High-Performance 2E Hybrid Powertrain Test Cell

This test cell is ideally suited to testing high-performance high-speed engines and complex hybrid powertrain development testing. It has two wheel-mounted, ultra-high dynamic AC dynamometers and a 300kW battery simulator. It is large, allowing for additional equipment to be added as required, and self-contained, including its own control room. The 40,000L fuel tank is split into two bulk volumes.

Applications

- IC or hybrid emissions development, including simulation of real world and regulated cycles
- Test of powertrain with a virtual battery using the battery simulator
- Powertrain control strategy development
- Hardware integration testing
- Development of low maturity hardware
- Development of traction control systems using fully integrated tyre slip models
- Mule use of components to simulate future vehicles
- Condensed testing on a rig as opposed to track- or road-based testing
- Highly repeatable measurement of fuel economy, emissions and energy consumption

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Facility Specifications

- System nominal power absorption 700kW
- Dyno inertia 0.84 kgm²
- 2x ultra-dynamic synchronous motors; 350kW, 3500Nm (+20% overload). Maximum speed 3000 min-1
- Dynamic torque changes performed at minimum 0.13ms
- 300kW Battery Simulator (1000V/600A)
- ETAS Inca ECU calibration tools with iLinkRT real-time interface
- Modelling and Simulation realised through Mathworks and dSPACE software integration
- Cell and engine intake air control between 20°C to 35°C +/- 2°C
- Engine coolant control to +/- 1°C
- Test bench intercooler temperature control to +/-1°C
- AVL Fuel Exact measurement with temperature conditioning to +/-0.02°C
- Measurement of 70 temperatures and 32 pressures
- Additional analogue and digital input/output channels available