

Simulation of the energy demand of a battery drive vehicle in timetable operation

Current state:

In order to be able to operate locally emission-free rail transport on non-electrified secondary lines in rural areas, batteries are used as energy storage systems, among other things. Because of the high weight and for economic reasons, the batteries should not be oversized and should be adapted as far as possible to the specific needs of the line. This requires a detailed model of the energy demand in timetable operation.

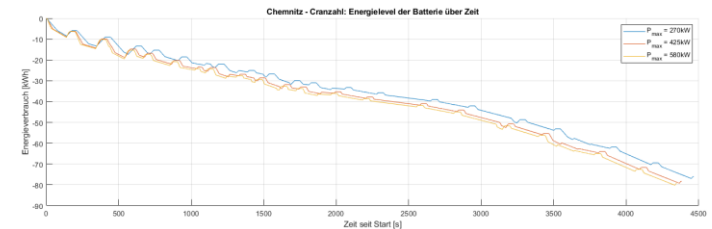
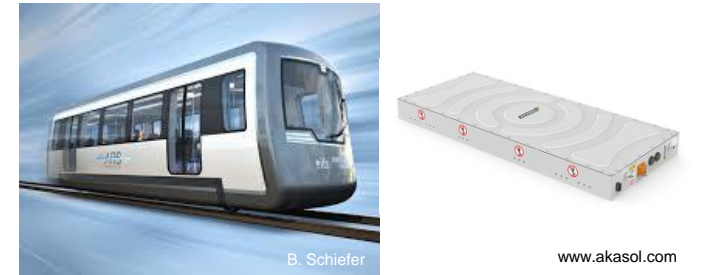
A battery-powered rail bus is currently being developed at the IFS, for which such a model is to be built as part of the master's thesis. This model should be able to create an energy-optimized driving profile based on current timetable data and output the corresponding energy demand.

Possible content:

- Literature research on exemplary local transport routes including a timetable study
- Familiarization with the simulation environment (e.g. MATLAB)
- Implementation of the energy demand calculation
- Implementation of the energy optimization
- Derivation of battery requirements
- Documentation

Other notes:

- Programming experience is beneficial
- Basic understanding of vehicle longitudinal dynamics is beneficial
- Content and scope can be coordinated depending on the type of work



Contact person:

Axel von Stillfried, M.Sc.
Institut für Schienenfahrzeuge und Transportsysteme
EG, Raum 005
Seffenter Weg 8, 52074 Aachen

Tel.: 0241 / 80-25565

E-Mail: axel.stillfried@ifs.rwth-aachen.de