

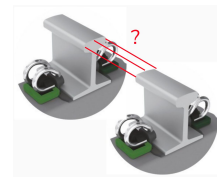
## Design of a Rail Bridging Mechanism for High-speed Wheel Transport

### Short Description

Global rise in mobility brings traditional modes of transport to their limits. Vacuum Transportation enables an efficient and safe way of transport. Vehicles, so-called pods, travel at high speeds on a rail through a low-pressure tube in order to minimize drag.

The test track AlphaTube, built by the EuroTube Foundation, figures a novel subtrack design for the high-speed raiing and guiding of the vehicles. To test the maximal speeds for wheel-based high-speed transport systems continuous rails are required: bumps and gaps would compromise safety.

Due to the gate valve system in the airlock a gap results in the UIC60 rails (standard SBB profile). This gap requires a rail bridging mechanism to open and bridge this gap.



This thesis shall investigate a variety of concepts for a fast and reliable motorized bridging mechanism and will implement a first proof-of-concept working prototype. The developed mechanism will provide a compact and fail-safe solution for high-speed rail and vacuum transportation applications.

Type	Bachelor thesis or Semester thesis
Partner	ETHZ, EuroTube Foundation
Start date	14.09.2020
End date (planned)	tbd
Student(s)	tbd
Internal supervisor	Fabio Dubois, <a href="mailto:fabio.dubois@eurotube.org">fabio.dubois@eurotube.org</a>
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### Work packages

- Literature review of related work
- Compilation of requirements list
- Creative study of bridging/connection concepts
- CAD design of mechanism
- Prototyping
- Testing and performance evaluation on demo bridging setup

### Requirements

- High motivation and interest in the topic
- Able to work independently and be creative
- Methodological and goal-oriented working behavior
- Good theoretical understanding of structural mechanism
- Experience with mechatronic actuation and simple electronics
- Knowledge about vacuum transport technologies is beneficial

### Application

Please email your CV and transcript to [weiss@inspire.ethz.ch](mailto:weiss@inspire.ethz.ch)



Planned AlphaTube Infrastructure, by EuroTube Foundation



Swissloop Pod Claude Nicollier (2019)