

# Transport Capsules as the Fifth Mode of Transportation

## Student Club Works on Innovative Mobility with the Hyperloop

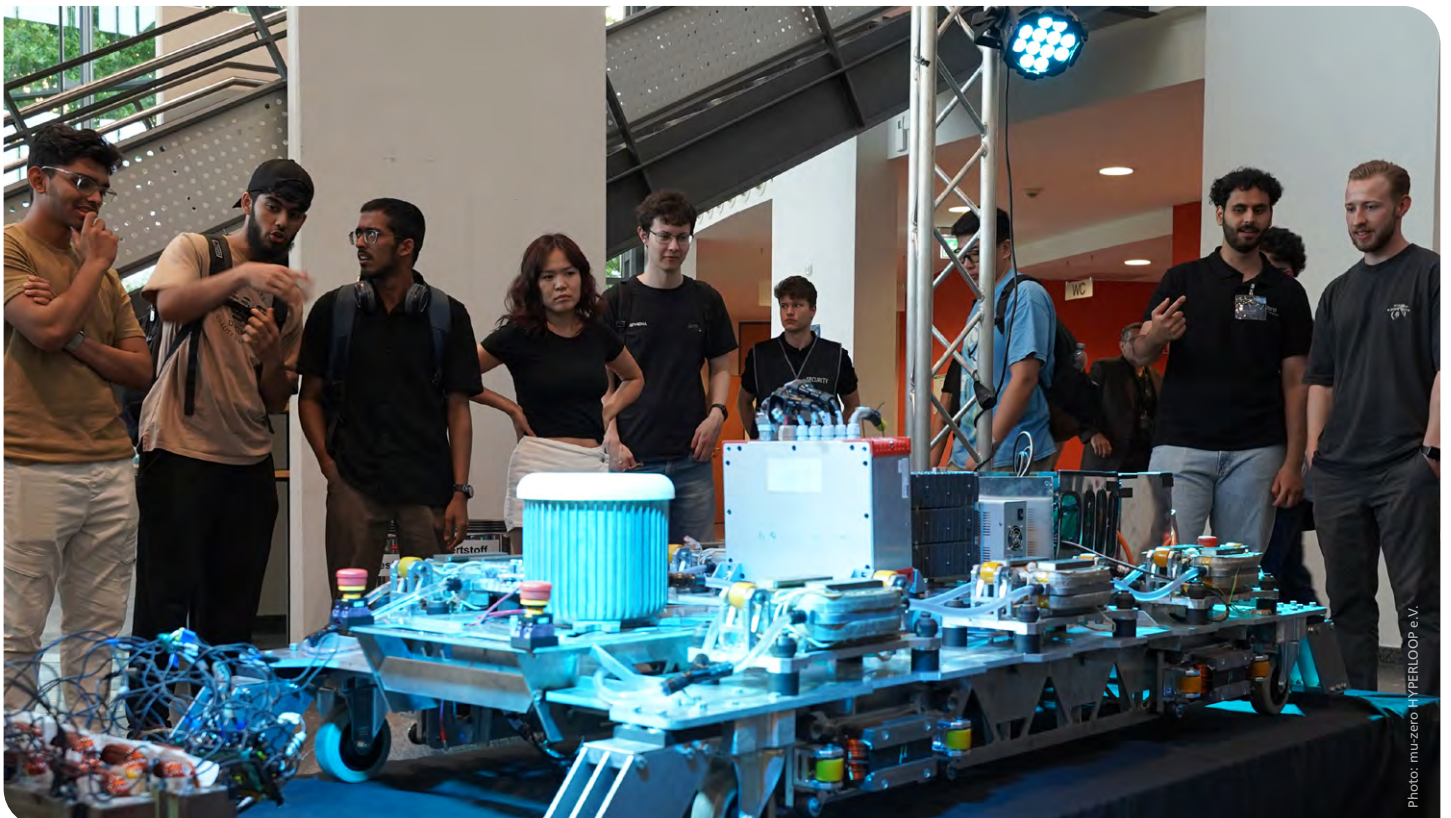
Transport capsules travel at high speed through largely evacuated tubes – this is the hyperloop concept. Hyperloop could establish itself as the fifth mode of transportation for future mobility in addition to road, rail, water, and air vehicles. Hyperloop can significantly reduce travel time, energy consumption, and land use compared to conventional modes of transportation, making it a key technology for sustainable mobility. Initiatives around the world are exploring this concept, among them is mu-zero HYPERLOOP e.V. at KIT. The club consists of around 60 students, approximately 90% of whom have an international background. They represent eleven different fields of study. The international and interdisciplinary composition reflects the club's commitment to diversity, equal opportunities, and result-oriented collaboration.

As a student initiative at KIT, mu-zero HYPERLOOP benefits from close academic exchange with institutes, laboratories, and researchers working in different engineering disciplines. This environment enables the team to combine academic research with applied engineering for participation in an international competition.

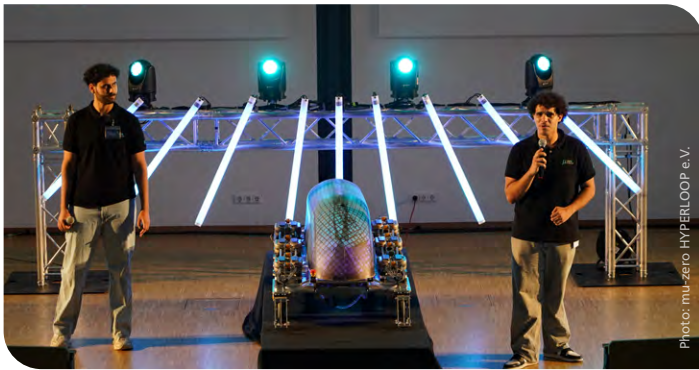
All students interested in engineering or organizing work and motivated to contribute to the team's further development are welcome by mu-zero HYPERLOOP.

### Values and Vision

mu-zero HYPERLOOP focuses on the core values of innovation, sustainability, and scalability. Innovation drives the development of solutions extending beyond existing technologies and addressing mobility challenges. Sustainability means developing systems that contribute to the society's long-term development, including e.g. low-emission and more efficient transportation concepts as well as high-speed logistics solutions to advance both the passenger and goods transportation sectors. Scalability focuses on standardized transferable system designs that can be adapted at low cost to various applications, such as urban transportation or industrial production.



Presentation of the prototype for the 2025 Hyperloop Week.



2025 Hyperlaunch at KIT's Audimax.

In addition, mu-zero HYPERLOOP offers students the opportunity to apply their theoretical knowledge in a complex interdisciplinary engineering project under real-world conditions. Members will gain practical experience in the areas of systems engineering, project management, industrial collaboration, and international teamwork.

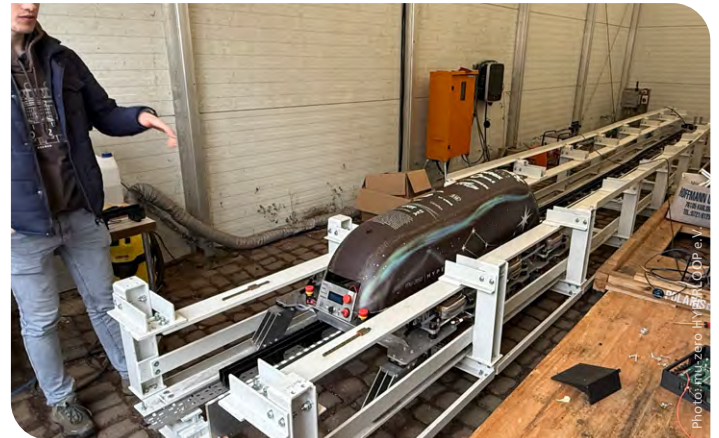
### Collaboration and Partnerships with Industry

mu-zero HYPERLOOP is a non-profit association and does not pursue commercial goals. Instead, the team focuses on close collaboration with industry partners who share its vision of fast, sustainable, and resource-efficient transportation. SEW EURODRIVE, for example, contributed a contactless energy transfer system for wireless power supply of up to 1500 W without direct electrical connections to the transport capsule (pod). Within such partnerships, industry-ready technologies are made the subject of students' research and development activities. Concepts are validated under realistic conditions. Visitors are cordially invited to inform themselves about options to collaborate with mu-zero HYPERLOOP and the latter's technical solutions at the stand of KIT.

### Successes and Awards

The mu-zero HYPERLOOP registered association was founded in 2020 and has already participated five times in the European Hyperloop Week (EHW), the world's largest hyperloop competition. In the upcoming season, the team will compete for the sixth time, remaining the only German team to participate regularly in this event. The EHW is the most important competition and research platform for the team. It brings together student teams from around the world to present and validate their hyperloop concepts under real-world test conditions.

In recent years, the team received several awards, including second place for its overall system. This award is not only about the performance of the pod and the underlying engineering work, but also about the accompanying technical and socioeconomic research. In addition, mu-zero HYPERLOOP was granted the Best Electronics System Award, the Best Guidance System Award, and the Socio-Economic and Technical Research Award. These awards confirm that the team's system- and research-oriented approach is the right one.



Workshop in Karlsruhe.

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