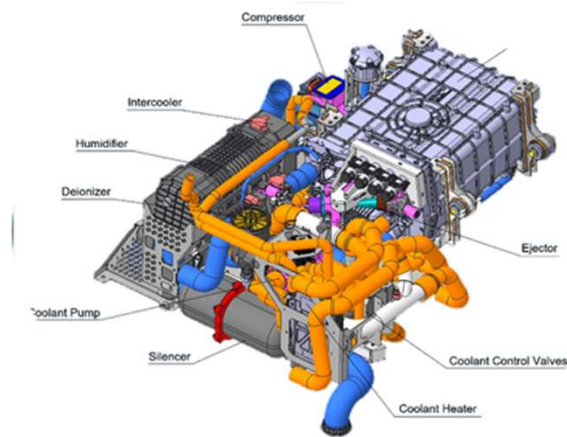


Integration and testing of a fuel cell control unit on a HiL test bench



Short Description

The increasing complexity of modern fuel cell systems (FC systems) requires new development and testing methods in order to validate control strategies, system behavior, and safety functions in a realistic and efficient manner. Hardware-in-the-Loop (HiL) test benches make it possible to test real control units under real-time conditions using virtual system models and therefore represent a key tool in the development of fuel cell control systems.

The aim of this master's thesis is to couple a dynamic fuel cell system simulation model with a HiL test bench, commission the test bench, and implement the connection to a real-time-capable fuel cell system control unit. The thesis thus makes an important contribution to safeguarding and accelerating development processes in the field of fuel cell technology.

Content / Time table:

- Getting started with the topic – fuel cell systems and HiL test environments (2 weeks)
- Implementation of the dynamic fuel cell system model on the HiL environment (2 weeks)
- Commissioning of the Hardware-in-the-Loop test bench (1 month)
- Connection and integration of a real-time-capable fuel cell system control unit (2 months)
- Conducting tests to verify functionality and real-time capability (1 month)
- Documentation of the results and preparation of the master's thesis (1 month)

Start: as of now
Duration: approx. 6 months
Compensation: paid master thesis
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