

Case Study

weisstechnik and 22 climatic test chambers with reinforced cooling capacity for tests with lithium-ion batteries

WHY

Various climate tests of lithium-ion batteries in the world's largest test centre for high-voltage batteries for electric vehicles

HOW

Turnkey solution
According to LV 124
Including safety device (HL4)

WHAT

22 modified standard climate test chambers
Amplified cooling capacity
5.0 K/min according to IEC 60068-3-5 (empty, in medium)

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 tests are carried out on 15,500 square metres and in around 70 facilities.

These include a wide range of climate tests in accordance with the automotive test standard LV 124. 22 climate test chambers with increased cooling capacity were to be successively delivered and put into operation within the project period of only 18 months. The rate of temperature change with test material should be 2.5 K/min (from +80°C to -25°C, on average, measured in the supply air, without heat load). The cooling supply is provided by the central refrigeration system.

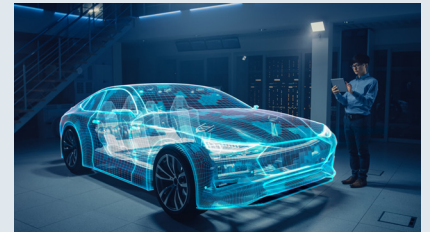
The turnkey climatic test chambers should be provided with safety equipment according to the determined hazard level.

HOW - The idea.

In order to work quickly and economically, tried and tested **weisstechnik** ClimeEvent test chambers are modified according to the customer's specifications.

In order to achieve the increased cooling capacity, the recirculation system was dimensioned larger and a larger heat exchanger was integrated.

Since the test chambers were to be used during the construction phase of the test centre, delivery and commissioning took place successively.



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WHAT - The solution.

In the modified ClimeEvent climatic test chambers, temperature tests can be carried out at temperatures from -40 °C to +180 °C as well as climatic tests in the temperature range from +10 °C to +90 °C and in the humidity range from 10 to 95% humidity. The heating and cooling rate with test material (energy storage and holder) is 2.5 K/min (from +80°C to -25°C, on average, measured in the supply air, without heat load) .

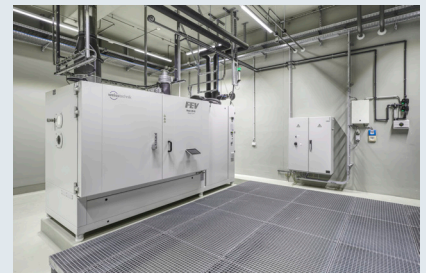
The 22 test cabinets are cooled externally via the central cooling system of the test centre. Operation and monitoring are carried out via a web panel with touch screen, status and warning display via LED and the WebSeason operating software.

Selected Product: **ClimeEvent C/2500/40/5/W/S-Li/HL 4**

According to the risk assessment for tests with lithium-ion batteries, safety devices according to Hazard Level 4 were integrated.



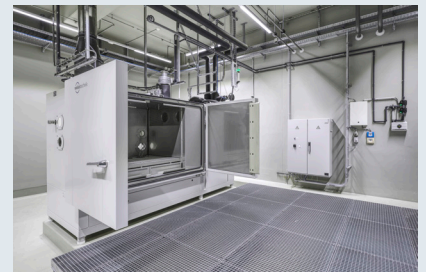
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Design features:

- Safety devices according to Hazard Level 4:
 - Electric door locking (de-energised closed) with emergency release
 - Particle barrier on door seal
 - Status display with signal lamp and horn
 - Reversible pressure relief flap to compensate pressure fluctuations in the test chamber
 - Pressure-resistant feed-throughs (125 mm diameter, with plug and plug protection on the outside)
- Recirculation system, heat exchanger and machine unit frame in larger dimensions
- Connection to central cooling system



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