

# AVL Power HiL

## E-MACHINE EMULATOR FOR TESTING CLOSE TO REALITY

### CHALLENGE

Power electronics validation can be performed in an early development phase with high-voltage load, reduced test costs and effort in an efficient test environment.

### OUR SOLUTION

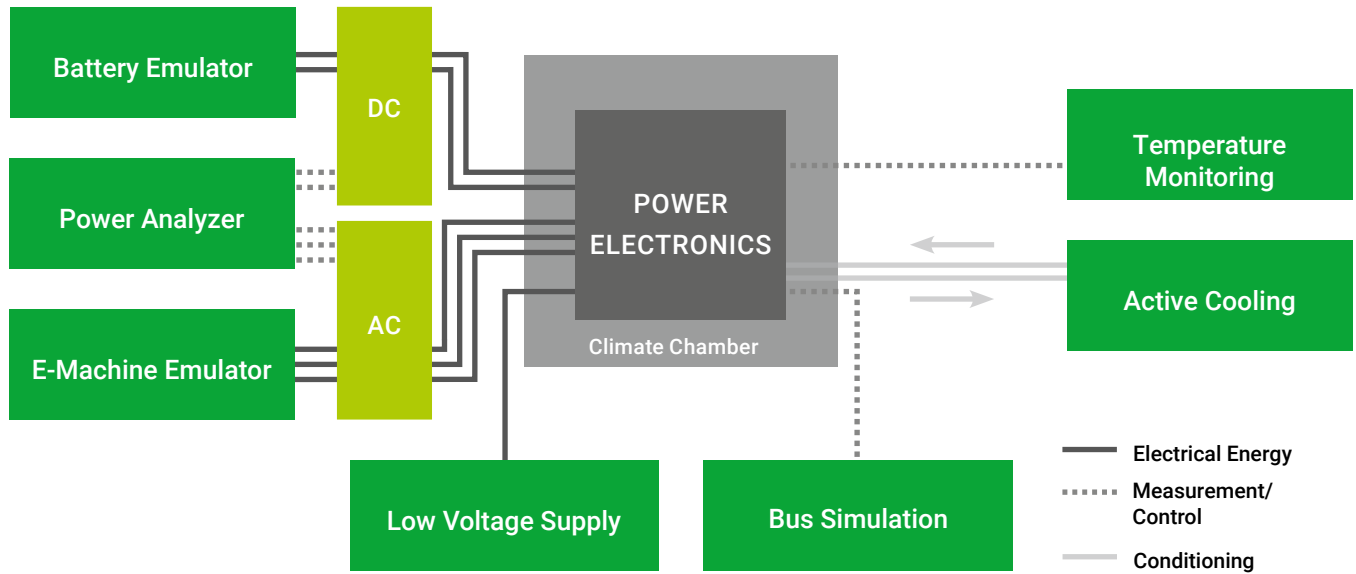
Our e-machine emulators are autonomous devices that run completely stand-alone. They ensure a maximum test coverage of the high-power solution in an early phase. In addition to mechanical power electronic test benches with real e-motors, electronic emulation with precise and parametrizable motor models can be used.

AVL's Power HiL enables efficient testing of several power electronics, such as high-voltage up to 1,000 V and 48 V inverters as well as DCDC converters under realistic load with a strong dynamic range.

### ADDED VALUE

- **Dynamic testing (up to 640 kVA):** Very high bandwidth and switching of parameter by using FPGA based e-machine models, e.g. 320 nsec. FPGA speed enables one mouseclick from motoric to regenerative operation in a four-quadrant power test run in full performance.
- **Real-time behavior:** 100 % coverage of real-world scenarios like test-track driving or the WLTP by Power HiL real-world scenarios.
- **Plug-and-play system:** Save up to 70 % of testing time compared to manual testing. Prepared test libraries will ease configuration through a plug-and-play system and offer you just in time results.
- **Early device-under-test qualification:** Accelerate your development by getting profound feedback on your power electronics at an early stage. Save time, money and development loops thanks to high frontloading capability.
- **Different e-motor types supported:** PMSM, IM, EESM

## TESTBED ARCHITECTURE



## BENEFITS



Real-time testing and measurement



Reduction of test costs



No need of rotating parts



High voltage and load



Parallel testing



Mechanical safety

## TECHNICAL DATA

Features	Values
Number of phase lines	3/6
Voltage supply	up to 1,000 V <sub>DC</sub> / 800 A <sub>DC</sub>
Phase current	up to 1,200 A <sub>rms</sub>
Emulated power	up to 640 kVA
E-machine models	ASM, PMSM & EESM
Interfaces	ETK/XETK/FETK/CAN/CANFD/FlexRay
Coolant conditioning	-40° C UP TO 100° C
Ambient conditioning	-40° C UP TO 160° C INCLUDING CLIMATIC CONDITIONING

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