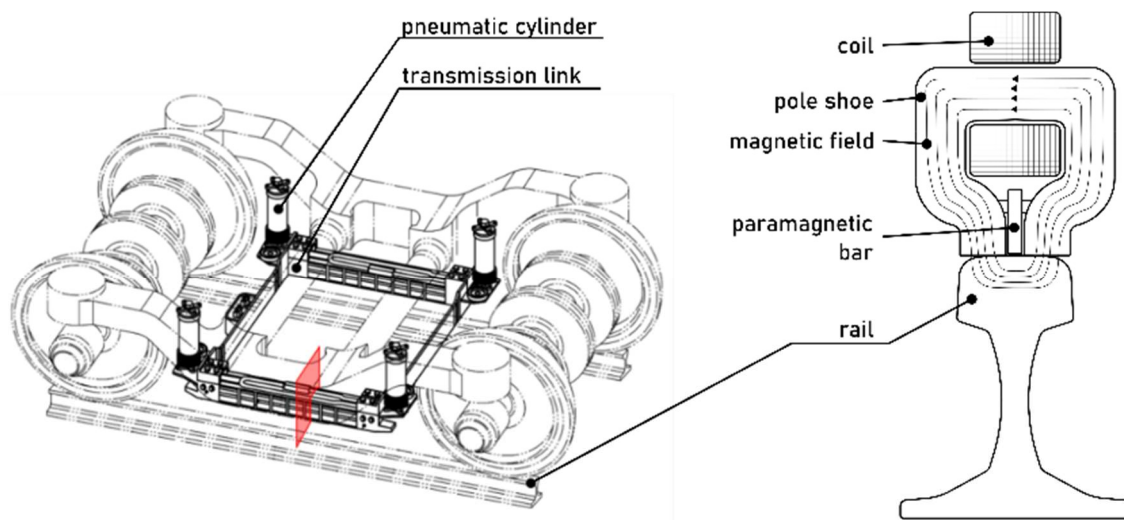


Announcement Master's Thesis

Development of a thermodynamic model for the magnetic track brake

Within this master's thesis, a numerical thermodynamic model will be developed to analyze the frictional heat generation due to sliding contact between the magnetic track brake (MTB, see below) and the rail. The model actually shall be developed to validate measurement data that has been accrued on a twin-disc test rig. There, the role of the rail is taken by a rotating wheel, and the pole shoes (brake elements) are simply pressed onto the rail and certain measurements, such as, forces, temperature (on a defined position) etc. were conducted for different setups. The aim is to find a simple, yet efficient and accurate mathematical model that predicts the temperature field within one such pole shoe (see below).



What is expected to be done in this study?

- Mathematical transient model of the 3D frictional heat development within the pole shoe; e.g., solution of heat conduction equation with appropriate loading and boundary conditions,
- Numerical testing and verification of the developed model through simulations,
- Comparing and parametrizing the model with conducted experimental measurement data.

Your profile:

- Good knowledge of the basics of (thermo-)mechanics and mathematics
- Good programming skills in Wolfram Mathematica (or any other suitable language) or having the motivation to learn it
- Independence, a high level of motivation and problem-solving skills

The project is carried out within the CD Laboratory for Enhanced Braking Behaviour of Railway Vehicles. If you are interested in working on this master's thesis with us and would like to join our team, please contact us by sending a short email.

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