

AKKA

PASSION FOR
TECHNOLOGIES



DIESEL CALIBRATION FOR PASSENGER VEHICLES

WE HAVE BOTH PERFORMANCE AND THE ENVIRONMENT IN FOCUS

Internal combustion engines still possess much potential for improvement in both their performance and environmental impact, despite the parallel trend for alternative drive systems. The experts at AKKA will support you with their know-how in diesel engine calibration. We are a one-stop shop to help develop your high-end diesel engine and exhaust gas systems. Our expertise includes specialized calibration of the following systems: Combustion, Control and Drivability Systems, Exhaust Gas Aftertreatment Systems and On-Board Diagnostics (OBD). In addition we utilize in-house tools to optimize your calibration requirements and evaluate vehicle telemetry (e.g. endurance testing).

YOUR SATISFACTION IS OUR GOAL

Our in-house experts and consultants will support you in all phases of powertrain development, be as an Expert on Demand (EoD), in both small-scale and turn-key projects. Together we'll develop products ready for series production.

PORTFOLIO

- Combustion System Calibration
- Exhaust Gas Aftertreatment Systems
- Controller and Drivability Calibration
- On Board Diagnostics (OBD)

OUR ADDED VALUE

- Short development times due to the targeted use of developmental methodologies
- Simultaneous engineering due to a network of expert teams working closely with one another
- Utilization of our own test benches and those run by co-operating facilities (engine, powertrain, exhaust gas, turbocharger, components)
- Utilization of automating tools and processes (DoE, CAMEO, PUMA, ARA, etc.)
- Utilization of proprietary measurement technology and resources
- Experienced, certified project managers
- Worldwide deployment of teams
- Functional development (software specifications)

OUR CUSTOMERS

- Automotive
- Aerospace



Automotive



Aeronautics



Railway



Energy



Life Sciences



Telecoms



Space



Services & Information Systems



Defense



Oil & Gas



Consulting



OUR EXPERTISE

COMBUSTION-RELATED CALIBRATION

- Development of emission and fuel consumption using steady state and dynamic trials and design of experiment (DoE)
- Performance and noise calibration
- Parameterization and calibration of the NO_x Model, learning functions (HDK, WRAF, MOBAP), and safety functions
- Designing cold run-specific and environment-specific adjustments
- Altitude calibration up to 4,000 m (load protector, blue-smoke, HC/CO) and cold start application -22 °F @ p_{atm} = 990 mbar
- Certification support (emissions and engine performance)
- Development of an optimized combustion process

ON BOARD DIAGNOSTICS

- Calibration of OBD-relevant diagnosis functions:
 - Engine coolant system, air system, fuel injection system
 - Exhaust gas aftertreatment system (including exhaust gas sensors)
- Definition of methods for fault simulation and preparation of OBD threshold parts
- Fault memory handler and scan-tool communication
- Dataset management and inhibit-coordination
- Validation of OBD systems (cold, hot, altitude), statistical proof of IUPR, pre-PVE and pre-OBD-demonstration
- OBD documentation and support for OBD certification testing

EXHAUST GAS AFTER-TREATMENT

- Support in developing exhaust gas system, characterizing, simulation, and modeling of DOC, DPF, NSC, SCR catalytic converters and systems
- Parameterization of DPF loading model, regeneration management and combustion process
- Parameterization of SCR exhaust gas after-treatment and overall emission development
- Parameterization of DOC and engine-specific protection functions (p_{max}, T₃ characteristic diagram)
- Designing cold run adjustments and environment-specific adjustments (heat, at altitudes up to 5,000 m, cold < -13 °F)
- Calibration of ambient correction (altitude, temperature)
- Certification support (emissions and engine performance)
- DPF low quality fuel application

CONTROLLER AND DRIVABILITY

- Controller design and tuning:
 - Airsystem controller (charge pressure, EGR)
 - Temperature controller
- Engine speed controller and vehicle speed limiter
- Thermal management and application for coolant temperature
- Generator management and Start-Stop
- Designing the drivability according to customer requirements
- Calibration of gear shift recommendations and transmission/ESP torque interface

