INSTRUCTIONS FOR COMPLETION OF THE EMISSIONS ACTIVITY CATEGORY FORM FOR INTERNAL COMBUSTION ENGINES OR GAS/OIL TURBINES (Form 3862)

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." Please note that it is important to provide as much information as possible to determine state and federal rule applicability and compliance requirements. 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 Part 60, (NSPS):
- Subpart A (General Provisions),
- Subparts GG and KKKK (Stationary Gas Turbines),
- Subparts Da, Db, and Dc (Steam Generating Units)
- Subparts IIII and JJJJ (Stationary Internal Combustion Engines)

40 CFR Part 63, (NESHAP/MACT):
- Subpart A (General Provisions)
- Subpart YYYY (Combustion Turbines)
- Subpart DDDDD and JJJJJJ (Steam Generators)
- Subpart ZZZZ (Reciprocating Internal Combustion Engines).

State:
- OAC rule 3745-31-02 (Permit to Install)
- OAC rule 3745-17-11(B)(4) and (5) - Particulate emission limits
- OAC rule 3745-18-06(F) - Sulfur dioxide emission limits
- OAC rule 3745-110- (NOx RACT)

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://epa.ohio.gov/dapc/DAPCrules.aspx Federal regulations may be viewed and downloaded at http://www.ecfr.gov/cgi-bin/text-idx?&c=ecfr&tpl=/ecfrbrowse/Title40/40tab_02.tpl

CALCULATING EMISSIONS:

Manufacturers of some types of engines and most types of control equipment develop emissions estimates or have stack test data that you can request. Stack testing of the emissions may also be completed by the applicant. Emissions test data may either be for the specific unit or a similar unit located at the facility or elsewhere. You may develop your own emissions 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 emissions factor calculation should include a reference to the origin of the emissions factor or control efficiency.

U.S. EPA has developed emissions factors for many types of air pollution sources 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 Sections 3.1 through 3.4 for information and data based on specific engine categories.

Engine certification standards and manufacturer technical data sheets often list emissions rates in units of grams/brakehorsepower-hour (g/bhp-hr) or grams/kilowatt-hour (g/kW-hr). The following conversions can be used to provide the emissions in the pounds/hour and tons/year format required in Section II of the PTI/PTIO application:

(g/bhp-hr)(hp)(1 lb/453.6 g) = lbs/hr

(g/kW-hr)/1.341 = g/bhp-hr

SPECIFIC INSTRUCTIONS:

1. 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).

4. 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. Please note that certain federal regulations contain additional criteria for qualification as an emergency engine.

5. Specify the name of the engine manufacturer, model number, model year, and engine serial number.

   The date of order from the manufacturer means the date that your facility entered into a binding contract for on-site installation.

   Specify the installation date of the engine. If the engine has been purchased used, the installation date listed should be the date the engine was first installed at any location by any owner or operator, if available.

   Certain engines comply with federal emissions standards via manufacturer’s certification. Please indicate if the engine is certified to meet federal emissions standards. If the answer is “Yes”, please specify the federal standard that is being met (e.g. Paragraph (d)(1) of 40 CFR Part 60.4205, Table 1 of 40 CFR 1039.1, Tier 2 field testing standards in 40 CFR 1048.101(c).)

7. For reciprocating engines only. Specify the volumetric displacement of the engine in units of **liters *per cylinder*** for compression ignition engines, or in units of **cubic centimeters** for spark ignition engines**.**

8. For turbines only. Describe method for recovering exhaust heat, if applicable.

9. 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 zero degrees Fahrenheit.

10. 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 in the appropriate unit, and ash and sulfur contents, in percent by weight (if) for all fuels used in the engine and supplemental (duct) burners. Provide estimated fuel consumption quantities based on normal and maximum operation.

15. For any engine that has been modified or reconstructed, describe the extent of the modification or reconstruction and specify the total fixed capital cost of the new and refurbished components.

FOR OHIO EPA USE
FACILITY ID: _____
EU ID: _____ Application #:_____

EMISSIONS ACTIVITY CATEGORY FORM
INTERNAL COMBUSTION ENGINES OR TURBINES

This form is to be completed for each reciprocating engines or turbines. State/Federal regulations which may apply to 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. 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. _____

2. Engine type: ☐ Turbine ☐ Reciprocating

3. Purpose of engine: ☐ Driving pump or compressor ☐ Driving electrical generator

4. Normal use of engine: ☐ Emergency only ☐ Non-emergency

5. Engine Manufacturer: _____ Model No: _____

   Model Year: _____ Serial Number: _____

   Date engine was ordered from the manufacturer: _____

   Date engine was first installed at any location by any operator/facility: _____

   Has the manufacturer certified the engine to meet any emissions standards? ☐No ☐Yes

   If yes, which Part and paragraph and/or Table and/or Tier has been met? _____

   Will the engine be operated under the conditions the manufacturer has identified as necessary to meet these standards? ☐No ☐Yes

6. Type of ignition: ☐ compression (diesel) ☐ spark

7. Displacement (for reciprocating engines only):

   _____(Liters/cylinder, for compression ignition)

   _____(cubic centimeters, for spark ignition)

8. 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)*

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

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

Rated:_____ Maximum _____ Normal _____

10. Output capacities (Horsepower): Rated: _____ Maximum _____Normal _____

(Kilowatts): Rated: _____ Maximum _____ Normal _____

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

**(for cogeneration or combined cycle units only)*

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

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

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	Heat Content (BTU/unit)	wt.% Ash	wt.% Sulfur	Fuel Usage		
				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)						
List supplemental (duct) burner fuel and information below (show units):						

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

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

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

☐ prestratified charge ☐ nonselective catalytic reduction (NSCR) ☐ water/steam injection
☐ air/fuel ratio ☐ selective catalytic reduction (SCR) ☐ injection timing retard
☐ catalytic oxidation ☐ 2-stage rich/lean combustion ☐ 2-stage lean/lean combustion
☐ preignition chamber combustion (PCC) ☐ diesel particulate filter
☐ other, explain_____

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

_____

_____

15. Has the engine been modified or reconstructed since its manufacture date: ☐ No ☐ Yes
If Yes, explain:

_____

_____

_____