



HELIUM LEAK TESTING

WHY HELIUM LEAK TESTING?

Tightening environmental standards together with increasing functional and safety requirements (to protect the environment, to guarantee high safety standards and product reliability, etc.) drive manufacturers to guarantee leak tightness by completing 100% leak testing as part of the production process.

International quality standards and legislations impose that helium is used to carry out the leak tests as it represents the only method that guarantees reliable and repeatable results that can be quantified and constantly monitored.

The testing operation can have different levels of automation and be fully integrated in the production line. There are several cost savings and a multitude of benefits that can be attained by using a helium leak detection system, as explained in the next pages.

HELIUM LEAK TESTING

Leaks can be caused by a number of factors like micro-cracks, porosity, small defects in the welds, defective seals, incorrect components assembly, etc.

Our engineers advise which method is best suited for leak testing certain products or components:

- Ultrasonic measurement and bubble test
 - Pressure decay
 - Helium sniff
 - Helium spray
 - Helium accumulation
 - Vacuum systems
-

LEAK TEST SOLUTIONS

We offer a range of helium leak test solutions to meet our customers' requirements.

We specialise in helium leak testing, which, among all, represent the ideal solution for leak testing.

This method is characterised by a very high level of sensitivity, quantifiable and reliable results and the possibility to partly or fully automate the process, integrating it directly into the manufacturing process.

The typical leak detection system includes a vacuum chamber where the product is enclosed in to check for any leak point. The air from around the outside is evacuated and helium gas is introduced inside the product.

A highly sensitive mass spectrometer detects the presence of helium on the outside which would indicate a leak. This technology has the sensitivity to detect leaks which other traditional methods such as pressure decay and the bubble test will not find.

To put this into context, industrial helium leak test machines can detect the equivalent of one tiny bubble every hour, that's the same as a car tire going flat over 2500 years!

Other techniques can be considered depending on the application and customer requirements.

VES' designing skills together with the experience and the knowledge gained through more than 30 years, ensures this highly sensitive and technical testing methodology is properly implemented in high quality and robust machines able to work reliably even when part of a high throughput manufacturing line operating 24/7.



Interesting Fact

Industrial helium leak test machines can detect the equivalent of one tiny bubble every hour, that's the same as a car tire going flat over 2500 years!

TRACER GASES USED FOR LEAK DETECTION

Most of the leak detection machines are based on the use of Helium for the many benefits that it offers:

Helium is present in the atmosphere in sufficiently low quantities so as not to affect testing (5.2 parts per million)

Helium is inert, so safe to use for testing. Moreover it's colourless, odourless, tasteless, non-toxic and its boiling and melting points are the lowest among the elements and it exists only as a gas except in extreme conditions.

Unlike other tracer gases, residual helium left in the component will not react with any gas/liquid which the component is charged during its normal operation.

Helium has a unique mass number (4) enabling mass spectrometers to be 'tuned' to only see helium.

Helium costs can be relatively low - in high consumption processes Helium Recovery Units (VES' PURE System) can be used to obtain high recovery rates.

Helium is naturally occurring in the atmosphere and can be safely discharged without any adverse environmental effects.

However, other tracer gases can be used too. Depending on the specific product and application, VES will offer the most adequate solution to guarantee the best results. Typical examples are the systems we created to test multichannel heat exchangers, where both helium and hydrogen are used.

Interested in knowing more about what we can offer for your specific products? please do not hesitate to contact us.



SOLUTIONS WE OFFER

The solutions we offer will always be in line with your technical requirements and financial possibilities:



- Manual to fully automated solutions
- Fully or partly integrated in manufacturing line or stand-alone systems
- Production rates to suit your needs, our fastest is 100 parts per minute!
- Leak rates as low as 1.0 -8 mbar·l/s
- Test pressure - to suit your needs
- Programming software - to suit your needs
- Product traceability system (barcode reading/ printing, engraving, pin-dot marking)
- Label-printing, data acquisition, data-storage
- PLC types to suit your needs
- Connection for remote support



Interesting Fact

As of 2020, 1/4 cars in Europe and North America had a traditional fuel tank leak tested with a VES leak detection system.

WHO ARE VES?

Vacuum Engineering Services are a specialist company offering customised leak test solutions to a variety of industries worldwide.

Formed in 1994, we offer unrivalled expertise in helium leak testing. We use our design and manufacturing expertise to provide bespoke leak detection systems that can be found across the world and are actively supported by our worldwide aftersales network.

Our leak test machines are used for guaranteeing leak tightness to very high levels and are used across the automotive, HVAC, fire safety, and nuclear industries. These machines are utilised on production lines in operation 24/7, where reliable results are vital.

For information on our leak test systems please don't hesitate and get in touch with us via the contact details below.

WHO USES VES?



DENSO



Vacuum Engineering Services (UK) Ltd.

T: +44 161 866 8860
sales@vac-eng.com

Vacuum Engineering Services (USA) Inc.

T: +1 724 340 6085
salesUSA@vac-eng.com

Vacuum Engineering Services Europe

T: +420 602 118 280
salesEU@vac-eng.com

Vacuum Engineering Services Fugani de Mexico

T: +52 442 402 1122
proyectos@vac-eng.com