TetraTec® Instruments



LEAKAGE MEASUREMENT SYSTEM

CoM4.Leak-ClosedBox

Leak testing without adapting the part

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01 — THE METHOD

When the part cannot be adapted.

Classical leak testing needs a connection at the part. Where there is no opening at all, the method fails – and with it the testability of whole groups of components. The closed chamber turns the task around: what is tested is the space around the part.

0.1 mL/min
SMALLEST LEAKAGE
quantified up to 5 mL/min

0.5 %
ACCURACY OF READING
Measurement uncertainty (k=2) < 1.0 % of reading

17025
DIN EN ISO/IEC
accredited, D-K-17589-01-00

THE ESSENTIALS

Test chamber as a drawer

Insert the part, close the drawer, test, remove. No tubing, no adaptation at the part.

Pressure decay against a reference volume

The test pressure is set electronically. After the isolation valves close, a differential pressure sensor measures the difference against the leak-tight reference volume.

Self-calibration with built-in calibrated leaks

The system calibrates itself via built-in calibrated leaks. This turns the pressure decay into a quantitative leakage rate.

Process time optimisation

Filling, settling and measuring are set for each test task – including variable shock filling.

MSA sequence in the instrument

Repeat measurements for measurement system analysis run as a program; the instrument supplies mean values and statistics.

Integrates into the line

The mechanics can be integrated into the production line; operation is via an external monitor with a Beckhoff HMI.

WHY THE CHAMBER AND NOT THE CONNECTION

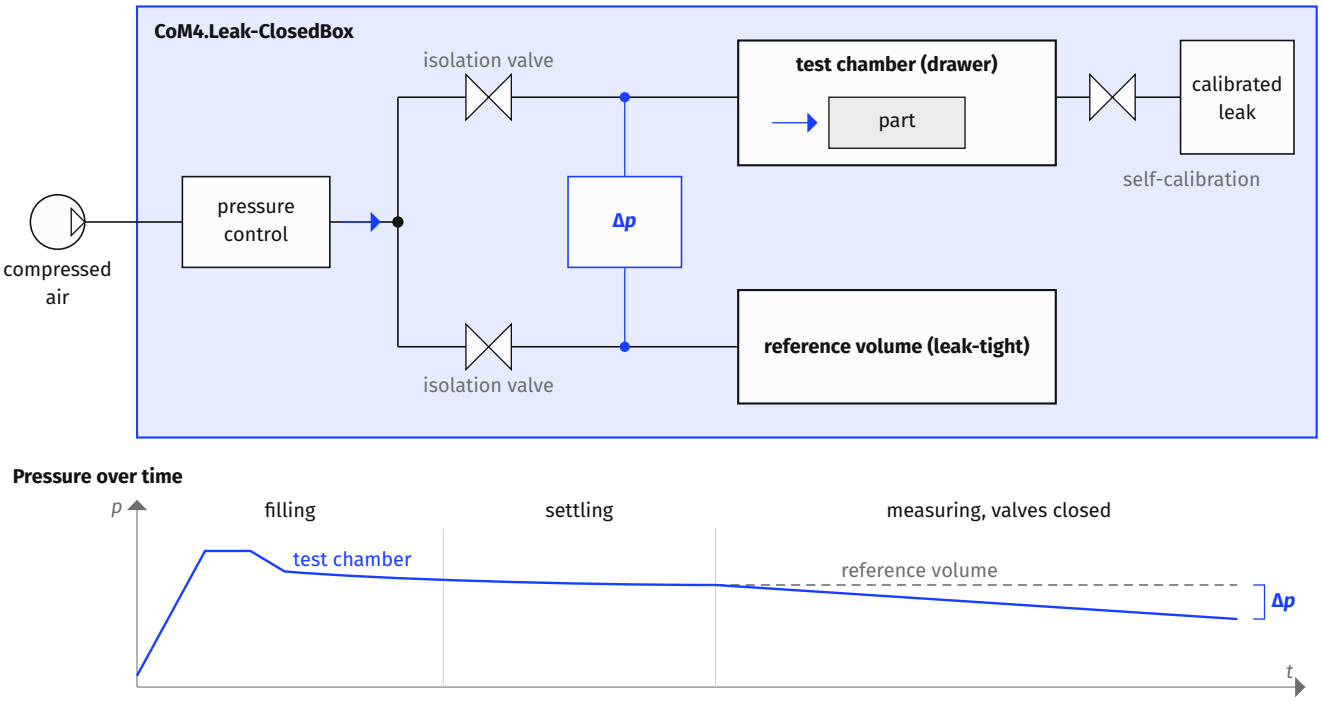
If the part itself is pressurised it needs a leak-tight connection – and every connection is a potential source of error. Any opening counts as a connection, even one that is hard to reach. The closed chamber is designed for parts that have no opening at all and must still be leak-tight. It moves the sealing point from the component to the drawer: always the same place, always the same geometry, always the same condition.

Operating principle

The same test pressure is set electronically at the part and in a leak-tight reference volume. The isolation valves then close. If the part has a leak, its pressure falls relative to the reference volume; a highly sensitive differential pressure sensor measures that difference.

The pressure decay alone is not yet a leakage rate – it depends on the test volume. The system therefore calibrates itself via built-in calibrated leaks and converts the measured decay into a quantitative leakage rate. The CoM4.SYS software, running on a Beckhoff hardware system, performs the entire sequence by itself.

TEST SEQUENCE



Idealised time curve illustrating the principle of the method; it does not show real measurement data.

TYPICAL APPLICATIONS

- Leak testing of small parts that cannot be adapted
- Series testing in the production line
- Testing of closed housings and potted assemblies
- Incoming goods and sample inspection
- Measurement system analysis with repeat measurements
- Comparative measurements in the laboratory

> *The test covers the space around the part – so even a part without a connection can be tested.*

02 — DESIGN

The leakage rate first, then the chamber.

VERSIONS

- Desktop or rack enclosure, also with handles
- Integration of the mechanics into the production line
- Chamber insert according to your component geometry

ACCESSORIES

- Calibrated leaks for recurring verification
- Chamber inserts, manufactured to drawing
- Filter and oil/water separator to ISO 8573-1
- Factory or DAkkS calibration certificate

KEY SPECIFICATIONS

Leakage	**0.1–5 mL/min**
Accuracy	**< 0.5 % of reading**
Measurement uncertainty (k=2)	**< 1.0 % of reading**
Test pressure	**0.1–7 bar**
Part holder	**Drawer with moulded insert**
Power supply	**90–260 VAC, max. 80 W**
Temperature	**0–50 °C**
Display	**external monitor, Beckhoff HMI**
Interface	**Ethernet, USB 2.0**
Enclosure	**495.5 × 449 × 444 mm**
Weight	**28 kg**

Complete data in the technical datasheet.

FROM ENQUIRY TO RECURRING CALIBRATION

1. **Record the measuring task**
   Measuring range, test volume, cycle time and operating conditions – the design follows from these.
2. **Design and calibrate the instrument**
   Assembly, calibration in our own accredited laboratory, calibration certificate with stated uncertainty.
3. **Integrate and support**
   Integration into your production, training and the recurring calibration at the agreed interval.

We will design the test chamber for your part.

REQUEST A DESIGN

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