

# LEAK TESTING OF COMPONENTS

## Plastic Containers



### DESCRIPTION OF TECHNICAL CHALLENGE

Low-cost plastic components cannot be both safely and cost-effectively tested for leaks using conventional industrial testing methods (such as the underwater bubble test, the pressure drop method or vacuum leak detection).

Plastic containers are difficult to test with pressure decay methods because the applied pressure leads to an expansion of the part and can even cause creepage over the testing period. A reliable measurement is virtually impossible as the pressure in the test part declines. The reproducibility of the measurement results is difficult to guarantee and continues to decline with smaller leak rates or increasing volumes.

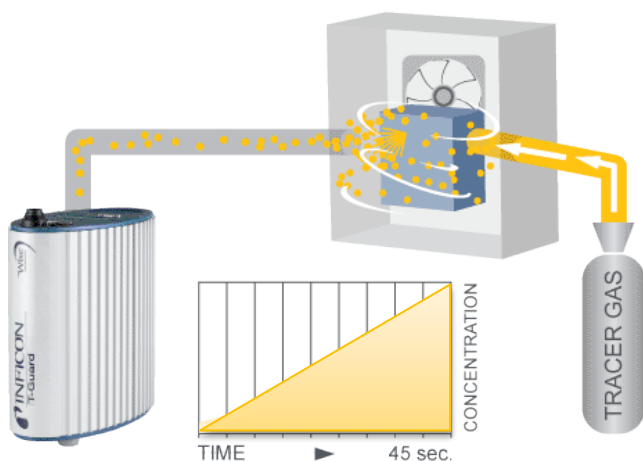
Stricter emission regulations are also driving the industry standards upwards. Pressure decay and water bath testing are no longer precise enough for many industrial requirements. Helium vacuum test methods offer the required sensitivity, but are usually overdesigned for these low-cost plastic components and are simply too costly.

### THE INFICON SOLUTION

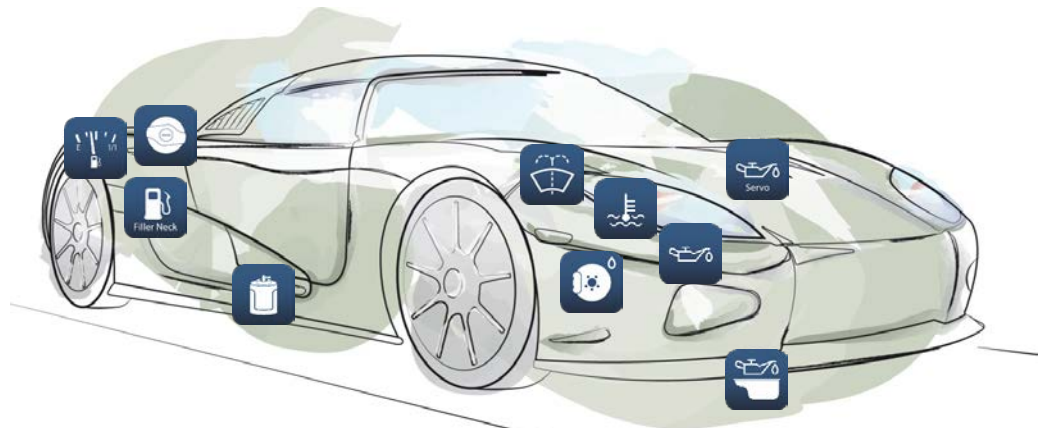
Today leak detection with helium or hydrogen in an accumulating chamber under normal pressure (accumulation method) is offering an economical solution for leak testing of plastic containers.

In a simple chamber, the test part is pressurized with helium or hydrogen through its test gas connection so that the test gas can escape through any leaks into the accumulating chamber. Fans then ensure an even distribution of the test gas in the chamber – so, independent of the position of the leak, precise measurement values are guaranteed. The sensor then determines the test gas content in this atmosphere. The expansion of the test part caused by pressurizing is irrelevant in this measuring system.

Hydrogen can be used just as well as helium. Hydrogen is priced even lower as a test gas, but does not permit the same sensitivity. In the T-Guard helium sensor, the highly sensitive, patented Wise technology sensor detects an increasing helium concentration. The Sampling Probe AP29ECO does detect the hydrogen share of a 95% nitrogen / 5% hydrogen mixture.



EXAMPLES OF PLASTIC CONTAINERS SUITED FOR THIS TESTING METHOD



Component	Plastic oil tank	Oil pan	Windshiel wiper fluid container	Servo oil reservoir	Coolant expansion tank
Typical leak rate	$\sim 10^{-3}$ mbarl/s	$\sim 10^{-2}$ mbarl/s	$\sim 10^{-2}$ mbarl/s	$10^{-2} \dots 10^{-1}$ mbarl/s 1 .. 10 sccm	$\sim 10^{-2}$ mbarl/s
Recommended INFICON product	<a href="#">T-Guard</a>	<a href="#">T-Guard</a> <a href="#">Sensistor Sentrac</a>	<a href="#">Sensistor Sentrac</a> <a href="#">T-Guard</a>	<a href="#">T-Guard</a> <a href="#">Sensistor Sentrac</a>	<a href="#">Sensistor Sentrac</a> <a href="#">T-Guard</a>

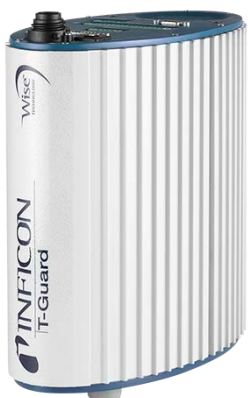
Component	Tank filler neck	Tank filler cap	Fuel tank sending unit	Swirl pot	Brake fluid reservoir
Typical leak rate	$\sim 10^{-4}$ mbarl/s	$\sim 10^{-4}$ mbarl/s	$\sim 10^{-4}$ mbarl/s	$10^{-2} \dots 10^{-4}$ mbarl/s	$10^{-3} \dots 10^{-4}$ mbarl/s
Recommended INFICON product	<a href="#">T-Guard</a> <a href="#">LDS3000</a>	<a href="#">T-Guard</a> <a href="#">Protec P3000(XL)</a>	<a href="#">T-Guard</a>	<a href="#">T-Guard</a>	<a href="#">T-Guard</a>

\* Click on the product name to get more product information from our website

BENEFITS OF HELIUM / HYDROGEN LEAK TESTING

- Accurate and repeatable measurements for reliable results of leak testing
- Test method independent of temperature and moisture
- Cost efficient leak testing
- High sensitivity

For more information, please visit us at  
[www.inficonautomotive.com](http://www.inficonautomotive.com)



T-Guard Helium Accumulation Sensor



[www.inficon.com](http://www.inficon.com) [reachus@inficon.com](mailto:reachus@inficon.com)

Due to our continuing program of product improvements, specifications are subject to change without notice.

miaa00en-a (1502) ©2015 INFICON