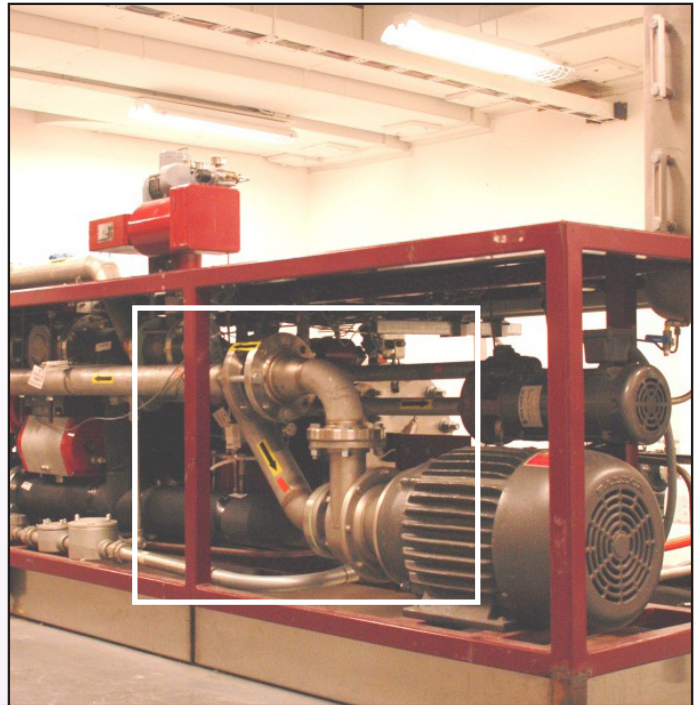


AEDC provides objective guidance on Liquid Flow Calibration System upgrades



When the U.S. Air Force considered upgrading its existing liquid flow calibration systems at all precision measurement equipment laboratories that support liquid flow meter calibrations, the Air Force Metrology and Calibration Program (AFMETCAL) contracted AEDC to evaluate the shortcomings of existing systems.

AEDC engineers were asked to help determine if it would be more beneficial to modify the existing liquid flow calibration systems or purchase new custom turnkey systems that would provide the latest technological enhancements, as well as long-term maintenance support from the manufacturer.

With objective testing and analysis, the needed enhancements were identified for the Air Force's older liquid flow calibration systems. The study performed by AEDC engineers determined the need to account for thermal instability in



Top: This vintage mid-1980s Air Force liquid flow calibration system was installed at UTSI and utilized to evaluate for needed upgrades.

Above: A forward looking infrared (FLIR) camera image shows a portion of the fluid pumping and piping processes during operation of the test liquid flow calibration system.

the fluid comprising the connecting volume between the metering piston and the flow meter under test.

A paper on the subject prompted the National Institute of Standards and Technology (NIST) to implement this enhancement for their liquid flow calibration systems.

Engineering analyses provided

cost estimates for upgrading versus purchasing new turnkey systems. AFMETCAL allowed the findings of this research and development study to guide their decision to purchase new turnkey liquid flow calibration systems with the needed connecting volume fluid thermal stability accounting implemented.