

## Improved Method for the Testing and Verification of the Sierra Instruments 620S Mass Flow Meter

Fluid flow represents one of the most significant process variables in an aerosol sampling system. The use of mass flow meters provides improved system control, easy maintenance, and reduced environmental influence. To ensure that flowmeters provide accurate data after initial certification and upon equipment replacement, a rigorous testing and validation process is critical. The system must include components of the manufacturer's test procedures, system and station specific applications, and verification against a trusted reference. General Dynamics Mission Systems (GDMS) performed a study of both population deviation in meter measurements and the effects of operational conditions on meter output. The Sierra 620S population shows good flow relationship to the differential pressure meter used. Additionally, it was shown that meter alignment is very forgiving in relation to the output measurement. For long-term, consistent compliance, GDMS has developed a multi-faceted flow meter verification process using National Instrument's LabVIEW architecture, Sierra Instruments verification methods, and in-house built tests and components. The results are stored within the GDMS logistics database in an easy to read format and directly associated with the device under test. This method allows subsequent testing repeatable with minimum error or deviation; and expandable to new systems and devices.

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