



# AIR FLOW LABORATORY



Air flow laboratory offers flow meter/flow product calibration & Testing/ Consultancy services to customers from a wide range of industrial sectors like automotive, aerospace, Pharmaceuticals & Health care, Gas distribution & Process industries, Flow meter manufactures, Research & Development centers, Academic institutes etc. These calibration facilities at FCRI are traceable to national and international standards.

Major facilities at Air flow Laboratory are detailed below

## Primary Air Flow Laboratory (PAFL)

Primary Air flow laboratory is equipped with internationally accepted primary flow standards like Bell Provers and Piston Provers of various capacities for precise flow measurement. Calibration of flow meters at low pressure is carried out here for flow ranges up to  $40 \text{ m}^3/\text{h}$ . As per the norms stipulated by the ISO, Primary air flow lab is always maintained at controlled ambient conditions for ensuring metrological qualities of the master flow meters and thereby providing highest quality and precision in calibration of flow meters.



500 ltr capacity  
Bell Prover



50ltr capacity Bell Prover



Piston Prover

## Secondary Air flow Laboratory (SAFL)

Secondary air flow laboratory is operating at near atmospheric pressure and has Critical flow venturi nozzles (Sonic Nozzles) as reference standard. Calibration of flow meters up to a maximum flow range of  $10,000 \text{ m}^3/\text{h}$  can be carried out here. Various types of flow meters and flow products of sizes up to 400 mm are calibrated/tested and Certified at these facilities. Critical flow venturi nozzles of different capacities designed as per ISO 9300 are used as reference flow standards. Sonic nozzles are considered as the best reference standard for Calibration of precision flow meters used for custody transfer applications.



Secondary Air Flow Facility at FCRI



TFM Calibration in Progress at SAFL



Ultrasonic flow meter under Calibration at AFL



Industrial personnel undergoing training at AFL

Other major Calibration / testing capabilities of Air flow laboratory include:

- ◆ Model approval testing of Diaphragm gas meters as per BS EN 1359 & IS14439
- ◆ Model approval testing of gas meters as per OIML R 137-1
- ◆ Gas regulator (OPSO/UPSO) type approval tests as per BS EN 334, BS EN 88-1 & BS EN 88-2
- ◆ Calibration/testing of Blower/Fan, Respirable dust samplers, High volume sampler, Leak flow calibrators, Critical flow orifices, Smooth approach orifices, Laminar flow elements, Flownozzles, Mass flow meters, Vortex flow meters, Ultrasonic flow meters, Rotameters and Leakage and flow test on Valves, Pressure drop test on filters etc.
- ◆ Air/Gas flow measurement in large diameter ducts, Calibration of annubars, aerofoils, venturis, orifices etc. at in-situ conditions
- ◆ Validation/Calibration of flow meters and Installation checking at site as per ISO/AGA standards
- ◆ On the job training of Industrial personnel in the field of gas flow metering and Calibration techniques

**Major Specifications of Air Flow Calibration facilities**

Testing conditions	Facility	Max. Flow rate (m <sup>3</sup> /h)	Uncertainty in Flow rate	Max. Line Size(mm)
Near Ambient (1 bar abs)	Primary Air Flow Lab (PAFL)	0.25-40.0 m <sup>3</sup> /h	0.10%	50
		0.05-0.25 m <sup>3</sup> /h	0.30%	
	Secondary Air Flow Lab (SAFL)	11.25-400 m <sup>3</sup> /h	0.15%	400
		400-10000 m <sup>3</sup> /h	0.25%	