



**ENVIRONMENTAL TEST CHAMBER SOLUTIONS
EV/BATTERY**

GET CHARGED



Stand the test of time.

www.weiss-na.com

Walk-In & Drive-In Chambers

Maybe a bit bigger?

If the standard test chambers are not large enough for you or the test requirements call for a special solution, Weiss Technik offers you almost unlimited options. As a single-source supplier, we develop and implement test chambers and test rooms for modules, packs and complete drive units, with or without BMS. In terms of size, you have choices ranging from walk-in test chambers up to test rooms for entire vehicles.



EUCAR Hazard Levels 1,2,3,4,5,6

w/w Series		w/w / w/wH420			w/w / w/wH512			w/w / w/wH1080			w/w / w/wH1728		
Plenum Type		Roll-Up Module											
Test Space Volume	Cu. Ft. / Liters	420 / 11839			512 / 14498			1080 / 30582			1728 / 48932		
Test Space Dimensions	Width	72" (1829mm)			96" (2438mm)			120" (3048mm)			144" (3658mm)		
	Depth	120" (3048mm)			96" (2438mm)			144" (3658mm)			192" (4877mm)		
	Height	84" (2134mm)			96" (2438mm)			108" (2743mm)			108" (2743mm)		
Exterior Dimensions ⁴	Width	84" (2134mm)			108" (2743mm)			132" (3353mm)			156" (3962mm)		
	Depth	132" (3353mm)			108" (2743mm)			156" (3962mm)			204" (5182mm)		
	Height	99" (2515mm)			111" (2819mm)			123" (3124mm)			123" (3124mm)		
Temperature Change Rate ¹	Heating Rate	1.5°C/min	3.5°C/min	9.0°C/min	1.0°C/min	3.5°C/min	8.5°C/min	0.5°C/min	1.5°C/min	3.5°C/min	0.5°C/min	1.0°C/min	2.5°C/min
	Cooling Rate	1.5°C/min	3.5°C/min	9.0°C/min	1.0°C/min	3.5°C/min	8.5°C/min	0.5°C/min	1.5°C/min	3.5°C/min	0.5°C/min	1.0°C/min	2.5°C/min
Temperature Range	Minimum	-70°C (-94°F)											
	Maximum	+180°C (+356°F)											
Humidity Range ^{2 3}		20%RH to 95%RH											

Reach-In Series

Know-how for e-mobility - at full charge

Special testing tasks require special test chambers. This is why we modify the standard chambers according to the hazard assessment and requirement at hand. For example, by adding safety components such as a flushing device with a particularly high air replacement rate. In addition, we offer a wide range of special solutions, such as positioning the control technology above the test chamber, for heavy-duty gratings with a telescopic system and drawer systems for up to 12 batteries with a guide-through and plug-in connector panel.



EUCAR Hazard Levels 1,2,3,4,5,6,7

Testing Safely

Laboratory Hazards

Testing lithium-ion packs, modules and cells with their increasing energy densities is a sensitive topic. During the temperature tests, overcharging or malfunctions of the batteries may occur. This can lead to the destruction of the batteries. Increasing storage sizes cause increasing impacts of possible failures and potential risks during tests with lithium-ion batteries. For this reason, safety in the laboratory, in particular the protection of the staff during such tests has the highest priority.

Tests under the influence of temperature

External influences, such as • External heating

- Overcharging
- Deep discharge
- Excessive charging current
- External short-circuit

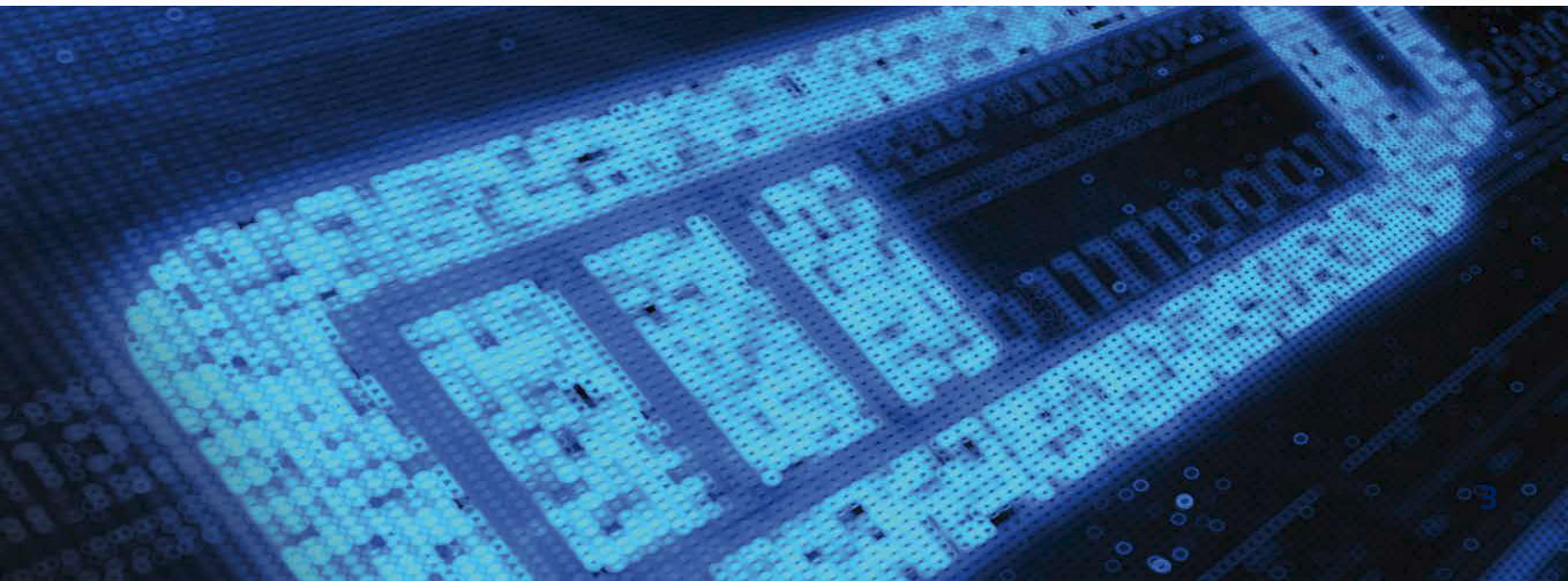
Internal events, such as

- Electrode electrolyte reactions
- Electrochemical reactions

Impacts on the lithium-ion battery

Hazard Level	Description	Classification criteria and effect
0	No effect	No effect. No loss of functionality.
1	Passive protection activated	No defect; no leakage; no venting, fire or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell reversibly damaged. Repair of protection device needed.
2	Defect/damage	No leakage; no venting, fire or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell irreversibly damaged. Repair needed.
3	Leakage Δ mass < 50 %	No venting, fire or flame*; no rupture; no explosion. Weight loss < 50 % of electrolyte weight (electrolyte = solvent + salt).
4	Venting Δ mass \geq 50 %	No fire or flame*, no rupture; no explosion. Weight loss \geq 50 % of electrolyte weight (electrolyte = solvent + salt).
5	Fire or flame	No rupture; no explosion (i.e., no flying parts).
6	Rupture	No explosion, but flying parts of the active mass.
7	Explosion	Explosion (i.e. disintegration of the cell).

*The presence of flame requires the presence of an ignition source in combination with fuel and oxidizer in concentrations that will support combustion. A fire or flame will not be observed if any of these elements are absent. For this reason, we recommend that a spark source be used during tests that are likely to result in venting of cell(s). We believe that "credible abuse environments" would likely include a spark source. Thus, if a spark source was added to the test configuration and the gas or liquid expelled from the cell was flammable, the test sample would quickly progress from Hazard Level 3 or 4 to Hazard Level 5. Source: Own illustration based on EUCAR



Our battery testing equipment and battery testing systems play a pivotal role in the development and production of computer equipment, smartphones, and electric vehicles. By utilizing Weiss Technik's battery testing equipment and battery testing systems, you can count on your product having a long, productive life.

Test Conditions

To make sure batteries can provide the power you need, we put them through their paces.

Weiss Technik manufactures battery testing equipment and battery testing systems that simulate a wide variety of environmental influences under accelerated conditions. Whether hot or cold, damp or dry, dusty or wet, at rest or in motion - our test systems cover virtually all conditions:

- **Temperature:** Our temperature shock test chamber assesses the effects of extremely rapid temperature changes ranging from -80 °C to +220 °C
- **Humidity:** Our Temperature Humidity Test Chambers can reach 98% humidity (RH) at 95 degrees C.
- **Tensile strength:** We can ensure the quality of materials and integrity of design and construction under realistic conditions.
- **Dust:** We inject compressed air through special nozzles and add dust to create a swirl.
- **Water splash:** To determine if housings are protected from water entering.
- **Vibration:** Our equipment measures the stress on parts caused by intense vibrations during use.
- **Altitude:** Our test chambers can simulate heights of up to 100,000 feet for use of batteries used in aerospace and aviation.
- **Vacuum:** Our thermal vacuum chambers accurately reproduce outer space conditions for pressure, cold, solar radiation, UV and cosmic rays.
- **Stress:** Our Highly Accelerated Life Test (HALT) and Highly Accelerated Stress Screening (HASS) tests identify hidden weaknesses and flaws in components.

Additional Chambers for Battery Testing



Controllers & Software

Connectivity - Integration - Access - From Anywhere in the World.

WebSeason®



More comfort and better usability with WEBSeason®

- Access from any Device
- Precise Controls
- Easy Touchscreen Control
- Real time multi-user, multi-language interface

SIMPATI®



SIMPATI System Control Software enables full chamber control and operation via remote access. The operation of test systems becomes easy and time-saving. The integrated monitoring feature enhances the reliability of your test systems.



Testing Services

Let Us Help

Our A2LA Accredited Test Laboratory provides environmental simulation testing utilizing the latest test technology to meet your testing needs from product qualification testing, overflow testing and /or third party product validation. Capabilities include Temperature, Humidity, and/or Vibration, Thermal Shock, Burn-in, Radiator Testing, Altitude, Vibration, HALT/HASS, Shock, Salt Spray, Cyclic Corrosion test and Drop Testing. Serving you from two locations in Cincinnati, OH and Sterling Heights, MI. Please call our Testing headquarters at **513-793-7774** or visit **www.wnatesting.com**.



Service & Quality

Giving You the Peace of Mind for Your Chamber Operation

After Hours Service Support Helpline: 1-800-361-6731

Weiss Technik products are backed by our After Hours Service Support global factory trained service department. With over 400 service technicians located throughout the globe, we can offer our customers a wide variety of services, including the following:

Quality - Count on Weiss Technik

Weiss Technik helps make the task of compliance with the QS9000 3rd Edition Calibration Mandate much simpler. There is no need for you to take the time to actively seek an accredited laboratory. Weiss Technik, certified ISO9001 in 1997, can provide the latest required ISO/IEC 17025 (A2LA accredited) calibration services at your facility. These services meet 17025 requirements and ensure that your company is in compliance with the most recent changes in the QS9000 3rd Edition mandate.



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Weiss Technik North America, Inc. Calibration Services are accredited by A2LA to ISO/IEC 17025



Weiss Technik North America, Inc. Quality System is registered to ISO9001:2015



Stand the test of time.