

## Passive thermal system for hyperloop tubes

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### Short Description

Hyperloop is the next evolution of rail-based transportation, combining the speed of aircraft and the efficiency of the railway industry. The hyperloop concept uses a partial vacuum environment to reduce air drag in addition to a contactless support and guidance system and an electrical linear drive propulsion. EuroTube believes in the usefulness of concrete tubes to build the hyperloop infrastructure and to realise the structure for the vacuum. The tubes will be spread all over the earth's surface and underground to shape a useful transport network. Doing so they will suffer from different heat sources like the sun or geothermal heat. Like every material concrete expands itself by heating up. Temperature changes will result in deformation of the tubes and thus misaligning the track which has to be minimized.

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### Possible work packages

- Literature review on thermal expansion of concrete infrastructure like bridges
- Literature review on cooling concepts for long pipelines
- Modeling and prediction of the tube deformation due to temperature changes by environmental influences
- Concepts to prevent huge temperature gradients
- Design cooling system for hyperloop tubes

### Requirements

- High motivation and interest in the topic
- Able to work independently and be creative
- Methodological and goal-oriented working behavior
- Heat source network modeling
- Knowledge in thermodynamics and heat transfer
- Knowledge about hyperloop technologies is beneficial

### Application

Please email your CV and transcript to [manuel.haeusler@eurotube.org](mailto:manuel.haeusler@eurotube.org)

