

## Leak test systems

Tailor-made leak test systems  
to customer specification



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### High-performance and reliable leak test systems

Building on its comprehensive vacuum technology expertise, PINK GmbH Vakuumtechnik develops and produces customised leak test systems and modular standard leak test systems for the dependable leak-testing of products and components to specific requirements, even in the UHV and XHV ranges.

The systems range from helium leak test systems up to  $10^{-9}$  mbar x l/s for products that have to be tested under space conditions to leak tests for the control of pressurised systems (test pressure up to 300 bar). The systems are characterised by a high degree of functional reliability, since they suppress environmental influences, perform continuous self-monitoring and monitor the timing of all mechanical motions.

PINK Vakuumtechnik is QM-certified to DIN EN ISO 9001:2015, carries out production with high vertical integration and has extensive experience of the processing of special materials. At the customer's request, we use components with acceptance certificates (e.g. test chambers manufactured and approved in accordance with the German Pressure Vessel Ordinance).



By using specially tested components for high switching frequency and elevated stressing, PINK's systems are noted for their high operational reliability (system availability up to 95 %).

*Pressure and helium leak test system with TÜV-tested vacuum chamber and automatic feed, with integrated burst testing (22 bar) and helium recovery, for very large test specimen volumes (1,600 l).*





*Ergonomic leak test system for small series with height-adjustable measuring station, touch panel and uniform workplace lighting.*

**Performance features**

- Helium leak rate up to  $10^{-8}$  mbar l/s
- Test pressure up to 300 bar
- Guaranteed compliance with measuring equipment capabilities
- High precision even in extreme environmental conditions
- Cycle time reserves for additional measurements (e.g. flow sensors, moisture sensors)
- Extension to include gas mixing station and test gas recovery systems possible
- For applications with extra-low leak rates, optimised adaptation tools with dual seals and intermediate extraction
- Partially or fully automated with robot loading/materials flow integration
- Programmable logic controller, visualisation and data documentation
- Remote maintenance and 24 h support

**System variants**

- Helium leak test systems
- Integral leak test systems
- Leak test systems in the UHV/XHV ranges
- Leak tests using the rising pressure method
- Burst test systems with high test pressure and various test media



*Customer-specific system with 1,400 litre chamber, fully automatic test gas control and system calibration, cycle time: 35 seconds.*



## Quality features of PINK industrial leak test systems

### Leak tests free of environmental influences

In PINK's helium leak test systems it is technologically standard to reliably exclude problematic environmental influences such as helium-contaminated test chambers or systems, environmental influences arising at the production locations (humidity, ambient temperatures etc.) or residual contamination of the product being tested.

PINK uses special high-performance pump systems for He leak test systems. This permits very swift resumption of the system's accustomed production process – even if the system has been exposed to severe contamination, e.g. from a destroyed test specimen.

### Performance features

- Continuous self-monitoring
- Fully automatic control of compliance with the guaranteed leak rates
- Minimisation of the effect of machine factors and temperature problems during system calibration
- The data indicated by the detector are identical to those on the system panel

### Comprehensive diagnostics and documentation

The helium concentration is monitored via the system self-test with an integrated machine test leak. In the case of deviating concentrations, the switching point is automatically adjusted to the limit leak rate to ensure that the test specification is always adhered to. The results of the test gas control are verified with the aid of a reference measurement with 100 % helium.

Even with the most difficult test criteria, we are able to reliably verify and document the results for our customers. PINK leak test systems are equipped with fully automatic control of compliance with the guaranteed leak rates as well as the fully automatic calibration and checking of the system's measuring equipment.



*Fully automatic 3-chamber leak test system, measuring sensitivity:  $5.0 \times 10^{-7}$  mbar l/s, highly flexible thanks to interchangeable test chambers, cycle time: 6 test specimens per minute with fully automatic test gas concentration check and test parameter adjustment.*

# Highly efficient helium recovery and innovative accessories

## PINK's special components

In the development processes at PINK, the practice of designing products to a variety of customer requirements has brought forth numerous useful special products that improve the performance of leak test systems. These include, for example, specially sealed high-pressure valves, service-friendly high-pressure filters up to 250 bar test pressure for high-speed filter change, and chipcard seals (PHP sticks) for seal changes with faster cycle rates for high/medium-pressure tools.



*High-performance high-pressure filter*



*User-friendly chipcard seal*

The use of these special components opens up numerous new opportunities and significant savings in operating costs in connection with integration in automated systems.



*PINK designs customised helium recovery systems making use of balloon storage.*

## Advantages of He recovery

The recycling of the process gas helium is becoming increasingly important in terms of cutting production costs and conserving resources.

If leak test systems are equipped with helium recovery systems, gas consumption can be significantly reduced due to the lower demand for fresh gas, thus significantly improving cost-effectiveness.

The test procedure and PINK's special high-performance pump systems permit substantial reductions in production costs in conjunction with He recovery systems. For example, dual-chamber systems can easily be extended to include a further test chamber, which, given sufficiently high unit quantities, can make an additional system superfluous.

## Inline systems with high clock rates and the latest leak test technologies

### Automation solutions from PINK

On the strength of its far-reaching experience in vacuum and automation technology, PINK is being increasingly commissioned with the design of complete systems, which include both various mechanical pre-processes and handling equipment such as robot loading, lift stations, transfer systems, etc. Assembly and test stations (function and/or tolerance tests) can also be integrated into customer-specific automation solutions.

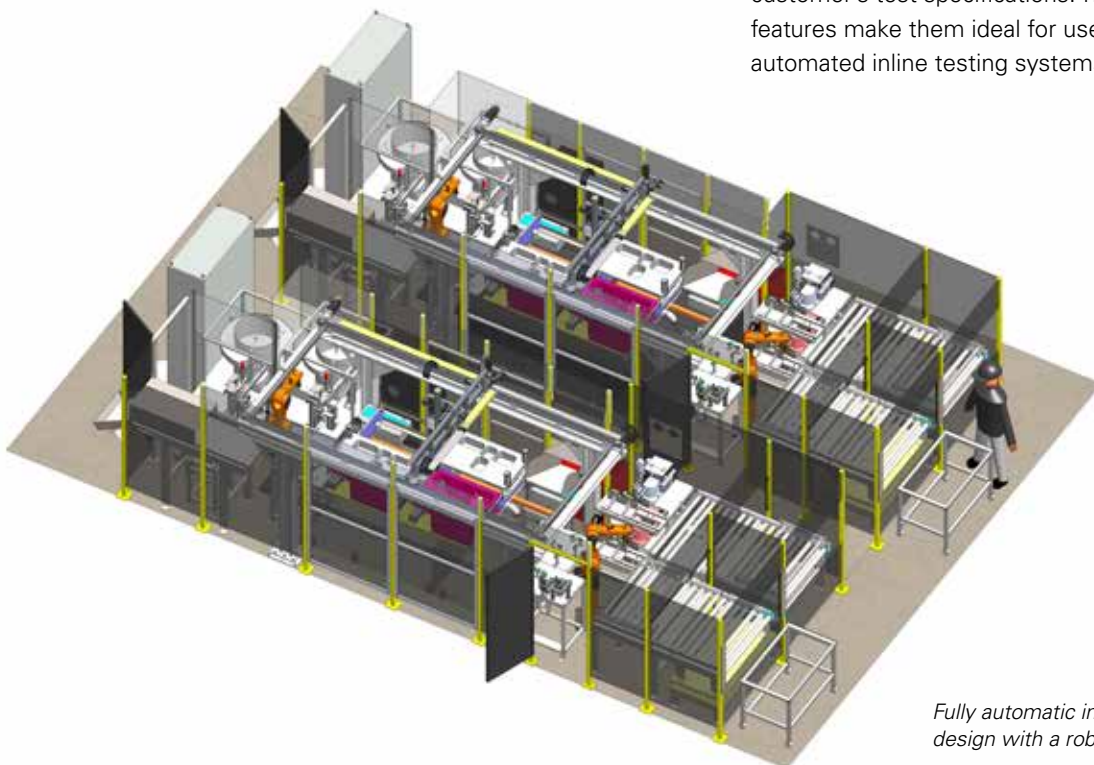
The integration of leak test systems into existing or newly developed production lines is individually designed by PINK with special consideration for the customer's automated processes. The customer's requirements range from the optimisation of the handling of test specimens and the continuous recording of process data to the assurance of traceability, product quality and process safety.



### Fully automatic He leak test

The technological requirements for industrial leak testing are becoming steadily tougher not only in the automotive industry, but also in all other relevant industrial sectors. The main focus here is on a high degree of automation of the test processes with ever shorter cycle rates and further improved operational reliability and energy efficiency.

PINK leak test systems constantly check themselves, autonomously calculate their test parameters and dependably comply with the customer's test specifications. These positive features make them ideal for use in fully automated inline testing systems.



*Fully automatic inline leak test system in a twin design with a robot and loading portal connection.*



*Design of a fully automatic helium leak test system with robots for the transfer of test specimens within various process stations.*

### Profitability and high efficiency

For sensitive applications where particularly low leak rates are required, PINK uses optimised adaptation tools with dual seals and intermediate extraction.

The special high-performance pump stations used by PINK offer numerous technological advantages in helium leak testing, which can significantly enhance the profitability and efficiency of industrial inline testing systems.

The suppression of environmental influences and the ability to achieve the shortest clock rates are the most important prerequisites for the successful automation of test processes.

### Fully automatic diagnostic and monitoring systems

PINK leak test systems are equipped with comprehensive diagnostic systems ranging from continuous self-monitoring to fully automatic leak rate monitoring and the autonomous calculation of new test parameters.

Depending on customer requirements, the systems can be designed for partially or fully automatic operation. Thanks to individual system adjustment to the test specimens, very high clock rates can be achieved.

*Dual-chamber test systems as an inline system with integrated helium recovery, helium test pressure: 180 bar, test chamber volumes: 710 l, constant cycle time: 30 s, measurement sensitivity:  $5.0 \times 10^{-7}$  mbar l/s.*



**PiNK GmbH**  
**Vakuumtechnik**

Gyula-Horn-Str. 20  
97877 Wertheim  
Germany  
T +49 (0) 93 42 872-0  
F +49 (0) 93 42 872-111  
info@pink-vak.de  
www.pink-vak.de

