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

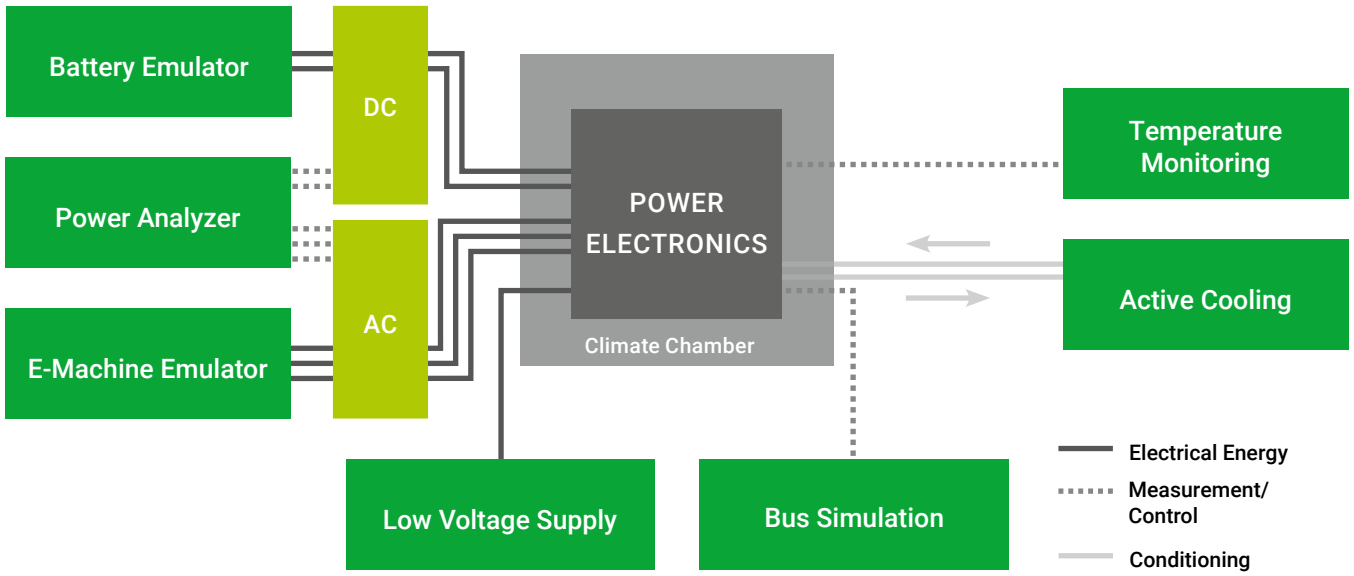
Our e-machine emulators are autonomous devices that run completely stand-alone. They ensure a maximum test coverage of the high-power solution in an early phase. In addition to mechanical power electronic test benches with real e-motors, electronic emulation with precise and parametrizable motor models 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_{DC} /800 A_{DC}
Phase current	up to 1,200 A_{rms}
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

AVL Software and Functions GmbH
Im Gewerbepark B29
93059 Regensburg
Germany

E-mail testing.sfr@avl.com
www.avl-functions.com