

AVL Battery Testbeds for the Battery of the Future

AVL's battery testbeds supports in the development of advanced battery systems for xEVs

SUCCESS STORY



(from left to right): Frank Gedemer, Sebastian Bohnet, Stefan Lunkenheimer (AVL), Stefan Sommer, Jan Stulken

Example of a battery pack testbed layout – as containerized solution.



THE CHALLENGE

The electrified powertrain plays an increasingly important role in the future of individual mobility. Therefore, the development of battery electric vehicles is also moving into the focus of the automotive industry.

The development of batteries requires the latest measurement and testing techniques as well as comprehensive know-how.

Whether high-voltage batteries are primarily used in city centers with stop-and-go traffic or for overcoming larger distances, energy storage is one of the most important factors. For this reason, the battery as an energy storage has to achieve a number of complex requirements in terms of range, charging times, safety and cost, before it can be used as a standard in vehicles.

Valmet Automotive and AVL initiated a joint project to achieve common strategic goals for the development and testing of high-performance batteries.

One of the project's biggest challenges for AVL was to adapt and individually design all measurement technologies, systems and tools to the very demanding standards of Valmet Automotive.

THE SOLUTION

The AVL Battery Test System provides the best possible support for development tasks such as performance evaluation and lifetime testing of electrochemical energy storage systems for hybrid and pure electric vehicles. The test system is equipped with the latest hardware and software required for modern battery testing.

“The automation and planning software used by AVL in the containers supports us in planning, utilizing and monitoring the testbed capacities. This gives us and our customers maximum reliability – when it comes to agreed deadlines, our facilities, units-under-test, our employees and the environment.”

Frank Gedemer, Head of Team Test Facility and Setup in the trial phase at the site in Bad Friedrichshall

The proven system components allow the operator to utilize the test system throughout the entire development process of the energy storage system - starting at the first physical prototype to pre-production and even the final production validation. All types of customer-specific and standardized testing procedures can easily be defined and executed. AVL Battery Test Systems enables state-of-the-art implementation of durability and performance cycles.

THE RESULT

Valmet’s portfolio of services already includes a multitude of tests - from cell characterization to module tests all the way to electrical and mechanical performance testing of complete high-voltage storage systems.

“Together with our customer we are developing the battery test systems of tomorrow. Our customer has a variety of requirements, which we can meet with our know-how in thermal management and battery management. I think that thermal management and battery management systems will be crucial in the future, especially in terms of how high-quality an energy storage system has been developed and how successful it is on the market. The



I APPRECIATED THE TRUSTING RELATIONSHIP WE HAD RIGHT FROM THE START. AND I WAS PARTICULARLY PLEASED THAT WE’D FOUND A TEAM IN GRAZ THAT WORKED WITH A HIGH LEVEL OF MOTIVATION AND THE NECESSARY DRIVE. FROM A TECHNICAL POINT OF VIEW, AVL OFFERS A POWERFUL TURNKEY SOLUTION THAT GIVES US THE EXPERIENCE AND SAFETY WE NEED TO ACHIEVE OUR OBJECTIVES IN THE SHORTEST TIME POSSIBLE.

Stefan Sommer, responsible for testing at
Valmet Automotive Engineering GmbH

third decisive factor is the battery cells, which have to be state-of-the-art.”

Jan Stulken, Head of Team Test Coordination eDrive in the trial phase at the site in Bad Friedrichshall

Valmet Automotive and AVL initiated a joint project to achieve common strategic goals for the development and testing of high-performance batteries. In this context, they developed a customized container battery test field, which from the beginning was designed for future expansion. The planning and realization was carried out in an exemplary short period of time.



THE ADDED VALUE OF AVL BATTERY TEST SYSTEMS

AVL Battery Test Systems offer the possibility to validate battery cells, modules and packs. With the battery control fully integrated into the testbed system, the battery pack testing can be performed with or without battery management.

AVL offers maximum flexibility and value – from individual components to complete testing laboratories with container solutions. The battery tester AVL E-STORAGE BT™, the AVL LYNX 2™ automation system, the AVL cell/module/battery test chambers and the AVL safety system provide ideal conditions for electrical performance tests and thermal or climatic environmental tests.

- Unique control technology for realistic charging and discharging profiles enables excellent control accuracy with parallel high current dynamics
- High system versatility with automatic configuration changes reduces downtime
- Easy to use thanks to user-friendly battery test automation software AVL LYNX 2™
- Maximum safety thanks to AVL's functional safety design

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