

# NASA's *secret weapon*

## Thermal mass flowmeters helps NASA get the right mixture of nitrogen, argon and oxygen to shuttles

Early developments in the evolution of mass flowmeters in the 1950's were largely driven by the need for highly-accurate readings. Over the last 50 years, the demand for substantially-reduced margins of error has only intensified. Sierra Instruments recently introduced a new series of meters that would allow customers to field-validate instrument performance. Starting-point accuracy was built-in at the factory where each meter was calibrated. That data was then stored in the meter's microprocessor. In the field, validating became as simple as comparing the meter's sensing element reading to data stored in memory. Specialized software then allowed users to troubleshoot, validate and re-configure from a PC.



For the last 25 years, NASA has relied on the accuracy of Sierra Side-Trak® Model 830 and 840 thermal mass flowmeters to get the right mixture of nitrogen, argon and oxygen to their shuttles during ground testing.

Steve Chism, a sales agent for Sierra in Orlando, Florida, identified a way NASA could upgrade the outdated technology they were

using to maintain positive space shuttle cargo door air flow on re-entry. He was convinced that Sierra's Model 780S thermal mass flow meter was ideal for this mission-critical function.

Small, compact, accurate and easy to move from shuttle to shuttle, NASA agreed to give the 780S a try and was immediately delighted with its performance. However, within six months a red flag went up when a third party calibrator reported a 10 percent margin of error. Sierra immediately hired CEESI, a world-renowned calibration consultant in Colorado, to conduct an in-depth field test. CEESI determined, conclusively, that Sierra's meters performed well within specifications.

NASA's Constellation Project includes the combination of large and small systems that will make it possible for NASA to travel and explore the solar system in the next decade. Sierra's Smart-Trak® Model 100, the next generation upgrade for the 830 and 840's, is currently being reviewed by NASA for the role it will play in NASA's vision.



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