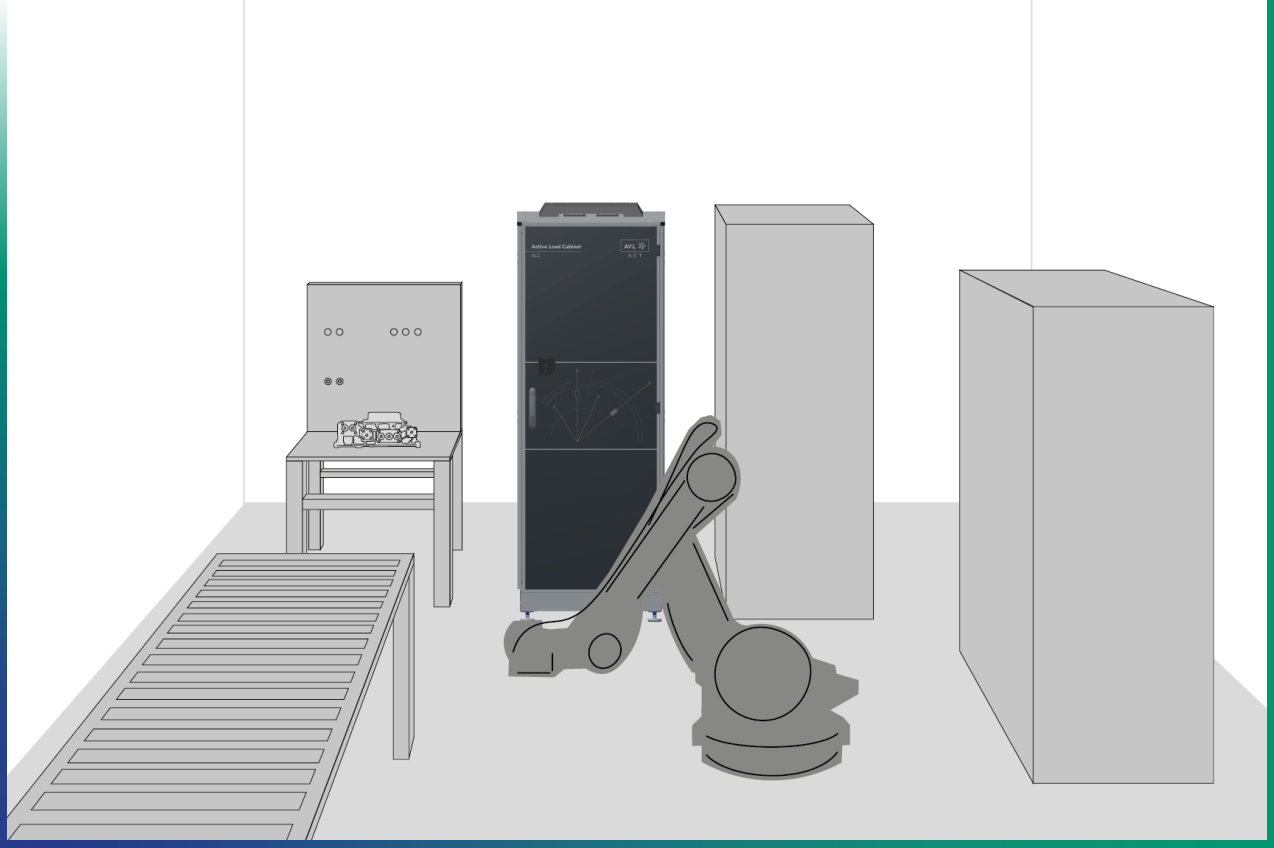

AVL SET

AVL Active Load Cabinet for Inverter End-of-Line Testing

Key product to perform End-of-Line high-voltage functional tests

End-of-Line testing to ensure inverter quality

The key component of an electrified powertrain is the inverter, which can therefore be found in every vehicle. The inverter is a power electronics-based mini-computer that converts DC current into a rotating multi-phase AC current and controls the torque of the e-motor.
The focus is on the production phase as part of the product development process, because more and more inverter developments are completed and begin production. End-of-Line testing is essential to ensure fault-free production and functional inverters.
End-of-Line testers for HV functional tests are used to verify the correct quality and functionality of the manufactured inverters. The aim is to release only functioning inverters to the market. A production environment has special requirements regarding the test equipment.

Our solution: the Active Load Cabinet

The AVL Active Load Cabinet (ALC) is an active load which can be used as a key product to perform high-voltage functional tests of inverters (unit under test, UUT) in the End-of-Line area. Additional equipment is required to perform the high-voltage functional test, which is not scope of the ALC. The ALC has standardized interfaces for an easy integration into an End-of-Line test cell that is part of the delivery scope of the production line manufacturer.
The AVL Active Load Cabinet provides two operating modes: the R-L mode (R = resistance, L = inductance), and the calibration mode. In R-L mode, the Active Load Cabinet acts as an R-L load. This allows to stress the UUT with active and reactive power on the AC-side. Due to this fact, testing of the UUT's power electronics is enabled under more realistic conditions.
In calibration mode, the ALC acts as a variable current source which can be used to calibrate the UUT internal sensors. To use this mode external measurement equipment is required which is not scope of the ALC.

TECHNICAL DATA

Recommended min. UUT DC Voltage in V_{DC}	200
Maximum UUT DC Voltage in V_{DC}	750
Phase current, nominal in A_{RMS}	up to 560
Phase current, maximal in A_{RMS} (Overload)	up to 800 for 10 s
Ratio overload capacity – nominal load	1:20
Adjustable virtual load resistance in Ohm*	0 … 100
Adjustable virtual load inductance in µH*	50 …1,000

* Depending on UUT

The Active Load Cabinet has standardized interfaces for an easy and smooth integration into an End-of-Line test cell. The integration is executed by the production line manufacturer. The product enables robust inverter End-of-Line tests within short cycle times and according to the UUT's voltage and power requirements.

THE ADDED VALUE

- **Fast and UUT-independent testing – no need to collect the UUT-internal signals**

The design of the Active Load Cabinet is based on a unique control concept. Thanks to this fact, the ALC does not require the UUT-internal gate signals to synchronize on the UUT. Therefore, downtimes can be avoided as well as fast and independent testing of the UUT is ensured.

- **Highly accurate UUT calibration through precise calibration current**

To calibrate the UUT-internal current sensors, the Active Load Cabinet offers the calibration mode. Within this mode the ALC acts as a variable current source. By integration of additional measurement equipment this modes can be used to calibrate the UUT internal sensors. Thanks to the ALC control concept the input current to the UUT can be adjusted fast and easy.

- **The combination of calibration and high-power tests save test time and space**

The ALC is a one-cabinet solution for active-power tests and calibration as it combines two operation modes (R-L and calibration mode). This not only saves floor space, but also eliminates the necessity to move the UUT to a further testing station and therefore saving potential testing time.

AVL Active Load Cabinet

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FIND OUT MORE

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