

Manufacturing High Voltage Batteries for Specific Vehicle Applications



FEV LiION POWER Standard Modul (2 kWh)



FEV LiION POWER Standard Modul (1 kWh)

Earlier this year, FEV expanded its facilities for manufacturing high voltage batteries. The air-conditioned facilities are aimed at the small regular production market for specific vehicle applications and are aligned to the individual process steps of the modular battery systems developed by FEV, with regards to manufacturing and test equipment.

The manufacturing process for FEV's modular battery concept starts with the construction of the battery modules consisting of several cells. At the moment, FEV manufactures standard modules with a capacity of 1 kWh and 2 kWh. Using the modular design principle, these modules can be joined to build battery packs of practically any scale for a variety of applications. Each module is equipped with an integrated module control unit for the FEV LiION MAN battery management system.

The integration of the module into the housing of the vehicle battery, and the wiring of the master unit of the FEV LiION MAN, which is also integrated into the battery housing, is performed in one manufacturing step with the battery pack clamped to a rotating assembly stand. The modules are electrically connected and wired to the other components, such as the pre-



BMS Slave Modules



Battery Module Assembly

charging circuit and the power relay. Safety technology is at the core of battery development at FEV. Functional safety, as well as the high-voltage safety of the batteries, is ensured by a technically mature safety concept.

During the end-of-line test, all of the electrical properties of the cell, module voltage, insulation resistances, safety functions and the data bus communication are checked and logged. After the battery module successfully passes the functional and safety tests on FEV's own battery test bench, the module is released for vehicle application. The test bench allows air-conditioned tests in a temperature range of -30°C to 85°C. The batteries can be loaded up to 160 kW. The battery cooling circuit can also be integrated in this test, with additional conditioning.

The manufacturing process, within the framework of quality assurance, is logged in detail from the receipt of goods to the end-of-line test for each individual component of the battery. As a result, it is always possible to track the composition of the battery packs back to the individual cells at any time.

FEV offers its services for the development of vehicle-specific battery systems, as well as the construction of prototype batteries for test vehicles or small fleets through to their maintenance and service.

huelshorst@fev.com

- Layout and Design of HV Batteries
- Spezifikation and Selection of Components
- Energy and Thermo Management
- Safety Engineering
- Small Series and Sample Production
- Quality Assurance
- Battery Testing