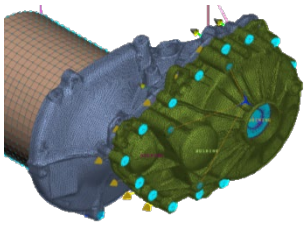
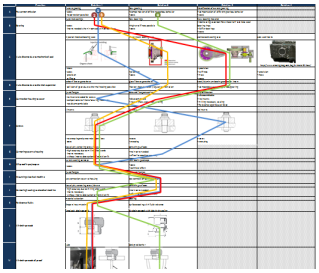
*Sample project:*
*Development of lightweight gearbox housing*

## Objective:

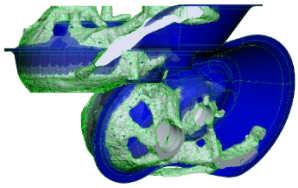
Development of an innovative lightweight gearbox housing made from fiber-reinforced plastic with significant weight savings



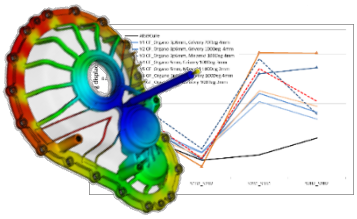
## Implementation:



- *3D scan of the previous housing*
- *CAE-based analysis of the component specifications using the scanned 3D data and relevant load cases of the vehicle in question*
- *Creation of the performance specifications based on the analysis of the mechanical requirements and requirements of conventional gearboxes*



- *Methodical selection of the materials system in combination with the strengthening technology to be used*



- *3D FE-based topology, shape and ply drop optimization for the materials system selected: organo sheet with short-fiber reinforced, injection-molded ribs*
- *Injection-molding simulation to identify the fill level and material orientation, for example, with subsequent FE stiffness analysis with regard to wave drift/wheelset displacement*

- *Development, construction and manufacture of the gearbox housing by the ARRK Group*
- *Testing the materials quality achieved and component characteristics*
- *Optimization of manufacture and construction*

## Result:

- *Organo-sheet gearbox housing with a weight saving of 30% offering the same performance as conventional gearboxes*

Powertrain development

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