

Certificate Testing for CEMS

INTRODUCTION

The U.S. Environmental Protection Agency requires that a continuous emissions monitoring system must perform according to the performance specifications contained in Title 40 of the Code of Federal Regulations, Part 60 (40 CFR 60), Appendix B, Part 75 (40 CFR 75) and/or other local requirements specified in the operating permit. A series of tests, known as certification tests, are conducted to determine whether a CEMS meets these requirements.

RELATIVE ACCURACY TEST

The certification test consists of two main parts: the relative accuracy (RA) test and the seven-day drift test. For the RA test, stack testers measure pollutant concentrations of gas samples from the stack for comparison to measurements being made simultaneously by the CEMS.

A minimum of nine and a maximum of 12 sample runs are performed for the RA test. Each run takes one hour. In total, the relative accuracy test takes two to three days, including set-up time, the test itself and finally, teardown and removal of the test equipment.

SEVEN-DAY DRIFT TEST

The seven-day drift test actually takes eight days. The first day is utilized to establish the baseline or starting point to get seven subsequent days of drift values. If the plant/ combustion source is shut down for a day or two after the drift test is started, the EPA may allow the “down” days to be skipped in the drift test and the drift test to be picked back up when normal operation resumes. As with the RA test, the plant/combustion source must be at or above fifty percent of maximum load for the duration of the drift test.

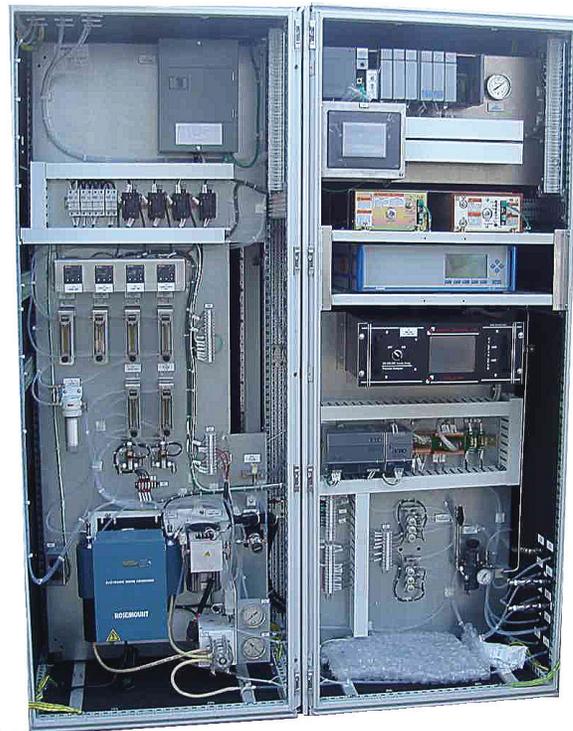


Figure 1. The certification process for a continuous emissions monitoring system (CEMS) typically takes two to three months.

Emerson’s Rosemount Analytical CEMS are designed to perform the required EPA daily zero and span checks (and consequently the seven-day drift test) automatically and unattended. If the automatic calibration option is not included in the CEMS, it will be difficult, costly and time consuming to meet the EPA requirements for daily calibration checking of the CEMS.

The EPA requires documentation verifying operating load during all tests. The plant documentation of operating load has to be included in the certification test report to fulfill this requirement. Emerson will

normally include customer-supplied documentation of plant operating load and the customer-supplied seven-day drift test data in the EPA certification test report when it is submitted to Rosemount Analytical on a timely basis. If not originally included, it must be submitted as an addendum to the EPA certification test report at a later date.

The data logging/recording device is considered a part of the CEMS and must be certified as part of the CEMS. All test data must be documented utilizing the certified data logging/recording device. It should be noted that in some areas, the EPA requires the relative accuracy portion of the certification test to be performed during the seven-day drift test. This will require careful planning and coordination of all parties.

At start-up or soon after, an on-site pre-test meeting should be scheduled. This allows the stack test crew and EPA to review the site. Prior to the meeting, the status of the test protocol previously submitted for review/approval will be reviewed. The test protocol will be the basis of discussion for the pre-test meeting. This prepares everyone for the meeting and allows discussion of the final details for performance of the EPA certification tests.

The cognizant EPA representative should be invited to this meeting and should be provided with a copy of the test protocol so that they are aware of the agreed upon final details for the tests. This should be the same EPA person that later is notified of dates for the tests and who will ultimately approve the EPA certification test report and perhaps even the operating permit. The schedule for completing the test requirements and submittal of

the EPA certification report is also finalized at the pre-test meeting. Normally the report is issued within 30 days of the relative accuracy test's completion.

Some variations of the 40 CFR 60 Appendix B Performance Specifications require that additional tests be performed. These may include a response time test, a linearity test, and a calibration error test, etc. Some of the calibration tests stipulate that EPA Protocol One gases be utilized in the test. Special calculations and corrections may be required which may dictate the measurement or derivation of algorithms for special process variables. These are all items that will be covered during the pre-test meeting.

APPENDIX F QUALITY ASSURANCE MANUAL

Increasingly, the EPA is requiring a 40 CFR 60 Appendix F Quality Assurance Manual, which contains operating and maintenance procedures to ensure the long-term proper operation of the CEMS, including documented procedures for quarterly performance verification testing of the CEMS. The manual is typically the last item completed in a CEMS project. When the manual is provided by Emerson as part of the CEMS contract, it is started after the EPA certification test is completed. By this time, all the site-specific operating/maintenance requirements have been identified and can be accommodated in the documentation in the Appendix F manual.

CONCLUSION

In all, it normally takes two to three months from start-up until submittal of the EPA Certification Report. Depending upon efficient coordination, the process may be accomplished faster when needed, but can be done comfortably within a two- or three-month time frame.

Rosemount Analytical
Process Gas & Combustion Solutions
6565P Davis Industrial Parkway
Solon, OH 44139 USA
T + 440.914.1261
F + 440.914.1262
T 1.800.433.6076
e-mail: gas.csc@emerson.com

EUROPE
Emerson Process Management
GmbH & Co. OHG
Industriestrasse 1
63594 Hasselroth
Germany
T +49 6055 884 0
F +49 6055 884 209

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