TORQUE ACCURACY CHECK

Avoid inefficient and time consuming conflicts

THE CHALLENGE

For the optimization of driving experience accurate torque delivery from torque generators is required. Reality shows, that deviations occur in different conditions, finally causing unacceptable vehicle behavior. Today expensive, error-prone and time-consuming torque measurement sensors are installed on the flex plate to assess torque deviations. Time consuming measurement execution, data analysis, and report generation can nowadays block performing structured evaluation.

THE AVL SOLUTION

AVL's approach to tackle this challenge is a powerful methodology containing fully automated and efficient testing, analysis, and reporting (total cost of ownership savings up to 50 % realistic, up to 80 % possible). The whole operating range (steady state and dynamic) as well as high reproducibility and flexibility of testing environments (on testbed, chassis dyno, and test track) are covered. Additionally, we are able to substitute established torque measurement devices by utilization of combustion (also known as pressure indicating) as well as e-Power analysis on e-Motor / inverter.

THE ADDED VALUE

- Avoid inefficient and time consuming conflicts between engine, e-Motor, and transmission departments
- Fast, efficient, and accurate analysis of the accuracy of the interface between torque source and transmission
- Flexible according to working environments (testbed, chassis dyno, test track), measurement devices (flex plate, torque shafts, combustion analysis, e-Power analysis, …), and accuracy targets (e.g. AUTOSAR)
- Identification of failures in XCU torque calculations

SOLUTION OVERVIEW

Reduction of development time

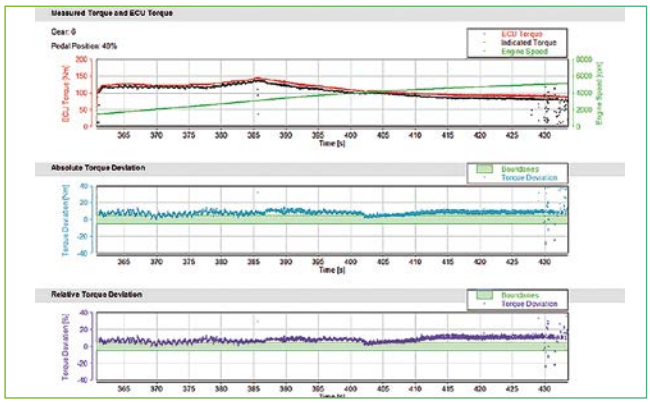
- Fast and efficient way to check torque accuracy
- Set-up time within a few days instead of 9–15 weeks per vehicle (due to long delivery time for flex plate or drive shaft adaptation)
- Applicable and reproducible at different working environments: test track, chassis dyno, powertrain testbed, powerpack testbed

Reduction of costs

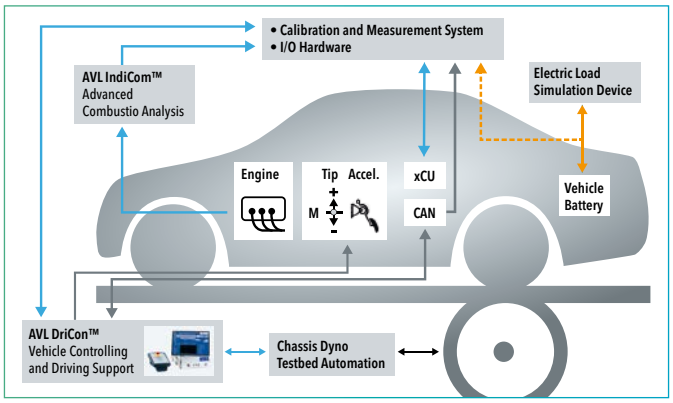
- Cost efficient and reproducible results due to automated testing
- Tool supported analysis and report generation (reduction of costs and effort up to 60 %)
- Comprehensive torque assessment possible at low cost (reduction of installation costs and effort up to 90 %)

Increase of product quality

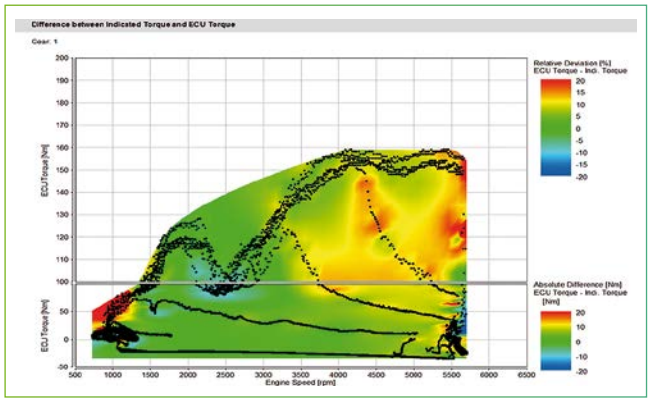
- Reduced risk of instrumentation failure due to the elimination of sensitive torque flange strain gauge
- Transmission shift quality and robustness in all driving conditions greatly improved
- Increased accuracy of torque blending between conventional and hybrid drive modes
- Common base for discussion for different powertrain teams



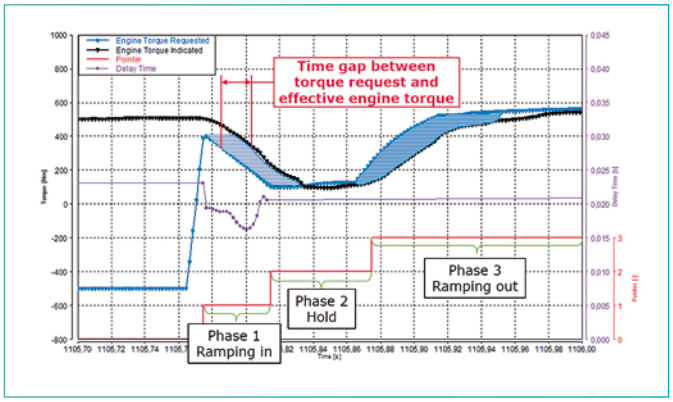
Static Torque Deviation ECU / IndiCom™ (time based) automated exported from our reporting tool



AVL proven toolchain example on powertrain testbed



Static Torque Deviation ECU / IndiCom™ (entire operation area for one gear) automated exported from our reporting tool



Dynamic Torque Deviation ECU / IndiCom™ in different shift phases automated exported from our reporting tool

FIND OUT MORE:

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