PRESSURE LABORATORY

About

The Pressure laboratory maintains the National Measurement Standards for Vacuum and Pressure. Calibration services are offered on a wide range of Pressure, Vacuum and Gas Flow instrumentation. Details of which can be found under the "How can we help you?" section.

Key Facts

The Pressure Laboratory, which includes a Vacuum Laboratory, is one of the oldest laboratories at KEBS Pressure is a derived parameter and obtains its metrological traceability from PTB of Germany and/or Tubitak UME of Turkey.

The Pressure Laboratory has participated in registered comparisons and will be updating its Calibration and Measurement Capabilities (CMCs) at the BIPM Key Comparison Database (KCDB) which will demonstrate KEBS international metrology equivalence. The Pressure Laboratory is also ISO/IEC 17025 accredited from 1.4 kPa to 0.7 MPa for pneumatic pressure, 0.1 MPa to 100 MPa for hydraulic pressure and 0.075 MPa to 100.1 MPa Absolute pressure.

The Pressure Laboratory can also perform vacuum calibrations, but these are not yet covered by the current scope of accreditation. The current National Measurement Standard for pressure is a DH/Ruska Pressure Balances together with their dedicated weight stacks and piston cylinder assembly units. See Figure 1 below.

Figure 1: Ruska Pressure Balance with Weight Stack

Figure 2: PG700 Pressure Balance with Weight Stack

The Pressure Laboratory generates/measures pressure in terms of force and area according to the basic formula (1):

$$P = \frac{F}{A} \quad (1)$$

Where:P is the pressure in Pascals (Pa), F is the force in Newtons (N) and A is the effective area of the piston/cylinder combination in metres squared (m2)

The force is derived from mass and the area is derived from dimensions according to basic formulae (2) and (3):

Where:F is the force in Newtons (N), m is the applied mass in kilograms (kg) and g is the gravitation acceleration constant in metres per second squared (ms-2)

$$F = mg \quad (2)$$

Where:A0 is the effective area of the piston/cylinder combination in metres squared (m2) at zero pressure. r is the radius of the piston/cylinder combination in metres (m).

$$A_0 = \pi r^2 \quad (3)$$

Services Offered

- High Accuracy Pressure Gauges,
- High Accuracy Pressure Transducers,
- High Accuracy Barometers,
- High Accuracy Pressure Balances
- Vacuum Gauges
- Pressure Valves/Switches
- Medical Patient Monitor Analyzers
- Medical BP Machines
- Medical Ventilators and Ventilator Analyzers
- Training in pressure metrology