Question 3.41

Topic: Converting Volumetric Flow Data to Standard Temperature and Pressure

Question: How should the correction to standard pressure be performed for the "average volumetric flow rate for the hour (scfh)" reported in the <UnadjustedHourlyValue> field of the <MonitorHourlyValueData> record for flow? Specifically, must local, real time, hourly barometric pressure be used, or can an annual or multi-year average pressure for the local area, corrected to the elevation of the flow monitor, be used in the P_{stack} term in Section 6 of Appendix F, Part 75?

Answer: To convert from actual flue gas volumetric flow rate to the required flue gas volumetric flow rate at standard temperature and pressure, use the equation in Part 75, Appendix F Section 6: $F_{STP} = F_{Actual} (T_{Std}/T_{Stack}) (P_{Stack}/P_{Std})$. For the barometric pressure portion of P_{Stack} (P_{Stack} = barometric pressure at the flow monitor location + flue gas static pressure), EPA recommends that you use an on-site pressure sensor.

Inexpensive, electronic pressure sensors are commercially available. The pressure sensor should be calibrated according to the manufacturer's instructions. If the pressure sensor is located at a different elevation than the flow monitor, the pressure output should be corrected to the flow monitor elevation (in the lower atmosphere, pressure changes about minus one inch Hg per 1,000 feet increase in elevation).

References: Appendix F, Section 6; ECMPS Emissions Reporting Instructions, Section 2.5

History: First published in October 2003 Revised Manual; revised in 2013 Manual