

## INVITATION TO SEMINAR "VACUUM TRANSPORT RESEARCH - HYPERLOOP TECHNOLOGIES"



MONDAY, MARCH 12<sup>TH</sup>, 2021, 18:00 – 19:00

LECTURE ONLINE ZOOM ROOM: [LINK](#)



Website: [WWW.VACUUMTRANSPORT.ORG](http://WWW.VACUUMTRANSPORT.ORG)

### THE HOST ORGANIZATIONS



euroTUBE



**ETH** zürich

### PARTNERS:



TUM  
HYPERLOOP



Institut für  
Hyperloop Technologie  
Emden | Leer | Oldenburg | Lathen

### INTRO TO THE VACUUM TRANSPORT SEMINAR

#### **Creators and Partners**

The Vacuum Transport Seminar's creators and hosts, EuroTube and Swissloop, introduce the seminar as well as their partners introduce themselves, the University of Applied Sciences Emden/Leer, University of Oldenburg, Technical University of Munich (TUM) and TUM Hyperloop. All parties give a short and sweet overview of their Hyperloop research.

### STUDY OF HYPERLOOP POD EQUIPPED WITH COMPRESSOR TO OVERCOME KANTROWITZ LIMIT

#### **M.Sc. Student, Mechanical Engineering ETH**

For high speed Hyperloop systems, if the pod is too big with respect to the tube or if it travels too fast, the flow on the bypass chokes. The mathematical limit which describes when choking occurs is called the Kantrowitz limit. When overcome, the pressure accumulates at the front and the pod is forced to move the whole column of air ahead. This can significantly increase the drag and compromise the performance of the pod. An axial compressor mounted in front of the pod is proposed in the original formulation by Elon Musk with the purpose of releasing part of the pressure by allowing more throughput. In this session, the possible benefits of mounting a compressor to mitigate the effects of the Kantrowitz limit under different conditions are discussed.

### DC- AND AC-LOSS CHARACTERIZATION OF HIGH TEMPERATURE SUPERCONDUCTING (HTC) COIL

#### **MSc M.Sc. Student, Electrical Engineering ETH**

In the last few decades HTc gained some importance in industry since they offer the advantage of zero resistance at higher temperatures (77°K) than conventional superconductors. Concerning the Hyperloop project, investigation on DC- and AC-losses of such HTc are of great importance. Due to absence of gases, the heat removal by convection will drop drastically in the vacuum tube. Therefore, it is crucial to reduce the heat generation in the first place, which can be achieved by using HTc technology.

Prof. Dr. rer. nat. Walter Neu

Prof. Dr.-Ing. Thomas Schüning