

Vehicle engineering

Powertrain department of Applus IDIADA offers to their customers several kind of powertrain services on different type of vehicles: motorbikes, light, medium and heavy duty vehicles.



DESCRIPTION

Our technical capabilities combined with our long automotive experience on different areas are summarized in the following services:

Exhaust emissions and fuel consumption

- Development and test services of exhaust emissions and fuel consumption according to any standard (EU, EPA, CARB, Japan, Brazil) or customer requirements
- Vehicle emission test cells for 4x2 and 4x4 vehicles
- Vehicle emissions test cells at ambient temperature and climatic chamber
- Catalyst efficiency evaluation: Real-time data analysis for pre-cat, mid-bed and post-cat measurement
- Development and engine calibration services on light, medium and heavy duty engines. Optimization of engine behavior to fulfill the emissions and FE targets (for emissions, FC and EOBD and OBD II)
- Validation programs for emissions USA certification (EPA and CARB)
- On board system emissions measurements
- Energy consumption and electric range to any standard (EU, EPA, CARB, Japan) or customer requirements
- Integrated to a energy management system measurement (management of the voltage and intensity to or from the battery on hybrid and electric vehicles)
- Alternative fuel emissions

- Non – regulated emissions (speciation of aldehydes, ketones, alcohols and hydrocarbons) by HPLC, GC and FTIR
- Measurement of SOF, SOOT, and Sulfate in diesel particulate emissions

Performance and driveability

- Road load (coast down)
- Vehicle performances
- Driveability
- Shift quality (AT, AMT, DCT, CVT)
- Clutch pedal and gearshifter operation (MT)

ECU calibration

- Engine ECU application
- On-engine ECU application
- In-vehicle ECU application
- Engine ECU application: Support services

Fuel systems

- Activities in canister
- Activities on passenger car and motorcycles
- Fuel hoses testing

Engine cooling and heat damage

Our main capabilities includes:

- Engine Heat rejection on test bench
- System sizing by 1D tools and component characterization on test benches
- CAD design and System integration
- Cooling package airflow
- System Development

New front-end developments

Development of Cooling, Lubrication, Air intake, Exhaust and Fuel systems

Underhood and underbody thermal analysis

All activities supported by 3D tools (StarCCM +, Fluent, Radtherm...)

Powertrain benchmarking

- Complete program management (test car sampling, logistics, test procedures definition, reporting, analysis...)
- Complete vehicle instrumentation (temperatures, pressures, CAN parameters...)
- Coastdowns

- Emission tests and fuel consumption
- Performance testing on proving ground
- Performance testing on chassis dyno
- Driveability in climatic chamber
- Driveability on proving ground
- Shiftability
- Engine mapping (emissions and FC)
- Interior and exterior noise

Driveline and transmission integration

- Specification and calculation
- Transmission packaging
- Transmission integration and benchmarking
- Calibration and debugging
- Transmission validation

Powertrain NVH

- Engine noise characterisation
- Exhaust and intake noise
- Transmission fatigue
- Transmission noise (torsional vibration, whinining)

Durability and realibility

- Durability of exhaust after treatment devices in chassis dynamometer or engine test
- Powertrain and vehicle components durability tests
- Fleet monitoring
- OBD monitoring
- Taylor-made durability tests according to customer's specification
- Powertrain tests during the mileage accumulation (performances, emissions, FE...)
- General durability / quality tests
- Technical management of the test
- Tests can be performed in mileage accumulation chassis dynamometers, engine test beds, test tracks, public roads, and special geographic areas regarding special climate conditions or road surfaces

Alternative fuels

- Evaluation and development of alternative engines and fuel systems for alternative fuels use: CNG, LPG and biofuels (ethanol, FAME...)
- Diesel to CNG engine conversion
- Biofuels impact evaluation



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- IDIADA provides all the necessary alternative fuel infrastructure for testing and application