



Universal Inverter for Testing
(AVL SPECTRA™ Prod. Line)



Battery Cell Cycler for Testing
(AVL CELL TESTER™ Prod. Line)



Battery Emulator for Testing
(AVL E-STORAGE™ Prod. Line)



AVL Test System Automation and Software



A look into an AVL test cell



AVL Tech Center and Facility Solutions

Portfolio and Solution Overview

The portfolio of solutions ranges from individual test and measurement products, software and automation toolchain with AI application, complete test systems for various applications to complete turn-key facility solutions. This enables AVL to cover all key customer requirements and support the customer throughout the entire development process.

VARIOUS APPLICATIONS COVERED

- Safety and Compliance Testing
- Performance and Durability Testing
- Inverter Testing with Traction Drive Emulator
- Electromagnetic Compatibility (EMC) Testing
- Noise, Vibration, Harshness (NVH) Testing
- Software and Firmware Testing
- Brake Emission Testing
- Climate and Thermal Testing



Reimagining Motion

For a greener, safer, better world of mobility.

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Railway Technology Testing

Innovation on Track.

On Track for Excellence

Enabling efficient railway propulsion development and component validation.

INTRODUCTION

While electrification is standard in many areas in railway industry, new challenges arise in terms of catenary free line/track operations as well as efficiency gains which can be realized with new technologies. Furthermore, various railway projects are currently worked on, covering the whole range – from light rail, tram, metro up to full heavy haul and high-speed rail. Our vast expertise in propulsion technology enables us to think ahead and play out our strengths and know-how.



CHALLENGES

While traction motors have come a long way since their invention, many aspects such as running smoothness, NVH, EMC, performance, durability, low-floor application (size) are topics that need to be addressed today. When talking about energy supply, batteries will play a key role in catenary free operation as well as fuel cell in the medium term. Hereby, the challenges lie in performance, durability, long-term usage, safety, power-density. Same goes for fuel cell propulsion technologies and its applications in rolling stock.



BATTERY CELL AND PACK TESTING

To effectively test battery cells, a specific battery test system is required – such as the AVL Battery Cell TS™. The system includes at least one climate chamber suitable for testing various batteries, a cell cycler in the appropriate current and voltage range, and an automation system. For battery packs, the solution is similar, but has its own unique challenges, such as higher power, higher voltage and more space regarding the test chamber. Our solution AVL Battery Pack TS™ measures all the important parameters under different environmental conditions.



TRACTION MOTOR TESTING

A traction motor test system needs the flexibility to test the full speed and torque range of different types of traction motors. Therefore, the overall mechanics, drive shaft, and dynamometer system must be set up accordingly. A major challenge is to complete the large number of validation and verification tasks within tight schedule. Our optimized and future-proof traction motor test system offers the flexibility to test UUTs with a wide range of speed and torque, and to efficiently test any type of modern traction drive system.



FUEL CELL PROPULSION TESTING

Fuel cell technologies have come a long way in the last decades through multiple innovation cycles. With AVL Fuel Cell Test Systems we are supporting our customers with proven solutions in every step of their development cycle – from cell, to stack to complete system. Our deep technology and application expertise in testing solutions and strategic partnerships are making our know-how available to new and existing markets, realizing a faster time to market and superior propulsion technology.



Your Partner of Choice

Choosing a competent technology partner is critical in today's fast-paced electrified aviation market. As engineering challenges become more complex and time-to-market becomes more critical, you can directly benefit from AVL as a trusted partner. As a major technology and test system provider, we understand your needs and can help you achieve your development goals.

Why Choose Us?

With us, you can directly benefit from over seven decades of powertrain experience and know-how, providing you with proven technologies – now applied to the railway industry. Our well-designed solutions and test systems enable your engineering success through the perfect test environment. For faster time-to-market and great results.

Inverter Testing Technology

The AVL Inverter TS™ test system allows independent testing of the inverter while optimizing integration with all other components in the electrified powertrain. The test system is based on electric motor emulation technology with real-time simulation. This ensures highly accurate results when testing the inverter with the required battery voltage and electric motor current. Such a test setup requires exact copies of the electric motor and the battery. Within the AVL Inverter TS™, the electric motor is very accurately replaced by the Power Amplifier Cabinet (PAC) and the Signal Processing Cabinet (SPC).



FACT BOX

- Wide range of testing products and equipment to support your development tasks.
- Complete test systems providing you with ideal testing environment.
- Proven solutions for UUT or system testing in the railway industry and beyond.
- Consultancy and services to work closely on your engineering challenges.

Speed up your development with our comprehensive portfolio. **Contact us now and put your future railway propulsion goals on track.**