

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.



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

Exhaust emissions & 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 & 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 & 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 & 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 & 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, whinnying)

Durability and reliability

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