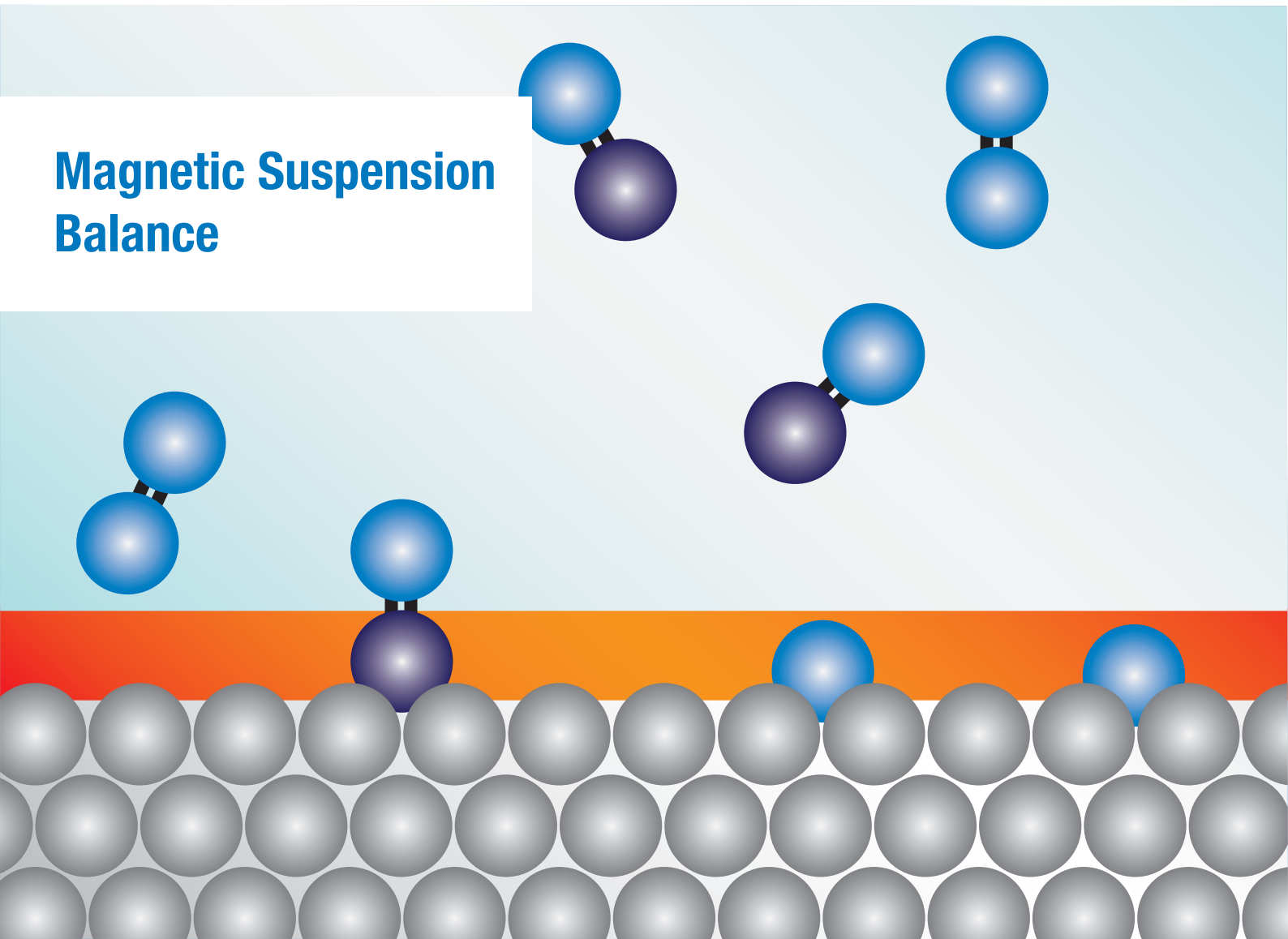


# Magnetic Suspension Balance



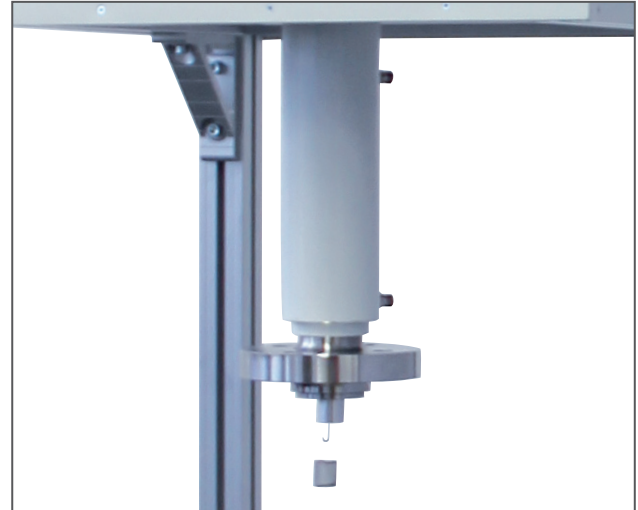
*LINSEIS*

# Magnetic Suspension Balance

## Linseis MSB – PT1

With the magnetic suspension balance gravimetric measurements in a wide temperature and pressure range and under aggressive media can be done. Such a magnetic suspension balance consist of a balance for recording the measurement values, a suspension coupling which carries the weight of the sample, a sensor for the position measurement of the levitation part and a control unit to control the suspension coupling.

The contact-less transmission of the sample weight is realized with a levitation magnet and a holding magnet. The levitation magnet consists of a permanent magnet and the holding magnet consists of an electromagnet hanging on the balance. The position sensor delivers the actual position of the levitation magnet and the PID controller makes a stable levitation position with the electromagnetic force as the actuating variable. Through the magnetic coupling a micro balance can be set up at environmental condition. Therefore the balance is protected from high temperatures, pressure and aggressive media.



### Quantity to be measured with the magnetic suspension balance

With the magnetic suspension balance dimensions like

- sorption,
  - diffusion,
  - surface tension
  - and density
- can be measured easily.

Furthermore chemical reaction e.g.

- corrosion,
  - decomposition
  - and combustion
- will be recorded and production processes can be simulated (coating, polymerisation, dehydration, etc.).

### Applications

- production of plastic
- exhaust gas cleaning
- foodstuff manufacturing
- supercritical fluid extraction
- gasification of coal
- soil detoxification
- purification and storage of natural gas and hydrogen
- analysis of membrane of fuel cells
- waste incineration
- research about process technology and chemical technology



## Technical Specifications

Model	Metal Version	Glass Version
Pressure Range	UHV to 350 bar	Vacuum to 1.3 bar
Temperature Range	-196 to 2400°C	Up to 900°C
Sample weight	25g, 10g, 1g	25g, 10g, 1g
Resolution	10µg, 1µg, 0.1µg	10µg, 1µg, 0.1µg
Evolved Gas Analysis	MS/FTIR possible	MS/FTIR possible

*Special custom versions can be realized.*

### Metal version

The metal version can be used for a wide application area. Measurements from ultra high vacuum up to 350 bar and a temperature range from -196 to 2400 °C are possible. Furthermore corrosive and toxic media are insertable. This will be possible with special coatings of the metal measurement cell.

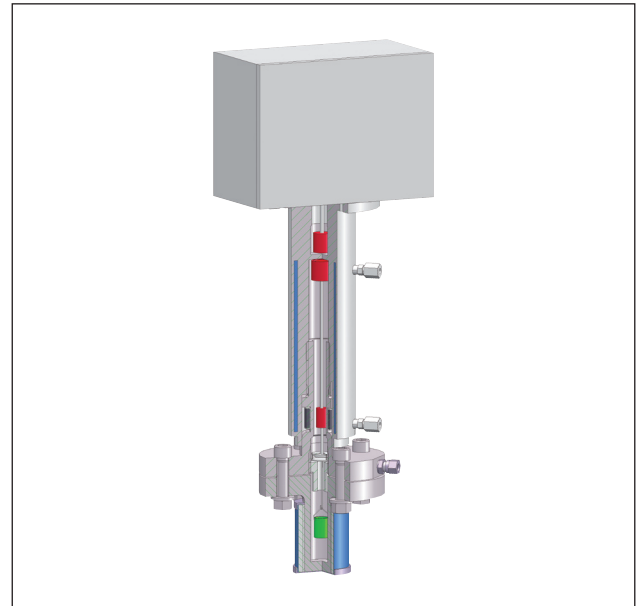
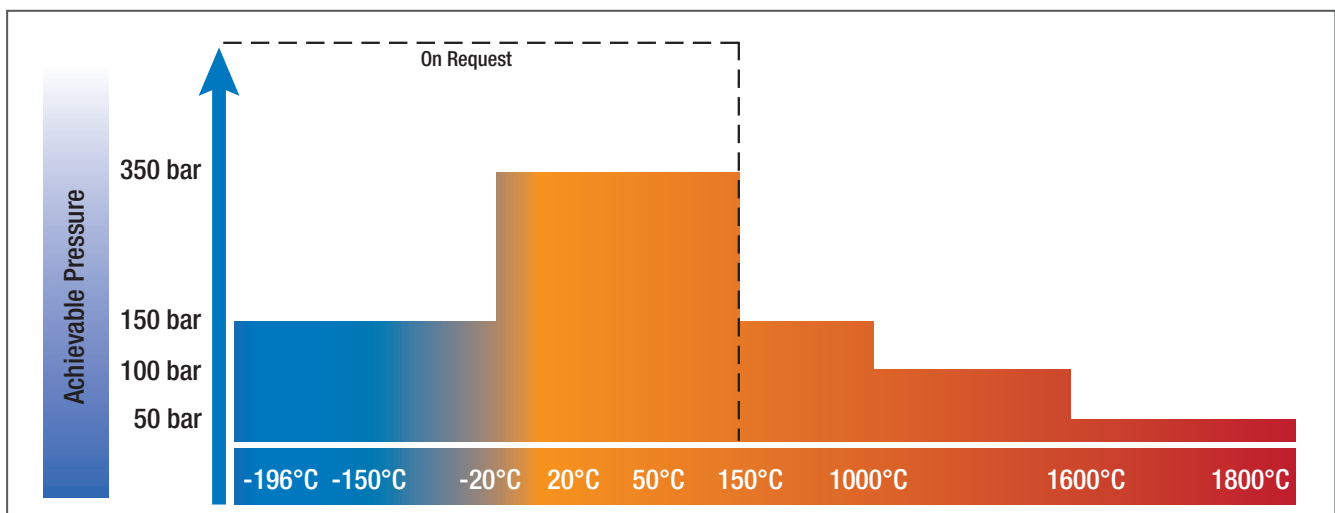
### Glass version

For the measurements with highly corrosive media, the glass version will be used. Sensitive parts in the measurement cell – for example the levitation magnet and the iron core for the position sensor – are fused-in glass. The functions of the magnetic coupling and of the automatic decoupling correlate with the metal version. The possible temperature is up to 900°C and the pressure range is up to 1.3 bar.

### Density

With the Archimedes' principle the density can also be analyzed with

### Temperature Control



the magnetic suspension balance. A mass with known volume will be weighed. With the buoyancy of the sample the density will be calculated. With a compact construction of the magnetic suspension balance the density can be analysed in a large temperature and pressure range.

### Variants of the Magnetic Suspension Balance

There are many different variants of the magnetic suspension balance for the respective application area. The magnetic suspension balance can be created as a metal version or as a glass version. The glass version is for predominantly highly corrosive applications and the metal version is for the high pressure measurements.

# L I N S E I S

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