

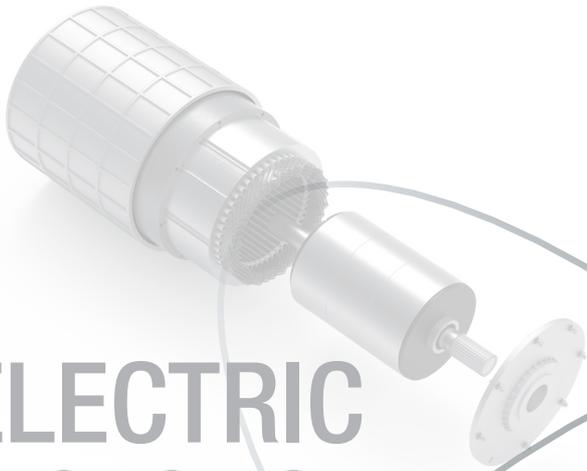


**MARPOSS**



# LEAK TESTS IN THE PRODUCTION OF BATTERY SYSTEMS

# MARPOSS OFFERS MEASUREMENT, INSPECTION AND TESTING SYSTEMS FOR ALL PRODUCTION AREAS OF THE ELETTRICITY INDUSTRY



**ELECTRIC MOTORS**  
FOR HYBRID AND ELECTRIC VEHICLES

**FUEL CELLS**



SAFETY



QUALITY

RELIABILITY

**TRACTION BATTERIES**



**GEARBOX**



YOUR GLOBAL PARTNER FOR MEASURING, INSPECTION AND TESTING SYSTEMS

**MARPOSS**

# TRACTION BATTERY

## THE CORE ELEMENT OF AN ELECTRIC VEHICLE



In order to meet the high-quality standards requirements for batteries, measurement and testing technology must have been applied systematically in the production process. This will improve production efficiency and reduce rejected parts and will also meet the requirements for safety and performance.

### leak test for battery cells

With HEV/EV technology comes new leak test requirements for the automotive industry: each single battery cell must be protected, reliably, against any penetration of humidity and air. The MARPOSS helium vacuum test detects leakage rate of  $10^{-3}$  to  $10^{-6}$  scc/s.

### leak test for cooling circuits of battery modules and packs

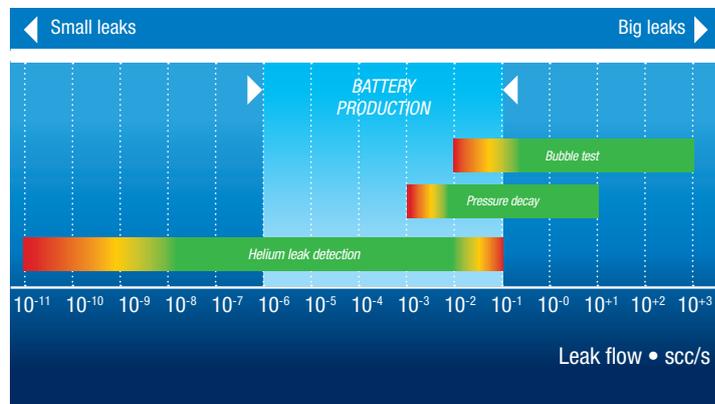
If the individual cells are to be combined into larger battery modules – or into battery packs – the tightness of the cooling circuit must be ensured in production. Leak rates within the range of  $10^{-3}$  scc/s are used when cooling with a water glycol mixture and  $10^{-5}$  scc/s when cooling with gas.

### leak test for battery trays, covers and packs

The complete battery modules are assembled in a housing and tested for leak rates within the range of  $10^{-3}$  scc/s.

MARPOSS offers solutions for leak test and leak detection in all phases of the production process of the batteries:

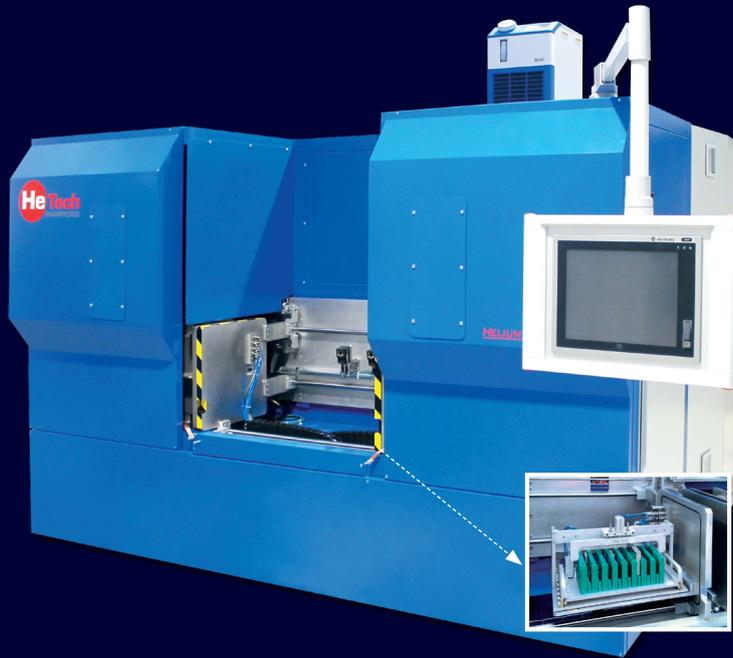
- Helium vacuum test or electrolyte tracing for individual battery cells
- Helium leak detection or decay/ flow test on battery packs components (e.g. on cooling tubes & hoses).
- Leak test on larger battery modules, packs and housing (including power electronics) after final assembly by means of the pressure decay/ flow test or with tracer gas.



# LEAK

## IN THE PRODUCTION

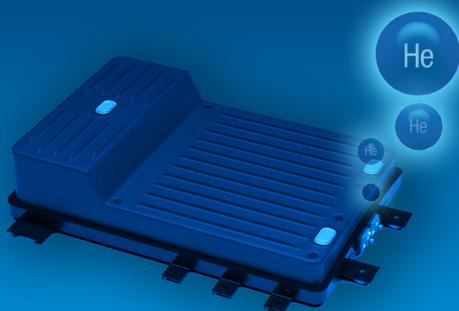
# BATTERY



## A HELIUM TRACER GAS

$\sim 10^{-2}$  to  $\sim 10^{-6}$  scc/s

LEAK TEST WITH HELIUM AS TRACER GAS, IN VACUUM CHAMBER, IN ACCUMULATION CHAMBER OR SNIFFER TEST METHOD



A



### BATTERY CELL

HELIUM TRACER GAS OR ELECTROLYTE TRACING

$\sim 10^{-3}$  to  $\sim 10^{-6}$  scc/s

Electrolyte must not leak out and humidity must not penetrate

B



### BATTERY MODULE

PRESSURE DECAY/FLOW TEST

$\sim 10^{-1}$  to  $\sim 10^{-3}$  scc/s

Protection from external humidity and dust

# LEAK TEST OF SYSTEMS



## PRESSURE DECAY/ FLOW TEST **B**

$\sim 10^{-1}$  to  $\sim 10^{-3}$  scc/s

LEAK TEST BY  
MEANS OF  
PRESSURE DECAY OR  
FLOW MEASUREMENT

A



B

### BATTERY HOUSING & COVER

PRESSURE DECAY/FLOW TEST  
OR HELIUM TRACER GAS

$\sim 10^{-1}$  to  $\sim 10^{-3}$  scc/s

Dust-proof & protection against  
temporary immersion of the  
component

A



B

### COOLING TUBES, HOSES, AND PLATES

PRESSURE DECAY/FLOW TEST OR  
HELIUM TRACER GAS

$\sim 10^{-1}$  to  $\sim 10^{-5}$  scc/s

No significant refrigerant loss

A



B

### BATTERY PACK ASSEMBLY

PRESSURE DECAY/FLOW TEST OR  
HELIUM TRACER GAS

$\sim 10^{-1}$  to  $\sim 10^{-3}$  scc/s

Dust-proof & protection against  
temporary immersion of the  
complete assembly



# ONE PARTNER MANY SOLUTIONS



worldwide present in

**34**  
countries

offices worldwide

**80**

exports

**94%**

more than

**3,500**  
employees

**1,314**

Italy

**820**

Europe

**1,040**

Asia

**330**

Americas

**26**

key acquisitions since 2000

**8%**

resources invested in R&D

Marposs was founded in 1952 and since then has provided shop-floor solutions for the quality check in the production environment. Marposs' solutions include gauging equipment of mechanical components, before, during and after the production process, monitoring solutions on machine tools, assembly and testing for many industry sectors and automatic machines and checking stations for production lines.

Marposs is one of the main supplier of the major car makers, but operates as well in the aerospace, biomedical, hi-tech and glass industries.

Marposs Group employs more than 3500 people around the world and is present in thirty-four countries with more than eighty sales offices.



**MARPOSS**  
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*For a full list of address locations, please consult the Marposs official website*

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