AVL X-ion™ e-Power

YOUR SOLUTION FOR ELECTRIFICATION

ADAPTS. ACQUIRES. INSPIRES.

Facing ever more stringent emissions targets, the quest for an efficient and affordable powertrain routes invariably through complexity. Advanced combustion strategies on the one hand, and electrification on the other hand are the keys to clean propulsion, which means also a consequent increase in powertrain development effort.

Confronted with this very same dilemma, and with the thirst for innovation, AVL has developed AVL X-ion™, the new high-speed data acquisition platform dedicated to powertrain development. AVL X-ion™ is a modular acquisition system that can be easily adapted to different units under test and test environments. It combines AVL's know-how and expertise in several application areas, namely indicating, optical combustion analysis, and e-power analysis.

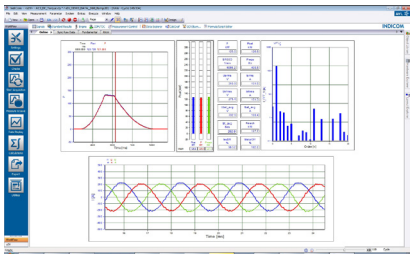
OPTIMIZATION OF E-POWERTRAIN PERFORMANCE

Regardless of the powertrain architecture it is crucial throughout the entire development process to individually optimize the e-components such as battery, inverter and e-motor, but also to investigate the complete propulsion system as a whole. Indeed, an optimal synergy between these components brings decisive advantages and allows:

- Lower component and system costs
- Consumption and CO_2 reduction, increase of vehicle autonomy and customer acceptance
- Best drivability (real drive)
- Components durability and low cost-of-ownership

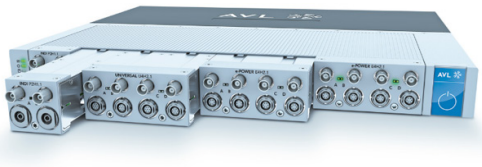
The innovative platform AVL X-ion™ provides a better understanding of component interactions and helps reach the development targets with less efforts.

HVP and CSS conditioning boxes



Online data analysis

X-FEM e-Power



AVL X-ion™

AVL e-POWER ANALYSIS: e-MILES AHEAD

AVL e-Power Analysis based on AVL X-ion™ is a powerful solution with application-specific e-Power X-FEMs (front-end modules). Up to 4 e-Power X-FEMs can be inserted in the base unit. Together with the signal conditioning units for high voltage (HVP-Box) and high current transducers (CSS-Box) the system is designed for pure electric as well as hybrid powertrains. The PC-based operating software AVL IndiCom™ calculates all results and stores the raw data for post-processing.

FUNCTION SUMMARY

The system acquires AC and DC voltages, currents, as well as E-motor speed and torque. The data are streamed to a PC running the AVL IndiCom™ operating software.
The system provides monitoring of result values like electric power (active, reactive, apparent), true RMS values, fundamental power and fundamental RMS values, DC power and DC average values, mechanical power (in conjunction with a torque flange), inverter and motor efficiencies, AC current harmonic, motor speed and electrical frequency, power factor and other relevant parameters.
Result values can be displayed or transferred to an automation system via Ethernet or CAN.

THE ADDED VALUE

- Flexibility, pure electric as well as hybrid testing
- Highest performance and next level accuracy
- Dynamic speed performance and transient testing capability
- Usability and smart storage of raw data

X-ion base unit	
Dimensions (WxH)	19'' x 1 HU
Power supply	12-36 VDC
Connection to acquisition PC	Gigabit Ethernet
# slots for X-FEMs (2CH / 4CH)	8 / 4
# CAN interfaces	3
X-FEM e-POWER E4H2	
# channels	4
Sampling rate per channel	2 MS/s
Bandwidth	1,000 kHz
Input range	Up to ±60 V
HVP Box	
# channels	4
Bandwidth (-3 dB)	10 bis 20 MHz
Input range	±1,500 V_{peak}
Output	+/-10 V
CSS Box	
# channels	4
Bandwidth (-3 dB)	200 kHz
Input range	±60 to ±1,000 A_{peak}
Output	+/-10 V
Sensor type	LEM Ultrastab

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