for the application, i.e., Horsepower for pumps and compressors, Kilowatts for generators, etc. Note steam output is required for turbine cogeneration or combined cycle units only.
11. Check all types of fuel fired in the internal combustion engine and any supplemental (duct) burners. Be sure to indicate whether the unit is single or dual fuel.
12. Specify the heat content and %Ash and % Sulfur (if applicable) for all fuels used in the engine and supplemental (duct) burners. Provide estimated fuel consumption quantities based on normal and maximum operation.
13. Check the type of combustion cycle design.
14. Identify any emission control techniques employed in the engine application and indicate the pollutant or pollutants controlled by that technique.