SIEBTECHNIK TEMA

BULKINSPECTOR

Gas-Pycnometer PYC 130-A

A global first

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Gas-Pycnometer PYC 130-A

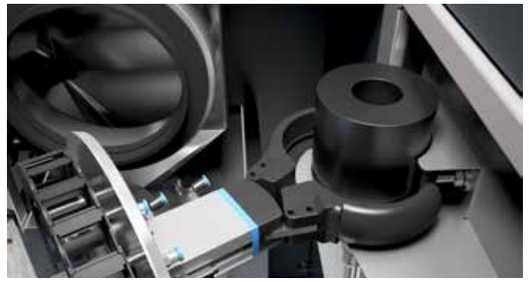
The fully automatic SIEBTECHNIK TEMA gas pycnometer is a high-precision tool for determining the density (skeleton density) of solids and bulk materials.

The sample to be analyzed is typically placed manually into the measuring chamber of the gas pycnometer.

In our device, the sample is placed in the measuring cell using a sample handling device. The process, which was previously carried out completely manually, has thus been automated, and the volume and mass of the solid are now determined in a single device.

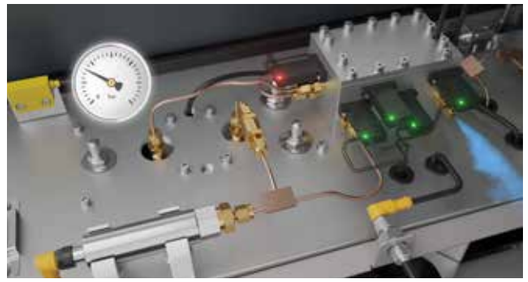
The sample material is fed into the device from the outside, ideally via a sample magazine in which the samples to be analyzed are buffered for the desired period of time.

1 After the material sample has been picked up in a measuring cup, this is inserted into the measuring cell via a handling device and the volume of the sample is determined there according to the advance settings selected.

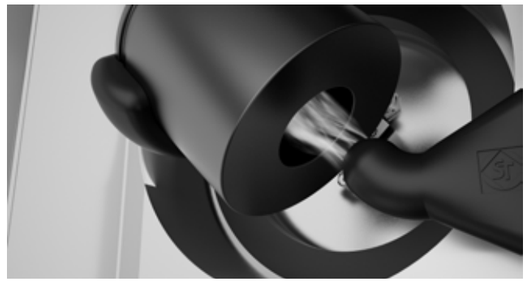


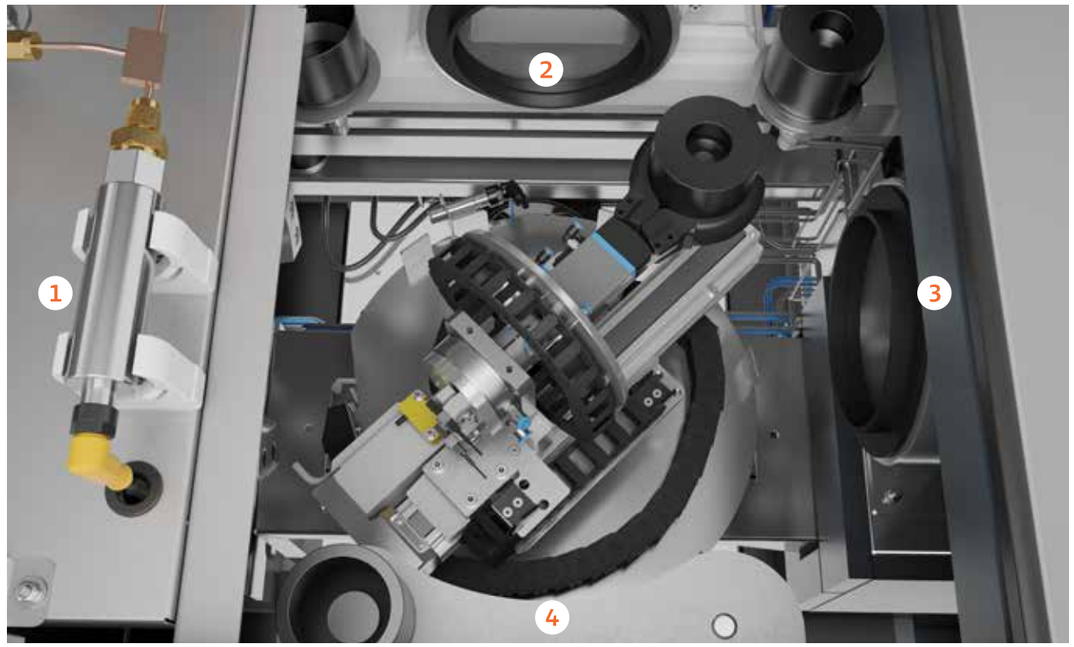
2 After the repeat determination of the volume, the handling device transports the material on to the scale for determination of the sample mass.

3 The two parameters volume and mass are now known, and from these the density of the sample is automatically calculated.

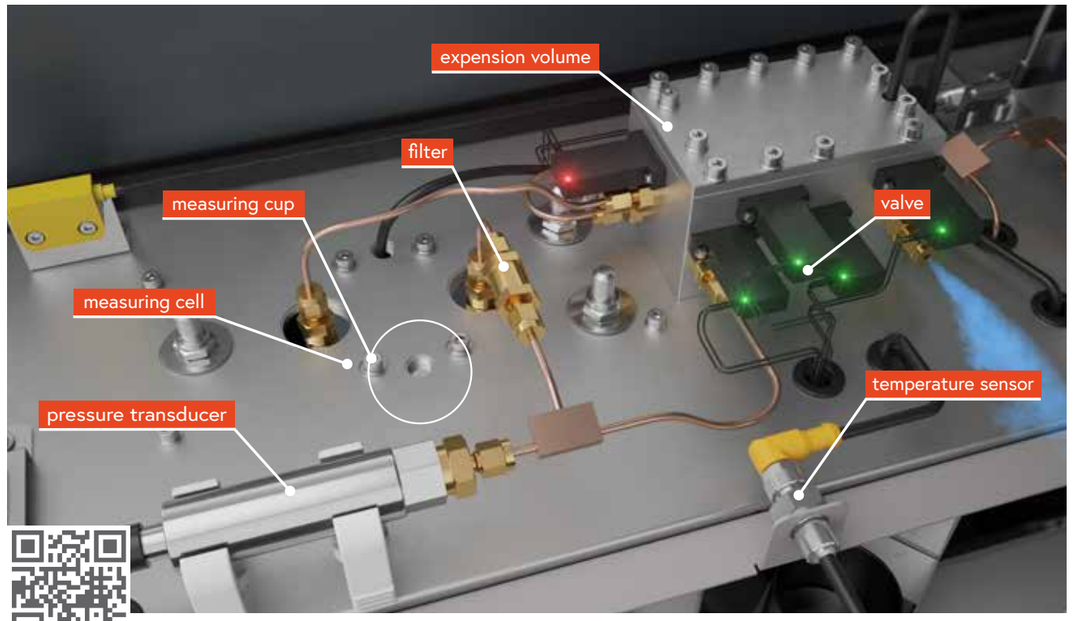


4 Finally the handling device removes the measuring cup and discharges the measured material sample into the emptying device. There the measuring cup is additionally cleaned with compressed air and is then ready to receive the next sample.





OPERATIONAL PRINCIPLE



Video of complete work process in BULKINSPECTOR - www.bulkinspector.com

Because the sample volume needs to be matched to the volume of the measuring cup for precise measurements, the fully automatic gas pycnometer offers the option of holding different measuring cups in parking positions inside the unit.

For automatic calibration, one of the measuring cup positions can be provided with a calibration volume so that recurring measurements for recalibration can be carried out during ongoing operation.

When selecting the components, special care was taken to ensure that the mechanical measurement setup, the transducers selected and the analysis electronics all generate reproducible measurement results with a low standard deviation. In addition, the interior of the insulated housing is heated or cooled as required via Peltier elements in order to maintain a constant temperature for the measurement.

Collection bottle for analyzed material

Rear view with various connections, including compressed air, sample gas, suction, power supply and data exchange

ONLINE ANALYSIS

The device is controlled via a tablet, which is included in the items supplied.

After opening the app, the user is presented with a user-friendly, modern interface design for operating the device.

Formulas for different samples can be set and managed via this interface. Measurement records can also be managed and exported, and the basic settings of the device can be adjusted. Depending on the user level, some of these function are password-protected.

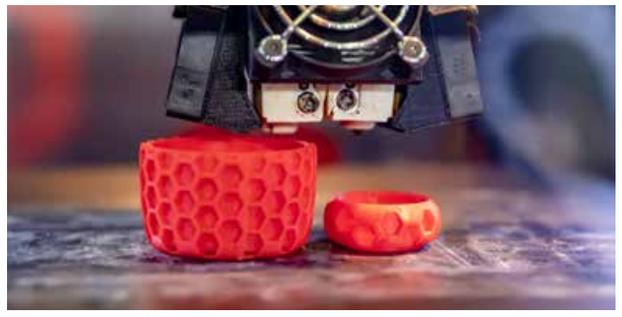
The operator can also access the user instructions via the tablet. If necessary, they can order any spare and wearing parts required from us directly online.

Automatic sampling from the downpipe with analysis in the pycnometer

FEATURES & APPLICATIONS

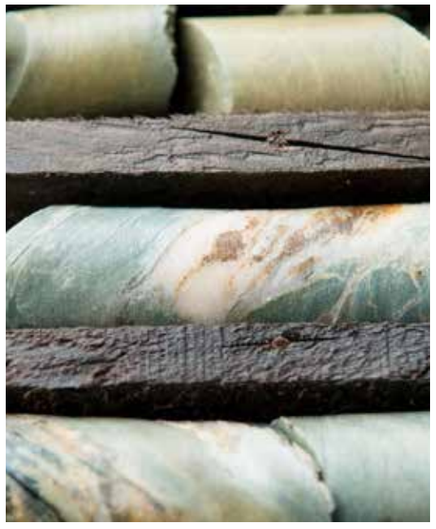
Applications

- Powder metallurgy: Measurement of sintered & cast densities to check for cavities
- Pet coke: Porosity measurement
- 3D printing, additive production: Component characterization with measurement of the solids content
- Pharma: Measuring the tablet compaction and detection of pore inclusions
- Cosmetics: Measuring pore inclusions in lipstick
- Roll compaction, bulk material compaction
- Determining properties/features: Purity of products, chemical conversion by reaction, water content, coefficient of thermal expansion, ...
- Plastics/composites: Measuring the proportion of filler material
- Construction industry: Measuring the density/porosity of materials
- Geology: Measuring the porosity of drill cores

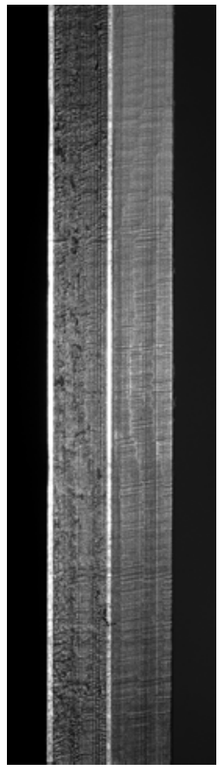


Features

- No manual intervention required during measurement, weighing and volume determination take place automatically inside the device.
- Highly accurate, fast and reproducible measurement of sample density.
- Use of various sample gases
- Non-destructive testing
- Variable measuring cup volumes
- Temperature control for the device using Peltier elements
- Easily controlled via the tablet
- Data transfer to external systems
- Online analysis with automatic sampling from the process

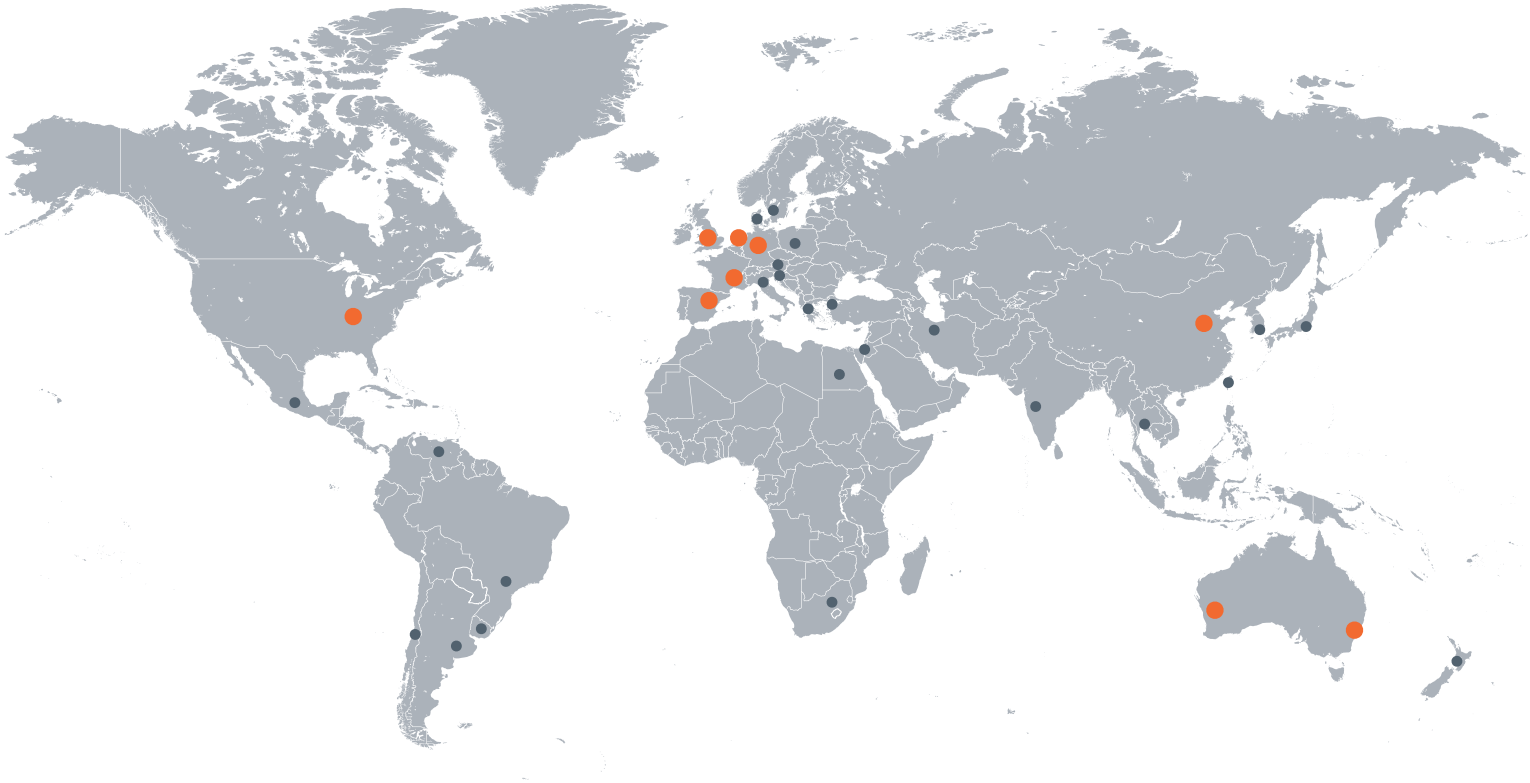


TECHNICAL DATA



Pycnometer technical data	
Model	PYC 130-A
Measuring cup volumes	130/65/10 cm^3
Number of holding points for measuring cups	4
Sample gas	Helium
Measurement pressure	0 …140 kPa
Scale	0 … 510 g ± 0.0001 g
Measurement temperature	15 … 35°C
Calibration method	Automatic calibration with calibration sphere
Measurement uncertainty	± 0.02%
Data interface	Wifi
Dimensions (width x depth x height)	1100 x 675 x 855 mm
Weight	190 kg
Power supply	AC 110 V/16 A/60 Hz, AC 230 V/10 A/50 Hz

One Solution. Worldwide.



SIEBTECHNIK TEMA provides more than 50 local support offices worldwide as well as main sites located in:

Mülheim an der Ruhr, Germany | Rijswijk / The Hague, The Netherlands | Madrid, Spain
Daventry, Great Britain | Mundolsheim, France | Sydney & Perth, Australia | Cincinnati, USA
Tianjin, China

We are experts in the field of solid-liquid separation and the processing of bulk materials

Automation | Channel conveyors | Crushing & Milling Equipment | Control Screening Machines
Decanter | Dryers | Laboratory Equipment | Pneumatic Tube Systems | Preparation Systems
Process Equipment | Pulsator Jigs | Pusher Centrifuges | Sampling Systems | Screening
Machines | Screen Worm Centrifuges | Sliding Centrifuges | Vibrating Centrifuges

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WB230-e | 01/2022