AVL - PASSION AND RESULTS

AVL is the world's largest privately owned company for development, simulation and testing technology of powertrains (hybrid, combustion engines, transmission, electric drive, batteries and software) for passenger cars, trucks and large engines.

Thesis work – Hybrid Driveline Configuration

Background
Future fuel consumption regulations in auto industry are very tough. In order to improve the fuel efficiency of vehicles, hybridization is an important technology. The configuration of the driveline can be done in a numerous ways and the level of hybridization can also differ depending on vehicle application, cost, performance or other requirements; in the range from a pure battery electric vehicle to a conventional combustion engine vehicle. To make the correct concept choice depending on vehicle application it is important to have as much decision material as possible. Last year a thesis work was executed in this topic with focus on heavy-duty vehicles, which resulted in a basic simulation tool to be able to compare different configurations of hybrid drivelines.

What
The purpose of the thesis is to continue the work on finding a model to use when comparing different hybrid driveline configurations. The thesis should also include what kind of parameters that are the best to use during concept evaluations of these driveline configurations.

How
- Investigate and understand the existing basic simulation tool in MATLAB.
- Analysis of existing hybrid configurations within the automotive industry with focus on both heavy-duty vehicles and passenger cars.
- Refinement of the simulation model that should be as flexible as possible regarding driveline configurations.
- Identify criteria to find optimum solutions of driveline configurations and level of hybridization.
- Investigate how different types of battery technologies affect the model.
- Recommendations of parameters to compare during the concept evaluation.
- Implement an optimization algorithm in order to achieve best possible hybrid driveline configuration based on given criteria.

When
Spring 2018

Tools
MATLAB and AVL-Cruise or similar tool.

Candidates
Suitable candidates are M.Sc. students within mechanical engineering, vehicle engineering, or engineering with a good understanding of modeling, and an interest in powertrain development. The thesis can be performed by 1-2 persons.

Contact
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