Question 3.2

Topic: Requirements for Dual Flow (X-Pattern Flow) Monitoring Systems

Question: A number of sources have installed two sets of flow monitors in a single stack and are reporting the average flow value as the unit flow on an hourly basis. This includes systems using x-pattern ultrasonic monitors, as well as systems using two differential pressure monitors.
How should these sources represent these monitors in the monitoring plan? How should they report flow data and calibration records?

Answer: In the monitoring plan, identify each separate flow monitor as a component in the primary flow system. If each monitor alone will be used as a redundant backup flow system, also define each redundant backup system containing a single flow monitor.
For example, a utility may install two flow monitors (Components 00A and 00B) on a single stack. Three systems (one primary and two redundant backups) could be listed in the monitoring plan using these two flow monitors. The primary system (P01) would contain both monitors (Components 00A and 00B) where the average flow value observed from these components is reported as the flow from this primary system. Then, Component 00A could also be listed as a component of redundant backup System B01, and Component 00B could be a component of redundant backup System B02.

For certification purposes and ongoing quality assurance, each monitoring system (P01, B01, and B02) must pass the RATA based on the monitored flow values produced by that system. Therefore, report three sets of RATA and bias test data and results: one for system P01 (the average of components 00A and 00B), one for system B01, and one for system B02. Note that one set of reference method test data could be used to calculate the relative accuracy and bias for all three systems as long as data from all three systems can be recorded separately during the reference testing.
For daily quality assurance, report one set of calibration and interference records for each of the flow monitor components in the <DailyTestSummaryData> record of the quarterly emissions report using only the component IDs.
Note also that for certifications where a 7-day calibration error test is required, conduct the 7-day calibration error test on each of the flow monitor components separately. Report the 7-day calibration error test data and results under the appropriate component ID (00A and 00B) separately for each component (see ECMPS Quality Assurance and Certification Reporting Instructions, Section 2.1).
Finally, report the average hourly flow value in the <MonitorHourlyValueData> record using only the system ID and leave the component ID blank for hours where the primary system with two flow monitoring components is used. Otherwise, when either of the backup systems (B01 or B02) are used, report both the System ID and the Component ID as appropriate for the system that was used.

References: Appendix A; ECMPS Quality Assurance and Certification Reporting Instructions, Section 2.1; and ECMPS Emission Reporting Instructions,

Section 2.2 and 2.5.1

History: First published in March 1995, Update #5; revised in 2013 Manual