



Massachusetts Department of Environmental Protection

Bureau of Waste Prevention – Air Quality

BWP AQ Selective Catalytic Reduction

Submit with Form CPA-FUEL and/or CPA-PROCESS whenever construction, substantial reconstruction or alteration of a Selection Catalytic Reduction system is proposed unless exempt per 310 CMR 7.02(2)(b).

Transmittal Number _____

Facility ID (if known) _____

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Inlet Operating Conditions

1. Complete the table below with information on inlet gas flow(s).

Table 1a			
Emission Unit No(s). Being Controlled	Average Inlet Gas Flow (Actual Cubic Feet Per Minute)	Inlet Temperature (Degrees Fahrenheit (°F))	Moisture Content in the Inlet (Pounds Per Minute)
Totals:			

2. Which metals/elements are present in gas stream?

<input type="checkbox"/> Potassium	<input type="checkbox"/> Arsenic	<input type="checkbox"/> Lead
<input type="checkbox"/> Zinc	<input type="checkbox"/> Sodium	<input type="checkbox"/> Phosphorus
3. Are there any other catalyst binding agents present in the gas stream?

<input type="checkbox"/> Yes – Describe Below	<input type="checkbox"/> No
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4. Complete the table below to provide the maximum oxides of nitrogen (NOx) emissions:

Table 2		
Emission Unit No(s). Being Controlled	Inlet NOx (Pounds Per Hour)	Inlet NOx (Parts Per Million by Volume, Dry Basis)

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B. Specifications

1. Manufacturer of Selective Catalytic Reduction (SCR) system: _____
Company

2. Model Number (or Equivalent): _____
Number

3. Location of SCR unit relative to other pieces of equipment: High Dust Low Dust Tail End

4. Information about the catalyst used:
a. Description of catalyst: _____
Description

b. Operating temperature range of catalyst: from _____ to _____
Degrees Fahrenheit (°F) Degrees Fahrenheit (°F)

c. Pressure drop across the catalyst: _____
Inches of Water

5a. Number of catalyst layers the system can accommodate: _____
Number

5b. Number of catalyst layers that will be installed: _____
Number

6. Does the SCR system employ a guard bed for catalyst protection? Yes No*

*If No, explain:

7. Expected catalyst life: _____
Years

8. Operating hours per layer of catalyst: _____
Hours

9. Can the catalyst be reactivated? Yes * No

*If Yes, describe how:

10. Catalyst cleaning method: Compressed Air Soot Blower Steam Soot Blower
 Sonic Horns Other – Describe:

11. Describe SCR system dust management technologies and strategies being used, if any (e.g. ash screens):



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B. Specifications (continued)

12. Are you proposing a by-pass stack? Yes * No

*If Yes, describe:

C. Description of Reducing Agent

1. Type and form of reducing agent proposed: Gaseous Liquid Anhydrous Ammonia
 Aqueous Ammonia Urea
 Other – Describe:

2. If liquid, provide weight percent in solution:

Weight Percent

3. Method of reducing agent injection: Direct Injection Injection Grid

4. Describe in detail how the concentration and usage rate of the reducing agent were determined. Continue on a separate attachment, if necessary.

5. Describe the process controls for proper mixing of the reducing agent in the gas stream. Continue on a separate attachment, if necessary.

6. Describe storage of the reagent, including details about any storage containment (e.g. dimension of berms, evaporative mitigation). Continue on a separate attachment, if necessary.

7. Is the reagent subject to 42 U.S.C. 7401, Section 112(r)? Yes * No

*If Yes, attach a copy of the Risk Management Plan to this form.

8. You MUST attach to this form a copy of an analysis of possible impacts to off-property locations from a catastrophic release of the reducing agent, in comparison with American Industrial Hygiene Association Emergency Response Planning Guidelines.



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D. Emissions Data

1. Complete the table below to provide maximum oxides of nitrogen (NO_x) and ammonia (NH₃) slip concentrations and emission rates:

Table 3		
Air Contaminant	Outlet (Pounds Per Hour)	Outlet ¹ (Parts Per Million By Volume, Dry Basis)
NO _x		
NH ₃		

¹Boilers at 3% oxygen; combustion turbines at 15% oxygen; engines at 15% oxygen.

2. Explain how the above NO_x and NH₃ emissions data were obtained. Attach appropriate calculations and documentation.

E. Drawing of Selective Catalytic Reduction System

You must attach to this form a schematic drawing of the proposed Selective Catalytic Reduction system. At a minimum, it must show the location(s) of the catalyst bed(s), bypass damper(s) if applicable, bypass stack if applicable, and normal stack. Sampling ports for emissions testing must also be shown.

Note: You must notify the BWP Compliance & Enforcement Chief in the appropriate MassDEP regional office by telephone as soon as possible, within but no later than one (1) business day after you discover any upset or malfunction to facility equipment that results in excess emissions to the air and/or a condition of air pollution. You must submit written notice within seven (7) days thereafter.

F. Monitoring, Record Keeping & Failure Notification

1. Provide the manufacturer, make and model number of the proposed continuous emissions and opacity monitoring systems:
2. Identify the air contaminants that will be continuously monitored and recorded (e.g. NO_x, NH₃, opacity)
3. Describe any proposed process monitors (e.g. ammonia injection, fuel combustion) and frequency of data recording:



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F. Monitoring, Record Keeping & Failure Notification (continued)

- 4. Are there any alarms associated with the monitoring equipment? [] Yes – Complete Table 4 [] No – Explain Below

Blank lines for providing an explanation if 'No' is selected for question 4.

Table 4: Monitoring Device or Alarm Type. Columns include Operating Parameter Monitored, Describe Alarm Trigger, Monitoring Device or Alarm Type (with checkboxes for Visual, Auditory, Automatic, and Other), and Does the Alarm Initiate an Automated Response? (with checkboxes for Yes/No and a description field).

- 5. Describe the operating conditions that are monitored to determine the reducing agent injection rate:

Blank lines for describing operating conditions for question 5.

- 6. How often will the catalyst be tested and by what test method (e.g. core sample)?

Blank lines for describing catalyst testing frequency and methods for question 6.

- 7. List and explain all of the operating and safety controls associated with the SCR system. Continue on a separate attachment, if necessary.

Blank lines for listing operating and safety controls for question 7.

- 8. List the SCR system emergency procedures to be used during system upsets. Continue on a separate attachment, if necessary.

Blank lines for listing emergency procedures for question 8.



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F. Monitoring, Record Keeping & Failure Notification (continued)

9. Explain the typical fluctuations in SCR system operation, such as changes in effluent temperatures, flow rates, pollutant concentrations, etc., which may affect operation of the unit. Also explain the means by which control efficiency will be maintained throughout these fluctuations. Continue on a separate attachment, if necessary.

10. Describe the record keeping procedures to be used in identifying the cause, duration and resolution of each system failure/emission(s) exceedance. Continue on a separate attachment, if necessary.

11. How will the SCR system be designed so as to allow for emissions testing using MassDEP-sanctioned test methods?

G. Standard Operating & Maintenance Procedures

Attach to this form the standard operating and maintenance procedures for the proposed Selective Catalytic Reduction system, as well as a list of the spare parts inventory that you will maintain on site, as recommended by the equipment vendor.

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H. Professional Engineer's Stamp

The seal or stamp and signature of a Massachusetts Registered Professional Engineer (P.E.) must be entered below. Both the seal or stamp impression and the P.E. signature must be original. This is to certify that the information contained in this Form has been checked for accuracy, and that the design represents good air pollution control engineering practice.

P.E. Name (Type or Print)

P.E. Signature

Position/Title

Company

Date (MM/DD/YYYY)

P.E. Number

Place P.E. Seal or Stamp Here.

I. Certification by Responsible Official

The signature below provides the affirmative demonstration pursuant to 310 CMR 7.02(5)(c)8 that any facility(ies) in Massachusetts, owned or operated by the proponent for this project (or by an entity controlling, controlled by or under common control with such proponent) that is subject to 310 CMR 7.00, et seq., is in compliance with, or on a MassDEP approved compliance schedule to meet, all provisions of 310 CMR 7.00, et seq., and any plan approval, order, notice of noncompliance or permit issued thereunder. This Form must be signed by a Responsible Official working at the location of the proposed new or modified facility. Even if an agent has been designated to fill out this Form, the Responsible Official must sign it. (Refer to the definition given in 310 CMR 7.00.)

I certify that I have personally examined the foregoing and am familiar with the information contained in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.

Responsible Official Name (Type or Print)

Responsible Official Signature

Responsible Official Title

Responsible Official Company/Organization Name

Date (MM/DD/YYYY)

This Space Reserved for
MassDEP Approval Stamp.