

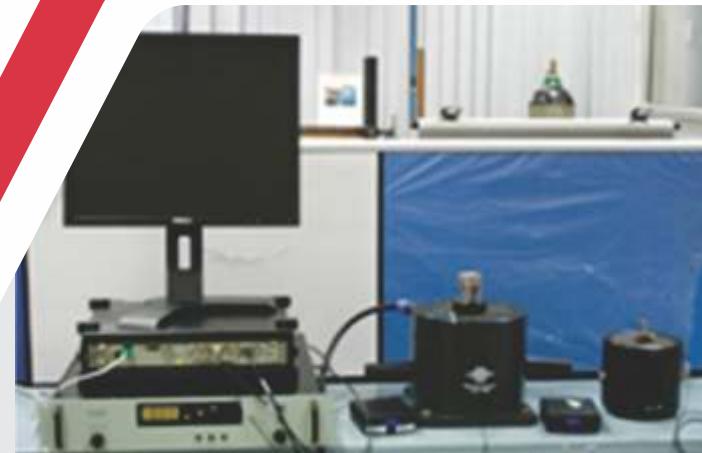


CALIBRATION LABORATORY

Quality Assurance Through Calibration
(Accredited as per ISO / IEC 17025)



ISO 9001
ISO 14001
ISO 27001
OHSAS 18001
CERTIFIED



CC - 2742

CALIBRATION CAPABILITIES

One of the leading Laboratory in India

Wide range of Calibration facilities under one roof

Undertake Turn- Key Calibration Assignments

Qualified and Experienced Technical staff

Onsite Calibration Facility for Various Parameters

Customer Centric Approach

ISO/IEC 17025 since 2000

Customer Retention for more than 10 years shows quality services

PARAMETERS

Mass & Balance

Micro Balances, Weighing Scales, Fractional Weight Sets, Weights etc.

Sound & Vibration

Sound Level Meters, Accelerometers Calibrators, Microphones, Vibration Analyzers etc.

Pressure

Pressure Gauges, Transmitters, Manometers, Vacuum Gauges, Pressure Systems etc.

Speed

Contact / Non Contact Tachometers & Pulse Engine Tachometers etc.

ARAI CALIBRATION LAB PROVIDES THE CALIBRATION SERVICE TO INTERNAL AS WELL AS EXTERNAL CUSTOMERS.

Electrotechnical

Multimeters, Calibrators, Shunt, Oscilloscopes, Function Generators, Counters, Timers, Indicators, HV Testers etc.

Temperature & Humidity

SPRTs / PRTs, Thermocouples, RTD Sensors, Environmental Chambers, Hygrometers, Temp Baths etc.

Flow Meters

Blow by Meters, Mass Flow Meters - Air Media PLU / DFL meter calibration- Petrol / Diesel media

EMI / EMC

LISN, CDN, EM Clamp, Current probes, ESD Target plate, Electronic Switches, Monopole Antennas, Preamplifiers, ESD Generators, Conducted Immunity Generators, Micro pulse Generators in Automotive field, RF Signal Generators, Signal Generators etc.

NEW CALIBRATION FACILITYS



- Impedance Of LISN, CDN etc.
- Insertion Loss for LISN, Bulk current probe, Attenuators etc.
- 0.1 dB to 65 dB
- Return Loss (VSWR) 1.0023 to 3.5
- Gain : Preamplifiers



- ESD Generators As per ISO10605 and IEC 610004-2
- Open ckt Voltage up to $\pm 30\text{kV}$
- Short ckt current in contact Discharge for
- Peak Current (I pk)
- I@t1 & t2 ns
- Rise/Fall Time



- Different type of Generators For Conducted immunity pulses of Generators used in Automotive as well as Non automotive Testing
- Peak Voltage
- Short ckt Current
- Rise / Fall Time
- Td Pulse Duration



RF Generator and Signal Generator calibration.

- Power Level Linearity and Flatness
- Frequency Calibration up to 18GHz
- Modulation for AM, FM and phase Harmonics and Total Harmonic distortion (THD)



Load Cell calibration :

Now ARAI Calibration Lab has established Load cell calibration Facility under ISO / IEC17025-2017, which is accredited by IAS (International Accreditation Service -USA)

Load Cell Calibration

| MEASURED QUANTITY or DEVICE TYPE CALIBRATED | RANGE | UNCERTAINTY ^{1,2} (±) |
|---|-----------------|--------------------------------|
| Mechanical | | |
| Load Cell | 100 N to 5 kN | 1.2% |
| (Tension & Compression) | 5 kN to 50 kN | 0.09% |
| | 50 kN to 100 kN | 0.11% |

MECHANICAL CALIBRATION



| Comparator Balance | |
|--------------------|------------------------|
| Range | CMC(\pm) |
| Up to 22 g | 0.0044 mg to 0.0013 mg |
| Up to 220 g | 0.08 mg |
| Up to 610 g | 0.28 mg |
| Up to 5100 g | 6 mg |
| Up to 12 kg | 80 mg |
| Up to 60 kg | 160 mg |
| Up to 150 kg | 3 g |



| Mass | |
|--|--------------------|
| Range | CMC(\pm) |
| 1 mg to 500 g | 0.0020mg to 0.25mg |
| 1 kg to 5 kg | 1.6 mg to 5 mg |
| 10 kg to 100 kg | 160 mg to 1 g |
| 1 mg to 500 g (E2 Class) Weight Set Calibration Facility | |



| Acceleration @ Lab (Piezoelectric, Piezo Resistive, Capacitive, etc.) | |
|--|-----------------------------------|
| Range | CMC(\pm) |
| Accelerometers (0.1 g to 10g) | (3 Hz to 10 kHz) 0.85% to 1.8% |
| Vibration Shakers, Excitors (0.1g to 10g) | (10Hz to 10kHz) 1.27% to 1.45% |
| Vibration Meters for Acceleration (0.5g to 10g) For velocity (1mm/s to 200mm/s) For Displacement (0.01mm to 5mm) | (10 Hz to 5 kHz) 1.60% |

Pressure @ Lab

| Range | CMC(\pm) |
|-------------------------------|--------------|
| 0 to 1000 bar g | 0.013% rdg |
| 0 - 25 bar g | 0.01% rdg |
| 0 - 2.5 bar A | 0.02% rdg |
| 0 to -0.9 bar | 0.013% rdg |
| (\pm)250 mbar to 250 mbar | 0.02% rdg |
| 0 to 25 mbar | 0.078% rdg |



Speed Calibration

| Range | CMC(\pm) |
|---------------------------------------|------------------|
| Non- Contact Mode 100 to 12000 rpm | 1.27 to 2.11 rpm |
| Contact Mode 100 to 5000 rpm | 1.80 rpm |



Sound Level

| Range | CMC(\pm) |
|--|-------------------|
| 31.5Hz to 16 kHz At 94 dB to 114 dB | 0.3 dB to 0.61 dB |

THERMAL CALIBRATION



| Primary Calibration (Fixed Point Cell) | Range | CMC(\pm) |
|---|------------|--------------|
| Boiling Point of Ln2 | -196°C | 0.015°C |
| Mercury | -38.8344°C | 0.0049°C |
| TPW | 0.01°C | 0.004°C |
| Gallium | 29.7646°C | 0.005°C |
| Indium | 156.5985°C | 0.007°C |
| Tin | 231.928°C | 0.0058°C |
| Zinc | 419.527°C | 0.008°C |
| Aluminum | 660.323°C | 0.016°C |



| Secondary Calibration | |
|-------------------------------|--------------|
| Range | CMC(\pm) |
| -50 to -40°C | 0.1°C |
| -40 to 25°C | 0.1°C |
| 25 to 650°C | 0.1°C |
| 650 to 1200°C | 1.40°C |
| 20 to 90 % RH at 25°C to 40°C | 1.17 %RH |

ELECTRO - TECHNICAL CALIBRATION

| | |
|------------------------------|---|
| DC & AC Voltage | 100 μ V to 1000 V & 1 mV to 1000 V (10 Hz to 300 kHz) |
| DC & AC Current | 10 μ A to 20 A & 10 μ A to 1000 A (10 Hz to 5 kHz) |
| Resistance | 1 Ω to 1G Ω |
| Insulation Resistance | 100 k Ω to 1 G Ω |
| Discrete Standard resistance | 1 Ω ,25 Ω , 100 Ω ,300 Ω & 400 Ω |
| Thermocouples | -250 to 1768°C |
| RTD | -200 TO 850°C |
| Capacitance | 3 nf to 30 mf |
| Power Meter | AC/DC Power ,PF |
| Time | 2s to 24Hrs |



FLUID FLOW CALIBRATION

| Fuel Flow Meter Calibration (DFL & PLU) | |
|---|--------------|
| Range | CMC(\pm) |
| 1 lph to 50 lph | 0.3% rdg |



| Blow by Meter (Air Media) | |
|---------------------------|--------------|
| Range | CMC(\pm) |
| 10 to \leq 30 LPM | 1.5 % |
| >30 to \leq 100 LPM | 1.05% |
| >10 to \leq 200 LPM | 1.02% |

| Air Flow Meter Calibration | |
|----------------------------|--------------|
| Range | CMC(\pm) |
| 20 kg/hr to 200 kg/hr | 1.2% rdg |
| 200 kg/hr to 2000 kg/hr | 0.75% rdg |

