AVL PUMA 2™

The ease of automation

The only automation system suitable for all testbed types

THE CHALLENGE

Tighter global CO_2 restrictions and the demand for afford-able vehicles with low fuel consumption yet no sacrifice in comfort pose a huge challenge to the automotive industry.

Important steps to meet these demands are the electrifi-cation electrification and hybridization of powertrains, as well as the further optimization of the combustion engine.

A state-of-the-art test environment must be able to handle this complexity, enabling both virtual development and test execution on the testbed.

THE SOLUTION

AVL PUMA 2™ is AVL's leading testbed automation system in validating conventional and electrified power-trains. We continously extend its functionalities to new powertrain concepts like fuel cell systems, enabling our customers to easily adapt to present and future demands.

At the core of the software is a cutting-edge user interface offering supreme usability and adaptability. PUMA 2 is a powerful, reliable and scalable system. It offers auto-mation, control and simulation in real-time and on a one-system approach. With PUMA 2, you can manage your various testing requirements in a graphical and simple way. To identify different behaviours of testruns and testbed configurations, PUMA 2 offers graphical comparison of parameters.

THE APPLICATION

AVL PUMA 2™ is the brains behind many different testbed applications. AVL offers tailored solutions for different testing environments like battery, fuel cell, e-motor and inverter testbeds.

Virtual Testbed	Inverter Testbed	Transmission Testbed	Engine Testbed	Battery Testbed	Fuel Cell System Testbed	E-Motor Testbed	E-Integration Test System	Powertrain Testbed	End of Line Testbed	Vehicle Testbed

THE ADDED VALUE

- Cutting-edge usability across all testbed applications
- Test cycle reuse thanks to flexible parametrization independent from the unit-under-test (UUT)
- Extendable for modern testing methods
- Easy definition of test cycles thanks to graphical parameterization
- Fully modular to address various unit-under-tests (UUT) and specific customer environments

HIGHLIGHTS

- Maximize the usage of testbeds by defining and executing a sequence of predefined tests
- Prepare and validate all parameters in the office to save valuable testbed time
- Easy roll-out of parameters from a central place ensures consistent and transparent testbed configuration
- AVL MultiSync Technnology™ enables easy handling of various software tools – one result time-synced
- Significant increase of runtime and substantial reduction of useless data thanks to integrated diagnostic features

TECHNICAL DETAILS

Key facts	• Windows 10, INtime 6 and Oracle 19c • Deterministic real-time behavior up to 10 kHz • Up to 20,000 quantities to manage all types of user variables
Measurement types	• Continuous measurements with up to five recorders in parallel up to 10,000 channels and 1 MS/s • Steady-state measurements with up to 5,000 channels and automatic statistics calculation such as min/max and standard deviation
Monitoring functions	• Protection of the unit-under-test with multi-level safety monitoring with up to 1,000 limits and different reaction types • Post-mortem recorder automatically captures data in case of events
Interfaces	EtherCAT, CAN, CCP, XCP (via CAN or Ethernet), CAN FD, OPC, PROFIBUS, FDX, Modbus (Serial or Ethernet), UDP, PROFINET, AK, ASAP3, iLinkRT™, LIN*, FlexRay*
Standard software functions	• 'Check' function to validate parameters upfront • Built-in tool to analyze testbed log files • AVL CONCERTO 5™ for powerful data processing • 'Design mode' to easily change the user interface according to customer needs • One tool to administer testbed and test field parameters • Graphical parameterization and visualization of the testrun and test cycle
Migration of older PUMA testbeds	• Reuse of various interface cards and F-FEMs • PUMA 5.x and PUMA Open 1.x parameters can be easily migrated to PUMA 2™
Measurement device integration	• Supports more than 100 different measurement devices from many suppliers • Communication through AK protocol • Various power control electronics supported • Built-in Device Driver Studio to develop drivers without AVL support

*) via Gateway

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