TUM Hyperloop
TUM School of Engineering and Design
Technical University of Munich

Design and Construction of a Synchronous Linear Reluctance Motor Test Bench

Type: Master's Thesis
Content: experimental/theoretical
Possible start: now
Key words: electric machines, reluctance forces, test bench setup

TUM Hyperloop

Our group is researching Hyperloop technology for passenger transport. We focus on electromagnetic levitation, suspension, and propulsion, simulation of high-speed aerodynamic phenomena, cooling systems, and vehicle structure and infrastructure topics. Depending on the topic, we work on new test benches and the implementation of various experiments, computationally intensive simulations, or the design of new types of components. Our chair aims to motivate you and other students to develop modern technology for tomorrow – together as a strong team with the power of everyone.

Job Description

Expanding propulsion options for a Hyperloop system is essential to meet varying system requirements. To identify the most efficient and cost-effective solution, different motor concepts and their combinations must be tested. A combination of short and long stator systems has gained particular interest. In this project, a short stator motor will be developed and tested alongside an existing long stator system. A synchronous linear reluctance motor will be designed and integrated based on existing simulation, into a test bench to study its motor characteristics and the transition between both motor types.

Your Tasks

- Familiarization with the operation of a synchronous linear reluctance motor
- Recreate a simulation of a paper and adapt it to Hyperloop requirements
- Construction and initial commissioning of a test bench

Our Requirements

- Familiarity with the operating principles of electric machines.
- Experience with, or motivation to learn, new software and build a test bench.
- Strong perseverance to complete tasks on time.

Our Offer

- Working with students and researchers in a highly motivated young research team.
- Experience in a new field of research that is gaining in importance.

Contact

If you are interested in working with our team, please send your application, motivational letter, and supporting documentation to Ruben König (ruben.koenig@tum.de). If you have any questions, do not hesitate to contact us.