

Experimental Methods for Leakage Detection in Large Volume Vessels for High-Speed Vacuum 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. Capsules, so-called pods, travel at high speeds on a rail through a low-pressure tube in order to minimize drag.

ETH Zurich's Hyperloop Team Swissloop participated with other university teams in Elon Musk's Hyperloop Pod Competition for three consecutive years. Due to the lack of testing infrastructure in Europe for R&D, the EuroTube Foundation aims to accelerate the breakthroughs in vacuum transportation and to push the promising concept forward by building a 3km long test track in the canton of Valais, Switzerland.

The goal of this thesis is to perform experiments with a leakage detection device in order to detect leakages in large volume vessels for high-speed vacuum transport.

The results of this thesis provide important information for future tube development and construction and a firm foundation for improvements of the detection device.

This thesis is conducted at the Institute of Fluid Dynamics at ETH Zürich in collaboration with EuroTube and Swissloop.

Type	Master thesis
Partner	ETHZ, EuroTube Foundation, Swissloop
Start date	tbd
End date (planned)	tbd
Student(s)	tbd
Internal supervisors	Fabio Dubois, fabio.dubois@eurotube.org Nathalie Nick, nathalie.nick@swissloop.ch
External supervisors	Institute of Fluid Dynamics

Work packages

- Literature review
- Study of existing models and methods from related work
- Setup of experiment and completion of experiments, collection of data
- Documentation and writing of report or paper

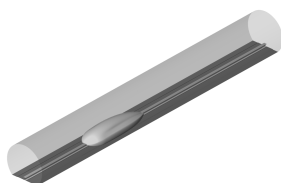
Requirements

- High motivation and interest in the topic
- Able to work independently and be creative
- Methodological and goal-oriented working behavior
- Good theoretical understanding of fluid dynamics / computational fluid dynamics and thermodynamics

Application

Please fill in the application form:

https://docs.google.com/forms/d/e/1FAIpQLSdy-SFLzulYiQICpFioLzTfWrsVnUZaepN4AVJ2FO3E_1I_q/viewform



Swissloop Pod in Tube, Hyperloop Pod Competition 2019



Planned AlphaTube Infrastructure, Collombey-Muraz, Switzerland