

WHY

Protection type tests (IP5X, IP6X, IP 5 KX and IP 6 KX) of lithium-ion batteries for electric vehicles in the world's largest test centre for high-voltage batteries.

HOW

Turnkey solution
According to LV 124, ISO 20653 and DIN EN 60529

WHAT

Dust-tight test chamber with double-wing door
Heating and drying device
Negative pressure device with vacuum pump

WHY - The challenge.

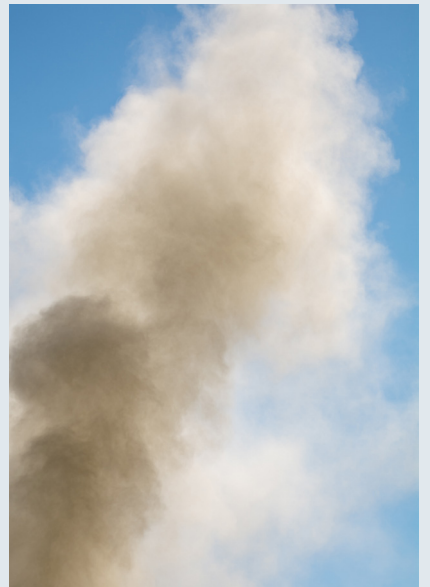
FEV Group GmbH has built the world's largest development and test centre for high-voltage batteries for electric vehicles in Saxony-Anhalt. A wide variety of environmental simulation tests are carried out on 15,500 sqm and in around 70 facilities.

These include tests in accordance with ISO 20653, LV 124 and DIN EN 60529 to test the dust protection and dust-tightness of the energy storage units. During the tests, the test material is exposed to dust for a defined period of time. The dust corresponds to the composition specified in the standards. A homogeneous dust distribution is required. The chamber shall enable the IP protection type tests IP5X, IP6X, IP 5 KX (dust-protected) and IP 6 KX (dust-tight) to be carried out. The dust test system shall be suitable for whole battery packs weighing up to 1000 kg. The dust in the test system shall remain as dry and lump-free as possible. The system shall allow for electronic test reports.

HOW - The idea.

Dust is generated in the test chamber by recirculation fans that convey the dust into the test chamber. The dust, which sinks from top to bottom, falls through the grid floor into the test chamber hopper of the dust chamber below and is fed to the recirculation fan again. The dust is fed, among other things, by low-noise scrapers at the bottom of the hopper. In order to be able to test a material weight of up to 1,000 kg, the hopper and substructure must be reinforced with stable steel supports.

A vacuum device that can be mounted on the test material ensures the air exchange required by DIN EN 60529. The integrated heating device on the floor hoppers ensures dry, lump-free dust in accordance with the test standards without the need for costly external drying. Dry storage of the dust before filling is a prerequisite.



WHAT - The solution.

The dust test system has a test chamber of approx. 13.5 m³ and is suitable for test materials weighing up to 1,000 kg. The double-wing test chamber door with removable centre bar allows even large test material to be inserted without any problems. Due to the high abrasive effect of the dust, the test chamber is particularly robust and durable.

Selected product: **ST 14' U**



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The scraper system conveys the test dust from the dust chamber into the blow-out unit with low noise emission. This blows the dust into the test chamber either cyclically or continuously via four channels. The blown-out dust collects in four hoppers under the test chamber. From there, the dust conveyor system transports it back into the dust chamber.

Design features:

- Large test room with reinforced steel supports on the floor funnels
- Adjustable feet to compensate for uneven floors
- 2-leaf test room door with removable central bar and electronic door locking
- Negative pressure device with vacuum pump (pumping speed max. 100 l/min.)
- Integrated heating device for drying the test dust
- Electronic recording of temperature, pressure and heat and heat for the generation of electronic test reports via the SIMPATI[®] control software
- Connection of the test system to the SIMPATI[®] control software