At the Institute for Combustion Engines (VKA) under the direction of Prof. Dr.-Ing. (USA) Stefan Pischinger, research on all topics concerning the vehicle powertrain is conducted. Core focus is still the research on conventional combustion engine development like the implementation of innovative engine designs, fundamental research on more efficient combustion processes also in combination with alternative fuels or the improvement of the engine mechanics and aftertreatment systems. Additional research areas include virtual engine development, hybrid powertrains, electromobility as well as fuel cells and mechatronics for combustion engines. At any time, research is closely associated with the ongoing development of intelligent methods for test procedures and engine calibration.

### Bachelor Thesis / Master Thesis

**Start: from now**

- Faculty 1 - Mathematics, Computer Science and Natural Sciences
- Faculty 4 - Mechanical Engineering
- Faculty 6 - Electrical Engineering and Information Technology

**Predictive and optimized operating strategies for different hybrid electric vehicle topologies**

Within the framework of current research projects in the field of electrification of light commercial vehicles (LCV), we are looking for a student (f/m) to support the development of advanced control strategies in order to minimize the fuel consumption and pollutant emissions for different use cases in the LCV segment. In addition, predictive operating strategies based on the short- and long-horizon prediction data will be also developed. A demonstrator vehicle (with P02 configuration) which can emulate different hybrid topologies as well as different levels of hybridization from a 48 V Mild Hybrid to a high voltage Plug-In Hybrid is currently in commissioning. The developed control strategies during this work will be initially tested in a Model-in-the-Loop simulation environment and finally implemented on the aforementioned demonstrator vehicle.

**Your tasks / your profile:**

- Good knowledge in hybrid drives and combustion engines
- Good knowledge in function/algorithdevelopment
- Good knowledge in MATLAB/Simulink and MS Office

Would you like to know more?

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