SwRI®

SOUTHWEST RESEARCH INSTITUTE

Metering Research Facility

High-Technology Natural Gas Flow Measuring Services

The Metering Research Facility at Southwest Research Institute® (SwRI®) is an internationally recognized center of excellence for natural gas flow measurement. As the only facility of its type in North America, the MRF is equipped to serve the measurement needs of the natural gas industry for:

- Accuracy
- Rangeability
- Controllability
- Traceability

Capabilities

The MRF is a world-class, high-accuracy, and high-technology natural gas flow measurement facility for meter development, calibration, and testing, simulating actual field operational conditions. The facility provides:

- Flow meter design and development
- Flow meter testing and calibration (traceable to U.S. National Institute of Standards and Technology)
- Flow meter station design, consultation, layout and optimization
- Field meter diagnostics and troubleshooting
- Gas sampling quality and gas consultation
- Gas measurement personnel training

Flow Test Systems

The MRF has two separate flow test systems:

- High-Pressure Loop (HPL) for high pressure/volume metering applications (pipe diameter 2–20 inches, pressure 165–1,100 psig)
- Low-Pressure Loop (LPL) for low pressure/volume metering applications (pipe diameter 1–8 inches, pressure 20–190 psig)
- The HPL and LPL are closed, recirculating flow loops. Both systems are at the same site and are operated from a single control center.

User Benefits

- Replication of field conditions
- Meter calibration accuracy better than 0.2 percent
- Field condition "test bed" for proving meters
- On-line analysis of test data
- Quick turnaround of tests
- Experts for on-site fuel flow measurement audits
- Expert training on meter station design
- Expert engineering, testing, and analysis of all meter types and sizes
- Cost savings
- Traceability to national flow measurement standards
- Experts for on-site meter station troubleshooting

Clients

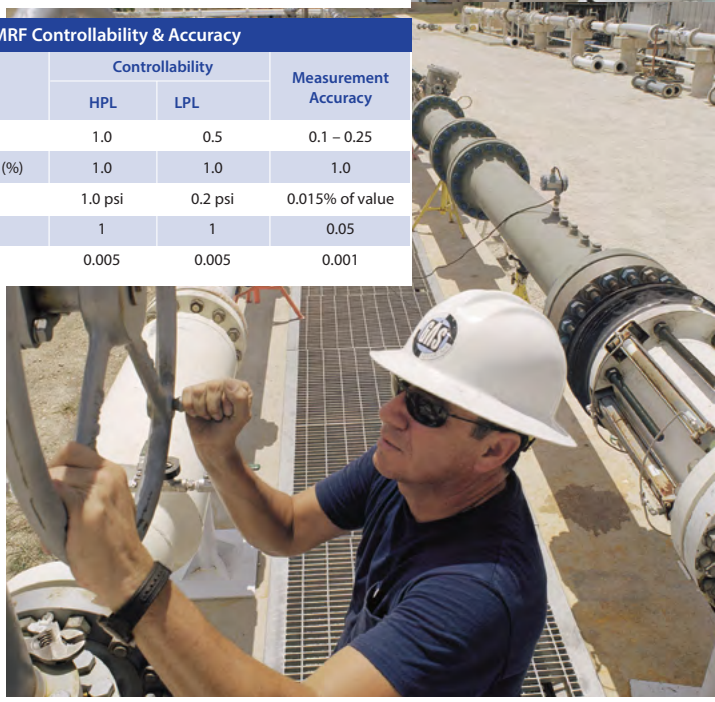
- Flow meter and valve manufacturers
- Natural gas production and gathering companies
- Natural gas transmission pipeline companies
- Local natural gas distribution companies
- Electric power industry (flow meter manufacturers and power plant operators)
- Aerospace companies

MRF Operational Ranges

Parameter	HPL	LPL
Maximum Flow Rate (MSCFH)	8,000	663
Maximum Flow Rate (ACFH)	93,900	45,000
Pressure Range (psig)	165 – 1,100	20 – 190
Pipe Diameter Range (inches)	2 – 20	1 – 8
Specific Gravity Range	0.55 – 0.97	0.55 – 0.97

MRF Controllability & Accuracy

Parameter	Controllability		Measurement Accuracy
	HPL	LPL	
Flow Rate (% of rate)	1.0	0.5	0.1 – 0.25
Pipe Reynolds Number (%)	1.0	1.0	1.0
Pressure (psig)	1.0 psi	0.2 psi	0.015% of value
Temperature (°F)	1	1	0.05
Specific Gravity	0.005	0.005	0.001



We welcome your inquiries. For more information, please contact:

Adam G. Hawley
Manager
Flow Measurement
210.522.3427
adam.hawley@swri.org

Matthew J. Godush
Engineer
Flow Measurement
210.522.5742
matthew.godush@swri.org

Fluids Engineering Department
Mechanical Engineering Division

METERING RESEARCH FACILITY
A Research Program of SwRI

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Designed & printed by SwRI MPS 18-0521 JCN 264159 tp