

# Helium inspection of cylindrical lithium batteries





## Overview

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Although various leak detection methods are available, helium mass spectrometer leak detection (HMSLD) is the preferred and is being used broadly to ensure low air and water permeation rates in cells. Can helium be used to detect a battery leak?

Even though the sensitivity of the technique is not yet on par with helium, the selection of appropriate markers for detection, coupled with an understanding of leak dynamics and the calibration of measurement systems, can enable reliable quantification of leaks in various battery formats.

How helium is used in a battery test?

The first step is to insert helium at a known pressure into the battery case through an aperture, typically the electrolyte filling opening (Figure 3). This hole is kept sealed during testing while helium is fed to the cell, the test chamber is evacuated and the presence of helium into the test chamber is monitored.

How do you test a lithium ion battery?

Common lithium-ion battery types. Testing for leak tightness requires some form of leak detection. Although various leak detection methods are available, helium mass spectrometer leak detection (HMSLD) is the preferred and is being used broadly to ensure low air and water permeation rates in cells.

Why do EV leak detection systems need helium?

This testing is essential in the EV industry, where high quality and safety standards are mandatory. Marposs is meeting these challenges with its leak detection systems that use helium, a light, reliable, inert, non-toxic, and non-flammable gas — making them ideal for precise leak testing.



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### Leak Testing Of Battery Cells By Helium Tracing

Leak Testing Of Battery Cells By Helium Tracing Leak testing is a fundamental operation in the battery cell production process, in particular for the new generations of lithium-ion secondary ...

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### Standardized Leak Testing for Lithium-Ion ...

Jan 6, 2021 · A helium tracer-gas leak-rate test limit of  $10^{-6}$  mbar·l/s would apply for all three types of lithium-ion battery cells. While leak-rate test ...

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### Helium-based leak testing solutions for EV battery cells and ...

Nov 1, 2024 · Leak testing is crucial in producing next-generation lithium-ion batteries, particularly for electric vehicle (EV) applications. Ensuring secure sealing of the cell housing is essential to ...

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### Helium-based leak testing solutions for EV ...

Nov 1, 2024 · Leak testing is crucial in producing next-generation lithium-ion batteries, particularly for electric vehicle (EV) applications. Ensuring ...

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### Setting a new standard for battery leak ...

Jan 28, 2021 · Furthermore, the helium leak test cannot be used for pouch cells. There currently are no reliable tests on which to base leak-detection ...

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### Leak Tester for Lithium-ion Battery Cases|Helium Leak Test ...

This tester performs a full automatic inspection of lithium-ion battery cases for tiny leaks. Rectangular or cylinder type lithium-ion cases are inspected at high speed with high accuracy, ...

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### ELECTROLYTE TRACING AS AN EFFECTIVE LEAK TESTING ...

Oct 25, 2024 · In the state-of-the-art, commercialized lithium-ion batteries which are basically composed of individual electrochemical cells connected in series, each one constituted by ...

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### The Vital Role of Helium Detection in Lithium-ion Battery ...

Jul 25, 2025 · In the high-stakes world of lithium-ion battery manufacturing, where safety and performance are paramount, the helium inspection process stands as a critical guardian. It ...

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### A Comprehensive Guide to Cylindrical Lithium ...

Nov 14, 2025 · The story of cylindrical lithium-ion battery cells traces back to the 1990s, when researchers pioneered the development of rechargeable ...

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### Battery Cell

In order to ensure adequate quality and safety standards of the finished product, it is necessary



to adopt appropriate control strategies within the ...

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#### Leak Testing of Lithium-Ion Battery Cells

Feb 14, 2023 · There are four different mechanical designs of a battery cell: cylindrical cells, coin cells, prismatic cells and pouch type cells. Cylindrical cells, coin cells and prismatic cells have ...

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#### Application of helium mass spectrometer leak detector for ...

Therefore, during the important processes of assembly and sealing (cylindrical and prismatic cells are sealed by welding) of lithium batteries, leak detection must be carried out. According to the ...

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#### Leakage detection of battery shell

The helium mass spectrometer leak detector of Noy Technology is used to check the leakage of the battery shell: the lithium battery needs to be leak tested in the process of assembly and ...

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#### Helium Detection for Lithium Battery Safety Assurance

Helium Detection ensures lithium-ion battery safety by identifying microscopic leaks--preventing hazards, improving sealing accuracy, and enhancing overall performance.

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#### Strengthening the Last Line of Defense for Battery Safety

Oct 29, 2025 · In this collaboration, the large cylindrical battery helium inspection equipment provided by our company undertakes the final and crucial sealingity leak detection process ...

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#### Greater Precision for EV Battery Leak Testing

Sep 18, 2024 · Inficon began rolling out its battery leak detection production equipment for pouch, prismatic, and cylindrical cells in 2020. Current ...

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#### Leak Detection of Lithium-Ion Batteries and Automotive ...

Apr 21, 2023 · Why leak test lithium-ion batteries and electrical vehicle (EV) cooling components? Lithium-ion chemistry is not inherently safe as lithium reacts rapidly with water in a single ...

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#### Helium Detection for Lithium Battery Safety ...

Helium Detection ensures lithium-ion battery safety by identifying microscopic leaks--preventing hazards, improving sealing accuracy, and enhancing ...

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#### 60 s/piece Cylindrical Battery Cell Helium Filling Equipment ...

Product use Mainly used for helium filling of cylindrical cells. By testing the sealing performance of cylindrical cells through helium filling, it provides an important basis for battery quality ...

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#### Helium detection technology of lithium battery , bowei

Nov 15, 2024 · Lithium Battery Helium Inspection Technology 1.The mystery of helium leakage in lithium batteries As a highly efficient energy storage device, lithium batteries have complex ...

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