



Real-time vehicle simulation and test cell control

Model-based engineering and testing have the potential to move system and vehicle development from the costly real world to the repeatable, reusable virtual world. This decreases time to market by reducing the number of prototype components or development vehicles required, and eliminating several iterations of expensive and time-consuming redesigns by having issues identifiable earlier in the design process.

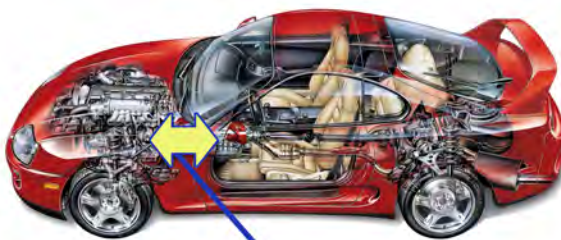
Andromeda is A&D's model-based solution for vehicle simulation and test cell control. The core of the Andromeda system is the ADX, a high-

performance measurement and control platform. The open and configurable system architecture supports multiple CPU's, expansion I/O boards, and a real-time operating system, all programmed with Simulink®/Stateflow modeling.

In an Engine-in-the-Loop configuration, the ADX measures speed and torque, controls the engine throttle actuator, and sends torque and speed commands to the dynamometer drive and other facility and safety systems. The vehicle model provided by A&D includes road load, inertia simulation and shift simulation.

Features

- High-speed dyno/throttle controller
- Direct I/O channels for analog, digital frequency, CANbus, dyno drive, etc.
- Vehicle simulation in the dynamometer test cell can be parameterized for the target vehicle.
- Gas-, diesel-, Hybrid-, EV-compatible
- Engine, transmission, full powertrain or components testing
- Starter module for ECU startup sequencing
- Open system runs customer or third-party Simulink-compatible models
- Calibrate one engine for multiple vehicles by changing vehicle model
- Enhance vehicle emissions testing
- Engine/Powertrain HiL calibration
- Automate testing with A&D iTest or third-party DAC system
- Expandable system to include setpoint control, ECU bypass, etc.

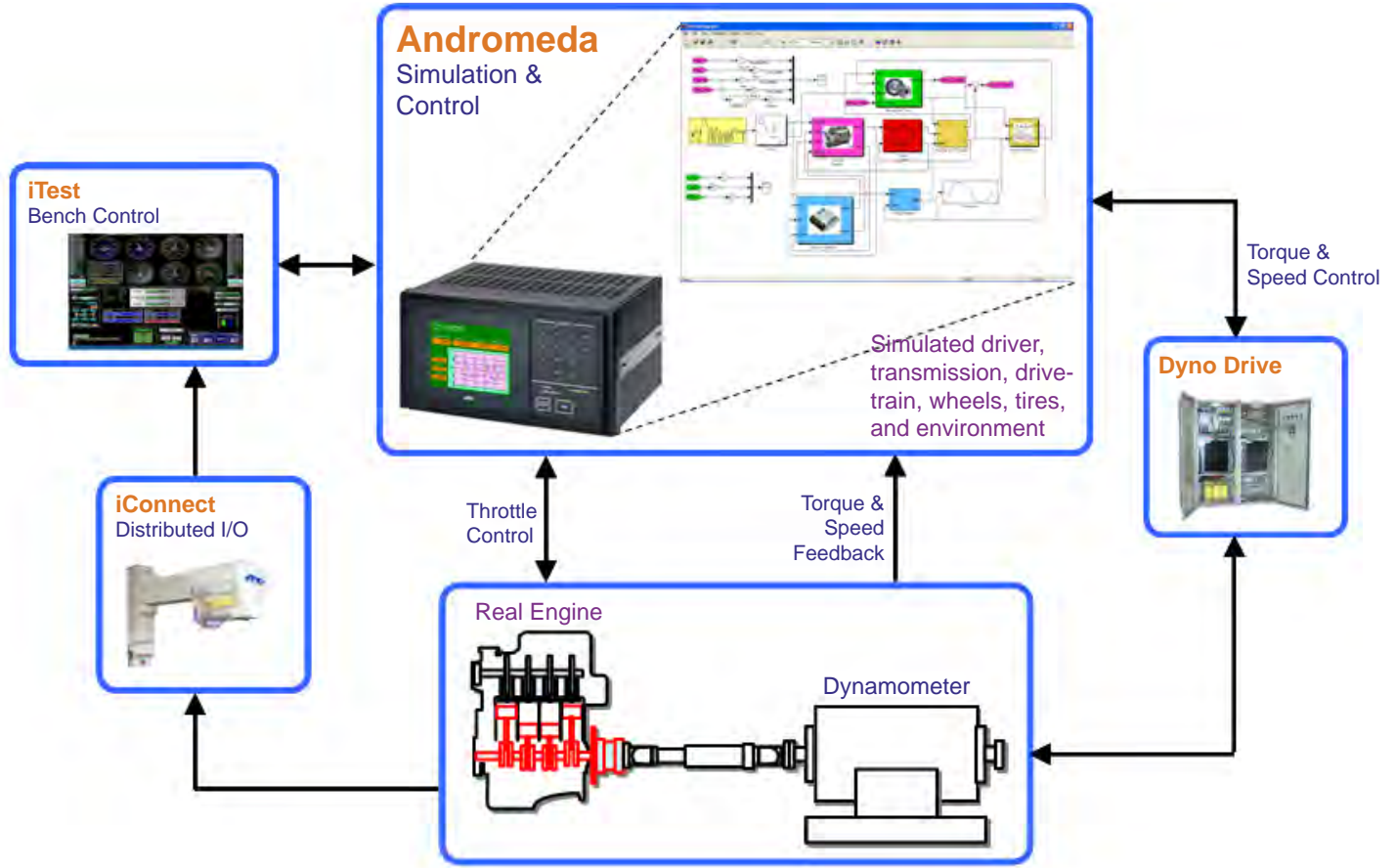


Speed/torque between engine and vehicle = Speed/torque between engine and dyno



The Andromeda system in an engine-in-the-loop configuration

System Architecture (Engine-in-the-Loop example)



Applications

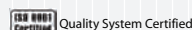
- Durability and drive cycle testing
- Emissions and fuel economy
- Driveability studies
- ECU calibration
- Benchmarking
- Warranty investigation
- System optimization
- Electric vehicle power studies
- Hybrid powertrain optimization

Options

- Engine, transmission, electric motor, drivetrain, hybrid and other -in-the-loop applications
- Integration of 3rd-party models
- Custom model development
- Custom device control
- Integration of 3rd-party DAC systems



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