

Question 16.4

Topic: NO_x Monitoring -- Multiple Stack Configurations

Question: For a single unit with a multiple stack or duct configuration, can the NO_x emission rate be measured in only one stack and still ensure that NO_x emissions are accounted for "during all times when the unit combusts fuel," as required by § 75.17(c)(2)?

Answer: Monitoring only one stack may be feasible, depending on the type of unit, the specifics of the stack or duct configuration, and the way in which the unit is operated. Use the following guidelines:

Guidelines for Boilers

(1) For a simple multiple stack configuration in which the flue gases from the unit are sent to two or more exhaust stacks, you may monitor NO_x emission rate using a single monitoring system installed on one stack, provided that:

(a) The products of combustion are sufficiently well-mixed to ensure that a NO_x emission rate representative of the unit can be obtained in any one of the stacks. As a guideline, the combustion products are considered to be well-mixed if test data or CEM data are available to show that the NO_x emission rates in the individual stacks differ by no more than ten percent or 0.01 lb/mmBtu (whichever is less restrictive);

(b) The flue gases are never routed in such a manner that they will bypass the monitored stack; and

(c) For units with NO_x emission controls, the flue gases flowing through all of the individual stacks are controlled to the same level.

(2) For a single-stack unit with split or multiple breechings, if the owner or operator elects to monitor NO_x emission rate in the ductwork (breechings) rather than in the stack, you may monitor NO_x emission rate using a single monitoring system installed on one duct, provided that:

(a) The products of combustion are sufficiently well-mixed to ensure that a NO_x emission rate representative of the unit can be obtained in any one of the ducts (see guideline in (1)(a), above);

(b) The flue gases are never routed in such a manner that they will bypass the monitored duct; and

(c) For units with NO_x emission controls, the flue gases flowing through all of the individual ducts are controlled to the same level, and there are no additional NO_x emission controls downstream of the point at which the NO_x emission rate is monitored.

(3) For a configuration consisting of a main stack and a bypass stack, you may monitor NO_x emission rate with a single monitoring system installed on the main stack, provided that:

- (a) You report the maximum potential NO_x emission rate (MER) for any hour in which flue gases flow through the bypass stack; and
- (b) A method of determination code of "23" is reported for every hour in which flue gases flow through the bypass stack. Treat hours in which code "23" is reported as non-quality-assured hours (do not include these hours in the load ranges (bins) for missing data lookbacks).

If the applicable conditions in paragraph (1), (2), or (3) above are fully met and you elect to monitor NO_x emission rate at only one stack or duct, then:

- _ Report all of the NO_x emission data and the related NO_x quality assurance data at the unit level. Do not use multiple stack ("MS") prefixes for NO_x reporting. However, if you use MS prefixes for SO₂ and CO₂ reporting from the same unit, continue to use these prefixes.
- _ If a flow monitor is installed on each stack or duct, determine the hourly heat input rate at each stack using the applicable Appendix F equation. For each hour, use the CO₂ or O₂ reading from the NO_x-diluent CEMS in the heat input equation. Calculate the heat input rate at the unit level using Equation F-21C.
- _ For cases (1) and (2), above, if you should install an additional NO_x-diluent CEMS on any of the other stacks or ducts, designate it as a redundant backup system in your monitoring plan.
- _ If the unit uses Appendix D and G methodology for SO₂ and CO₂, determine hourly SO₂ and CO₂ emissions in the normal manner during bypass hours. Also, determine the actual hourly heat input rates at the unit level, using the measured fuel flow rates and the fuel GCV value(s).
- _ Report the quarterly and cumulative arithmetic average NO_x emission rates for the unit.
- _ Perform missing data substitution for NO_x emission rate at the unit level.
- _ For further reporting guidance see the ECMPS Reporting Instructions.

Guidelines for Combustion Turbines

(1) For combustion turbines that have both a main stack and a bypass stack, you may monitor NO_x emission rate using a single monitoring system installed on the main stack, as described in paragraph (3) under "GUIDELINES FOR BOILERS," above. If you choose this option, follow the applicable reporting guidelines in the bulleted items, above.

(2) For combustion turbines that have a main stack and a bypass stack, you may not monitor NO_x emission rate using a single, certified monitoring system installed on the bypass stack, except for an interim period while the heat recovery steam generator (HRSG) and the main stack are under construction. If you elect to monitor NO_x emissions from the bypass stack during this interim period, designate the NO_x monitoring system as a primary system in your monitoring plan.

Report all NO_x emission data and heat input data at the unit level. When construction of the HRSG and main stack is complete, if you wish to continue monitoring NO_x emission rate from only one stack (i.e., the HRSG stack), you must certify a primary monitoring system at the main stack. If you elect to relocate the certified CEMS from the bypass stack to the main stack, keep the "primary" designation for the NO_x-diluent system in your monitoring plan, keep the same system and component ID numbers, and recertify the system at its new location. If you choose to certify an entirely new monitoring system, assign new component and system ID numbers. While testing the monitoring system for certification or recertification (as applicable), you may either use conditional data validation procedures of § 75.20(b)(3) or you may use the Part 75 missing data routines until the system is certified or recertified (as applicable).

After certifying (or recertifying) the NO_x monitoring system at the main stack location, monitor the NO_x emission rate as described in paragraph (3) under "GUIDELINES FOR BOILERS," above. Follow the applicable reporting guidelines in the bulleted items, above. If the guidelines and conditions for single-stack monitoring described above are not fully met, it is the responsibility of the utility to insure that NO_x emissions are accurately measured whenever an affected unit is combusting fuel. In these cases, owners and operators must install separate NO_x monitoring systems in each of the multiple stacks or ducts (see Question 16.5).

References: § 75.17(c), and § 75.17(d)

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