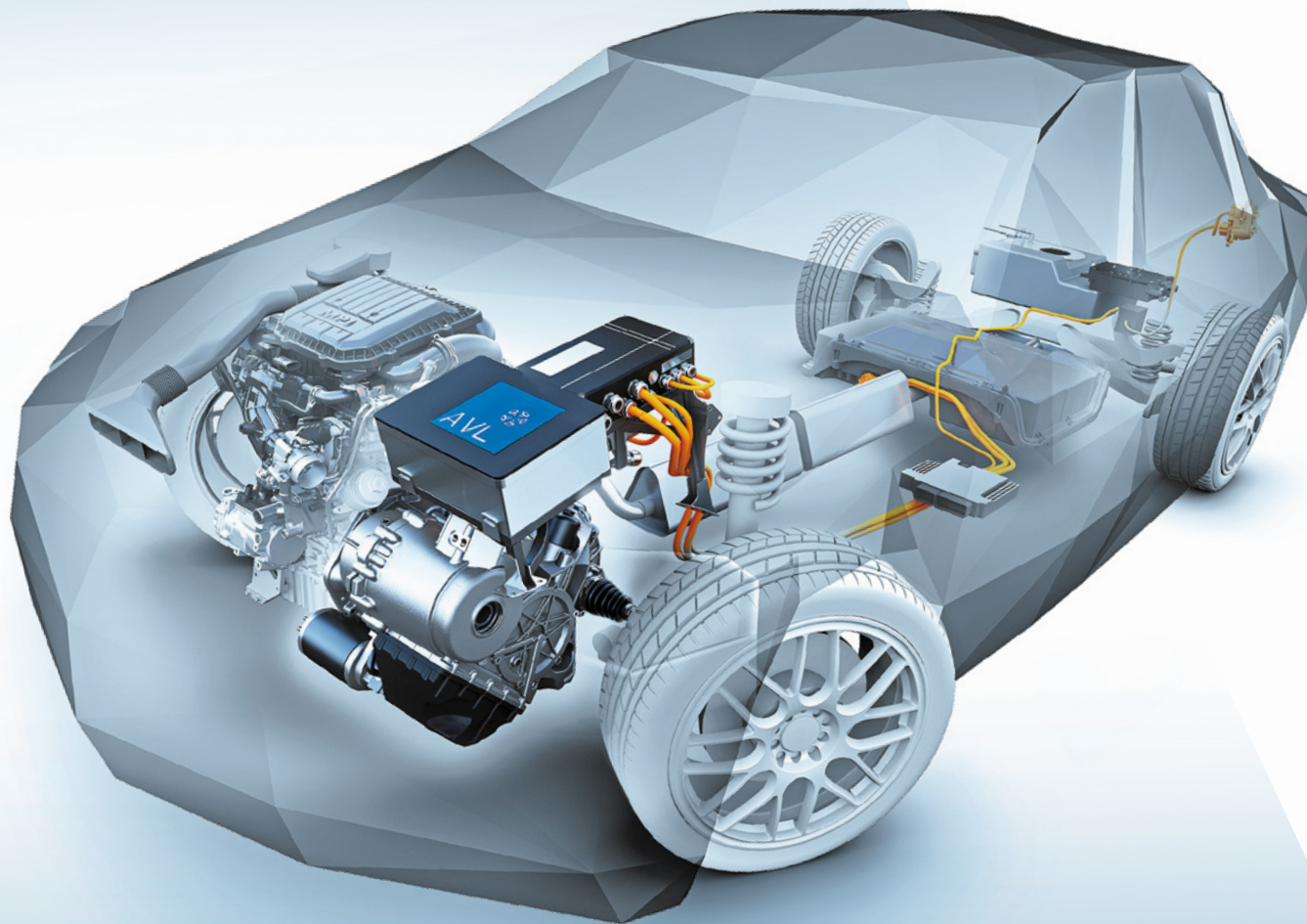


# AVL Transmission and Hybrid Powertrain Development

Engineering Solutions and Services from Concept to Serial Production



## AVL TRANSMISSION SOLUTIONS FOR CLEAN AND AFFORDABLE MOBILITY WORLDWIDE

### MARKET DRIVERS & CHALLENGES

- Emissions legislation drives new transmission concepts
- Efficiency, driveability, weight, comfort, and cost as key drivers
- Diverse local market requirements (high tech vs. low cost)
- Increasing competition, especially in fast-growing markets
- Rising number of transmission variants in diversified saturated markets
- Rapidly increasing system complexity
- Shortened development cycles

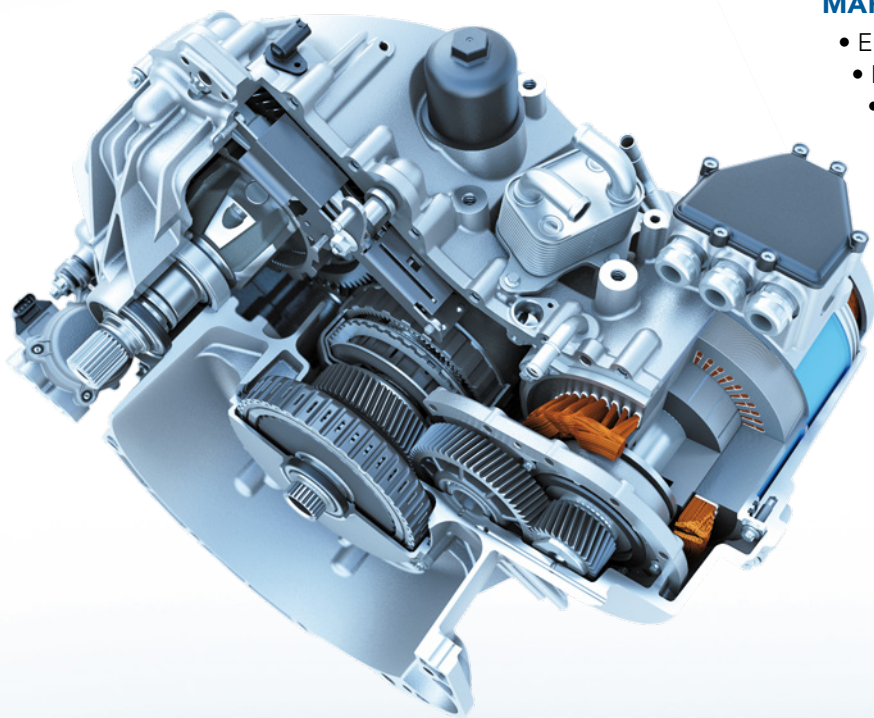
### AVL APPROACH

OEMs consider the transmission, as part of the entire powertrain, to play a major role in achieving CO<sub>2</sub> targets. As an independent engineering supplier, AVL approaches transmission development with

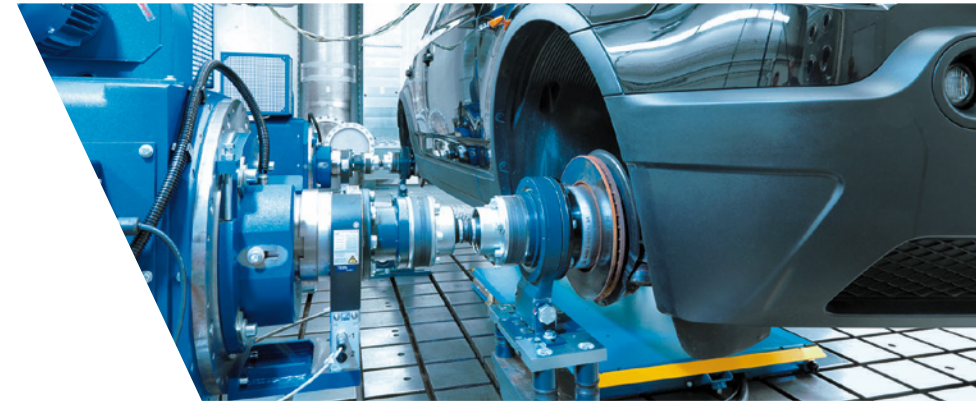
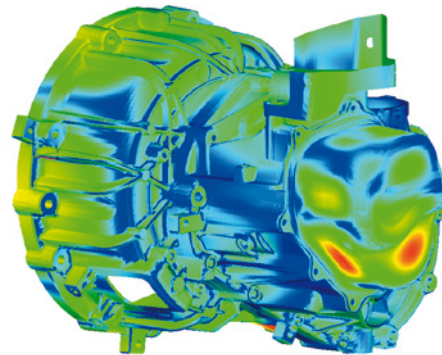
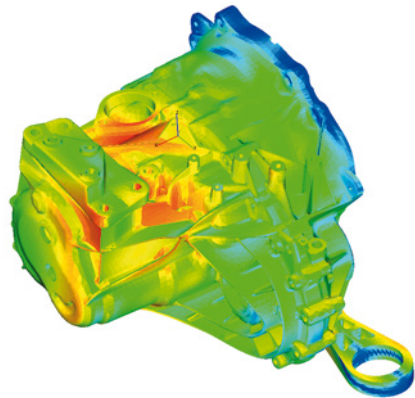
- Leading-edge technologies for conventional and hybrid powertrains from concept investigations up to complete production programs
- Holistic expertise from the single component to the entire system
- Global know-how and project execution with local customer support
- State-of-the-art methods and processes to raise development efficiency

### AVL SOLUTION PACKAGE IN DETAIL:

- Upfront system configuration incl. concept definition & operation strategies
- Design & simulation, prototype procurement & manufacturing
- Supplier management, production & plant engineering
- Reliability engineering & warranty cost prediction
- Control strategy & software development
- Calibration, driveability & NVH optimization
- Production launch & worldwide field support
- Enhanced frontloading with AVL software tools and a seamless simulation platform from concept to validation and SOP



# Engineering and testing services for all kinds of transmission topologies and hybrid application

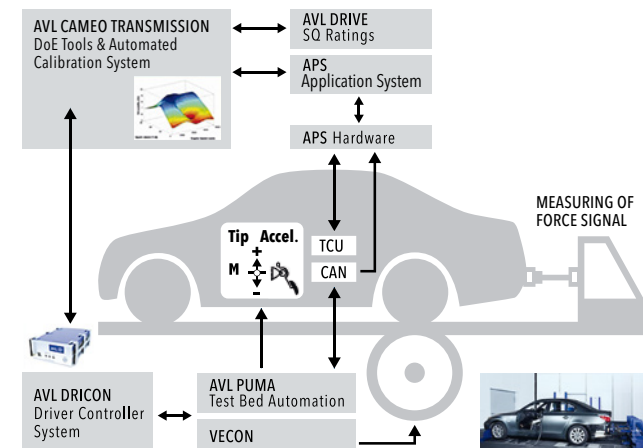


## AVL'S ADDED VALUE

- Seamless integration of design, simulation, testing and validation
- One-stop-shop partner
- Fast response times
- Simulation-coupled testing environment
- High-quality local support globally
- One partner with total system capability in all key areas (engine, transmission, e-motor, battery, controls)
- Independent hybrid/transmission system integration competence due to extensive in-house R&D

## HOW AVL'S CUSTOMERS BENEFIT

- Reduced time-to-market
- Reduced development and product costs
- Enhanced product maturity in each development phase.
- Efficiency through in-house simulation and testing tools
- Independent solutions applicable to different market segments and based on AVL's vehicle competence
- Highly flexible testing environment



**FOR FURTHER INFORMATION PLEASE CONTACT:**

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