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Modular EV battery pack test laboratory

Surging demand for test capacity has spurred one technology company to develop new modular EV battery pack test laboratories and centers

Proventia's test laboratories consist of ready-made modules that are easy to transport and quick to assemble on-site. Furthermore the test chambers are technically optimized to meet the customer's own requirements and preferences. The combinations of test equipment and automation installed in the test chamber are almost unlimited, using anything that is readily available on the market or tailor-made to the customer's own design.

The company's large climatic battery pack test chambers (2.8 x 4.0 x 2.5m [9.1 x 13.1 x 8.2ft]) can accommodate full-size EV battery packs and offer enough space for parallel testing with an additional pack. By splitting the battery cyclers capacity per chamber into several units, simultaneous tests for two or more packs can be run. Wide double doors with emergency exit features not only improve space use, but also make the chamber safer.

The battery pack chamber is watertight and thermally isolated. The climatic and air handling equipment have been designed together with Angelantoni Test Technologies. The chamber provides an operational temperature range between -40°C (°F) and +90°C (194°F) (restricted) but the equipment can reach +150°C (302°F) for non-battery testing requirements. The basic temperature change rate is 1-3K/min, although upgrades such as optional indirect cooling systems that prevent ice forming can take it beyond that. The adjustable humidity range is from 10-95% relative humidity.

RIGHT: A climatic battery pack test chamber featuring instrumentation space



ABOVE: Modular Proventia test laboratories are easy to integrate with existing buildings to form larger test centers

Each laboratory has a separate space for liquid conditioning systems, instrumentation, data acquisition and the master automation system. Visual pack monitoring is made with two types of camera: one CCTV operating in the visual spectrum and one infrared thermal imaging camera with automatic temperature threshold alarm features. Tests can be controlled from the main building or an optional control room module. Proventia Test Solutions come with full safety features, including the customer's preferred fire suppression system. In addition, the EV battery pack test chamber fulfills EUCAR Hazard Level 6 requirements.

The first climatic EV battery test laboratories are already in use, but demand still outstrips supply.

Proventia's modular test laboratory concept brings several advantages to the customer. As an independent system integrator and turnkey supplier, Proventia delivers unique combinations of equipment and automation systems in accordance with the customer's requirements and preferences.

Effective factory production and a very high standard of finishing reduce overall delivery time significantly. Ready-made modules are easy to transport and quick to assemble on-site – just like plug-and-play devices – saving time and money. The customer can start operating its new test laboratories earlier and maintain efficiency over time, thanks to optimized, independent test cells and the preferred test system.

Proventia's modular test laboratories can be integrated with existing buildings and facilities, providing not only operational freedom in where to have the test center, but also additional safety, as the test chambers can be placed outdoors, away from the main building. This becomes even more important when destructive tests are conducted. Damage can be contained in a smaller area, thus keeping the rest of the test center operational. In addition, modules are easier to replace and redeploy than traditional indoor cells. ◀