

Application News

Customer-supplied Piping Used in Flowmeter Calibration

Industry: Aerospace

Service: Flow Rate/Total

Fluid: Jet Fuel

Overview

In a typical piston prover calibration system, the device-under-test is installed in a horizontal position within the calibrator flow tube. A piston driven by compressed air displaces the liquid in the tube, causing it to flow through the flowmeter test section. The displaced liquid is then stored in a liquid reservoir.

In certain situations, however, it is advantageous to calibrate flowmeters in their actual process piping. Flowmeters can be sent to a calibration lab with their own manifold, which must be run in a non-horizontal orientation or in series with other meters to accurately simulate the end user's operating environment.



Customer-supplied fixture

Situation

A helicopter manufacturer who purchased turbine flowmeters for onboard fuel measurements returned its meters to Flow Technology for recalibration on a primary standard, positive displacement calibration system. Calibrators of this style can be directly traceable to the National Institute of Standards and Technology (NIST) via water draw validation. Their total uncertainty is specified at 0.05%.

The customer requested an "as found" calibration for the turbine flowmeters, which involved positioning the devices in a vertical orientation on the calibrator similar to their installation in the helicopter engine bay. Pairs of meters mounted in custom wooden jigs, and connected by fuel lines in a redundant configuration, were shipped to the FTI facility.

Solution

Installing the customer's apparatus presented some challenges. Flow Technology's service department ultimately solved the problem by connecting the turbine meters to the calibrator with sections of flexible hose. In this way, calibrations could be performed without costly modifications to existing laboratory equipment.

This application demonstrates the flexibility and innovation that is sometimes needed to perform calibrations on flowmeters with specialized application requirements.

Technical Information

Flowmeters: Turbine Meters

Flow Rate: 0.15-4.0 GPM

Calibration Fluid: 1.2 & 12 cSt



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