Case Study

weisstechnik and the salt spray test for testing the corrosion resistance of Li-ion batteries

WHY	HOW	WHAT
Corrosion must be prevented or limited on all of the components of electric vehicles.	Salt spray tests provide information on corrosion resistance.	Weiss salt spray testing chamber type S 16.0' with 2-leaf testing chamber door for tests in accordance with GS95024-3-1 sections K06 and K07 or DIN 60068-2-11, with limited safety equipment for testing Li-ion batteries.

WHY – The challenge.

The test specimens are Li-ion batteries installed in or on vehicles. Just like all of the other components of the vehicle, these must be designed to be corrosion resistant.

HOW – The idea.

Salt spray tests and other tests are completed in accordance with GS 95024-3-1 sections K06 and K07 or DIN EN 60068-2-11 by nebulising a 5% NaCL water solution at +35 °C.

2-material nozzles are used to nebulise the salt solution in the testing chamber. These are arranged in specialised spraying channels in the walls of the chamber.

This ensures an even distribution of salt spray across the entire surface of the testing chamber of 1.5 +/-0.5 ml /80 cm² h.
Humidified/heated compressed air is used to nebulise the salt solution in the testing chamber via the 2-material nozzles based on an injector principle. The salt spray will then fall down on the test specimens from above.

For walk-in chambers, the chamber is heated using electric heating elements mounted on the interior walls. These are inserted into fibreglass-reinforced plastic to protect them.

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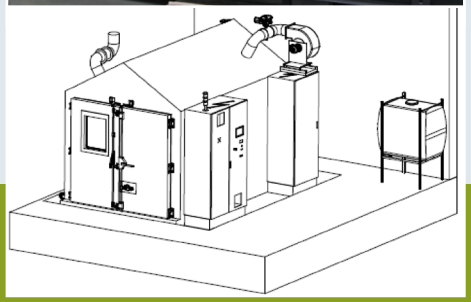
WHAT – The solution

Walk-in salt spray testing chamber with approx. 16 m³ usable space for testing Li-ion batteries (packs) in a salt spray test.
All equipment inside the chamber and all installations are corrosion-resistant and made of fibreglass-reinforced plastic or other plastic. The chamber is installed in a compact manner on a base frame for set-up in an on-site pit, to allow workers to enter it on ground level.
A fan is installed for ventilating the test chamber after the salt spray test by blowing it out with air from the installation area. The salty exhaust air must be vented to the outside on site.

Selected product: S 16.0'

Only some required safety equipment for completing tests on Li-ion batteries is provided (see modifications). The customer will set up the system in a separate area. The customer has provided additional safety equipment.



Implemented modifications

- Brine reservoir tank 500 l
- 2 bushings of 200 mm diameter with stopper plugs and exterior plug retainer
- Door latch with safety switch for the 2-leaf test chamber door
- Pressure relief flap installed in the sloping roof
- Visual and acoustic signal of the system status and gas alarm
- Door with sloping hinges for set-up in on-site pit for entry at ground level
- Siphon for condensate drainage
- Emergency stop in the chamber
- Ventilation fan and butterfly valve with status monitoring
- Bushings for on-site pipelines for test specimen cooling using a glycol/water mixture
- Fault message on potential-free contact

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