

<http://desl-pwrs.epfl.ch>

Student project proposal

Project title

CFD simulation of the hyperloop capsule and infrastrucutre.

Project type: MSc thesis BA semester project MSc semester project

Project responsible and e-mail

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Project description

At the EPFL, a reduced scale hyperloop test track has been recently developed. The test track is composed by a 40cm diameter tube assembled as a circular track of 40m diameter. It can operate with minimum pressures in the order of few tens of millibars. The main purpose of this infrastructure is to study the electromagnetic propulsion of energy-autonomous hyperloop capsules to optimise their energy consumption. In order to complete the experimental setup, the CFD simulation of the capsule and the tube has to be undertaken. Therefore, the MSc student is expected to study the fluid dynamics of the capsules and its interaction with the infrastructure in order to minimize the overall drag. The student will be member of the EPFLoop team, a multi-disciplinary students team with complementary tasks.

Tasks of the student (to be adapted based on the project type)

- CFD simulation of the pod/tube interaction.
- Study of the similitude of the drag coefficient of the reduced-scale system with respect to its full-scale counterpart.
- Optimisation of the drag coefficient.

Requirements

- Having attended fluid dynamic courses.
- Familiarity with COMSOL and/or ANSYS or, in general, CFD simulation softwares.
- Team spirit.