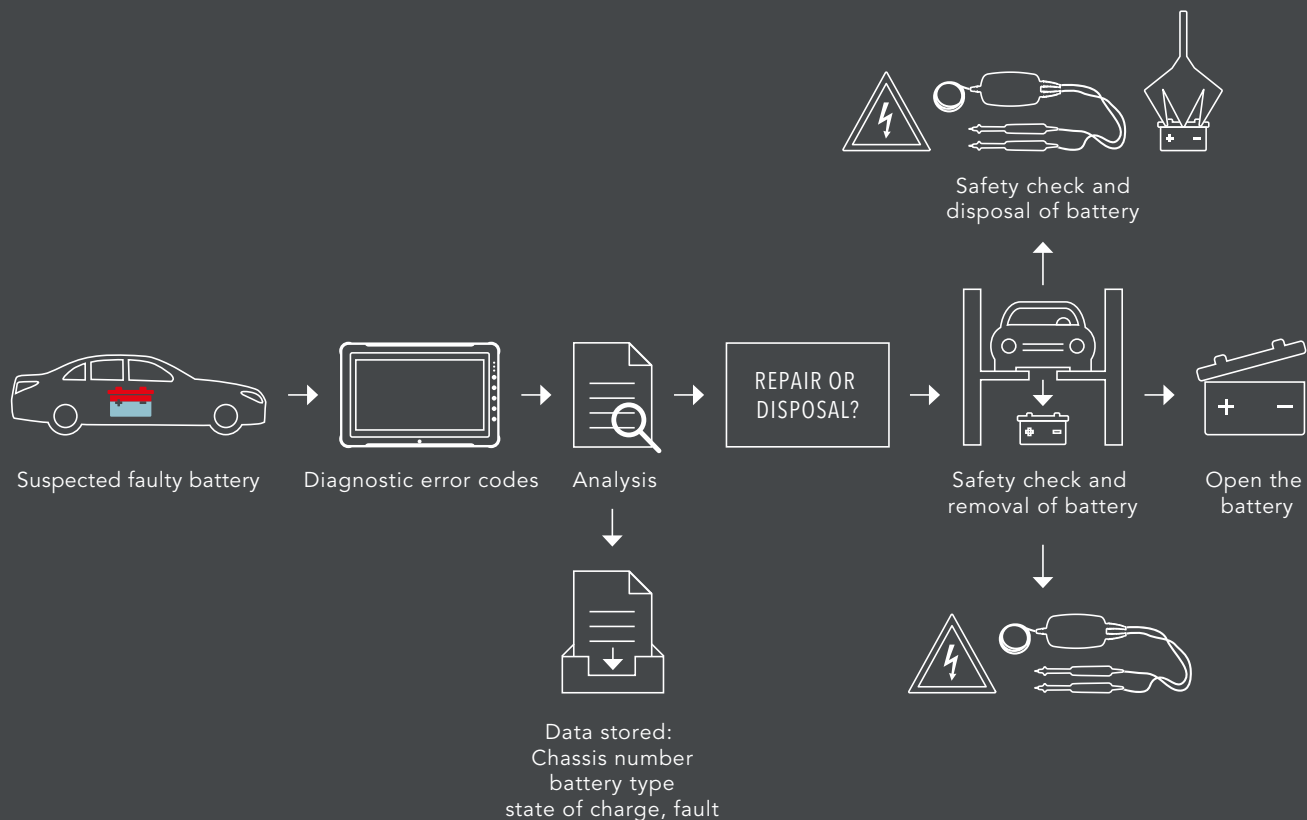


High-performance technology. Highly reliable testing.



AVL DiTEST E-MOBILITY TOOL CHAIN

Comprehensive after sales diagnostics
and repair solutions for HV drivetrains

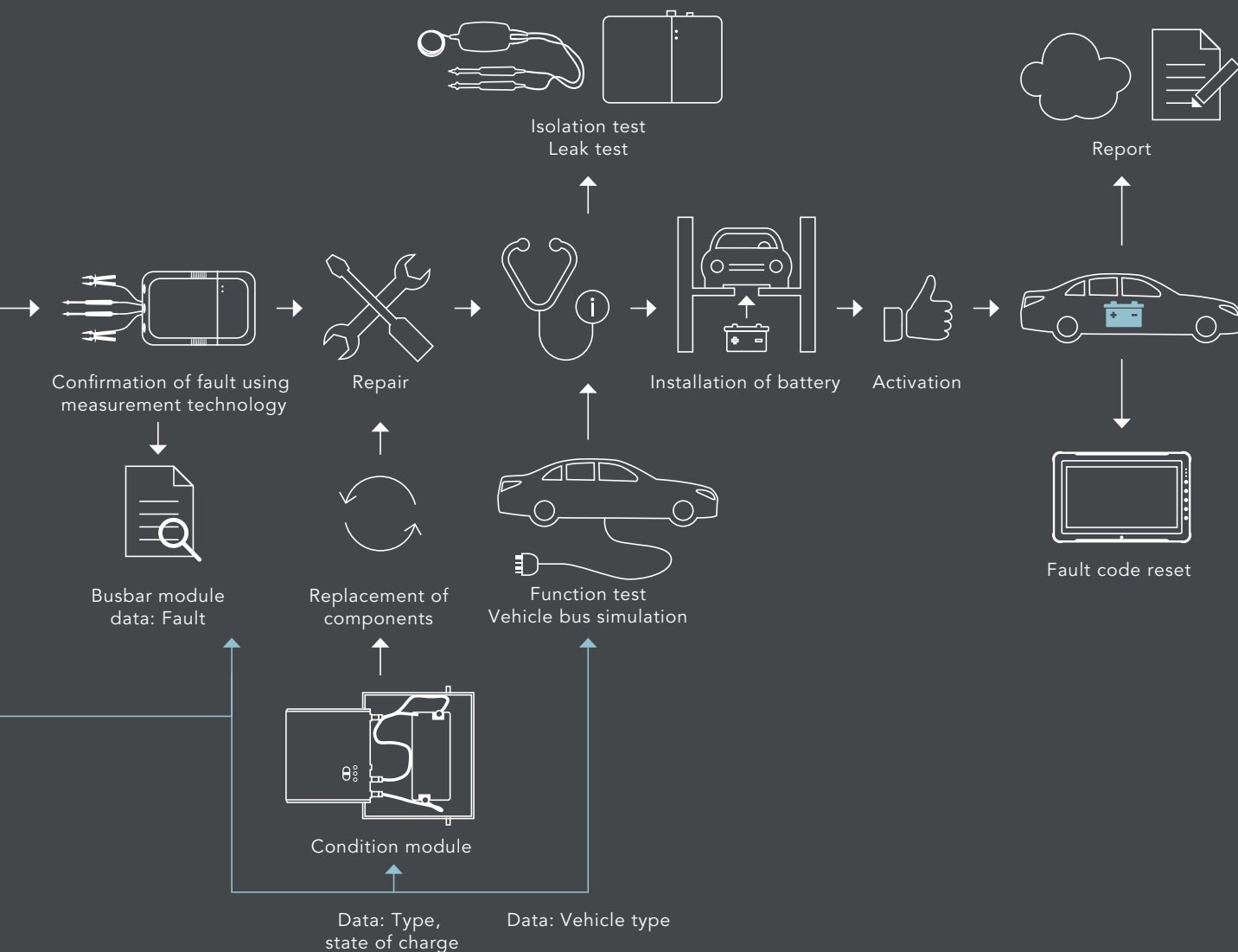


Repair process of the high-voltage battery.

DIAGNOSTICS AND REPAIR OF VEHICLE COMPONENTS IN THE WORKSHOP.

After sales is facing new challenges owing to the large number of hybrid and electric vehicles on the roads. It's not always economically viable to replace the entire traction battery, but now AVL DiTEST can provide you with the perfect testing tools for electrically driven vehicles. You can use them to carry out supervised diagnosis and maintenance in workshops, all according to country-specific standards.

The graphic shows the repair process carried out over the entire tool chain, which helps to ensure not only a correct and safe diagnosis and inspection of the vehicle. It's also possible to document the entire process. Every work step can be stored locally or on cloud-based systems and it can be used as verification of proof if needed.



An **MDS** diagnostic system including **AVL DiTEST weLINK** is used at the beginning of the repair process to detect and isolate faults, after which the battery is removed. After the HV system has been deactivated, all poles in the vehicle are checked that they are free from voltage using the **workSAFE**. This ensures that work can be carried out on the vehicle safely. The decision must be made whether the battery will be repaired in the workshop or HV repair centre or whether it should be disposed of. If it is to be repaired, the faults must first be isolated by using AVL DiTEST tools; the **micrΩHM** is suitable for measuring internal resistance for an additional health check to the diagnostic data and the contact resistance on the module connection to assure reliability when mounting busbars to prevent risk of

overheating, fire danger and safety relevant issues. Faulty components are then replaced. If one or more battery modules are replaced, use the **rightCHARGE** to prepare new modules for installation. Afterwards, check that the repair was successful using the AVL DiTEST e-mobility tools. After closing the housing, carry out a final check of all necessary tests with the **HV Sat** universal tool or check for leaks with the **noLEAK** device and the insulation with **workSAFE**. Safety relevant measurements should be taken before restarting. Finally, read out the diagnostic data and delete the fault codes using the diagnosis system to complete the repair.

With the correct equipment, every workshop can safely carry out HV repairs.



AVL DiTEST workSAFE

Safety-relevant measurements on the HV System:

- › Verify the absence of voltage
- › Voltage measurement up to 1500 V DC/1000 V AC
- › Check of the equipotential bonding
- › Capacitance, inductance, resistance measurement
- › Simulation of insulation faults
- › Insulation resistance measurement according to ECE R100
- › Insulation resistance measurement on active HV System up to 1500 V DC (SAE J1766, GB 18384)



AVL DiTEST micrOHM

Module health check and safe recommissioning:

- › Contact resistance on the module connection for reliable mounting of busbars in the workshop
- › Module internal resistance measurement with adjustable time and current pulses up to 40 A
- › High resolution measurement down to 0,1 $\mu\Omega$
- › Preventing power loss of the battery, risk of overheating, fire danger and safety relevant issues



AVL DiTEST noLEAK

Leak test for batteries:

- › Measurement of low pressure range -140 mbar to +140 mbar (e.g. battery housing)
- › Measurement of high pressure range up to 3 bar (e.g. battery cooling circuit)
- › Based on differential pressure method
- › Automated measuring process with integrated pump



AVL DiTEST rightCHARGE

For charging and discharging battery modules:

- › Safe charging and discharging
- › Process-controlled charging incl. guided software workflow
- › Intelligent contact detection
- › Reverse polarity protection
- › Battery capacity and internal resistance measurement to estimate the SOH (State of Health)
- › Support of all important interfaces: CAN, CAN FD, SPI and ISO SPI



AVL DiTEST HV SAT

Universal tool for testing batteries:

- › End-of-service test after battery repair
- › Comprehensive safety test after battery storage
- › Safety test before further processing/disposal
- › Restbus simulation for activating battery
- › Checks if there is voltage present
- › Checks for leaks in the battery casing
- › Measurement of insulation resistance



AVL DiTEST MDS DRIVE 188

Automotive multi-brand diagnostics system:

- › Comprehensive diagnosis function
- › Very easy to use
- › Select your vehicle in three clicks
- › Quick vehicle scan

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