

THE HYPERLOOP: SUSTAINABLE MOBILITY

People are travelling further, faster and more frequently than ever before. At the same time, we strive to reduce energy consumption and transport emissions. That is why Tata Steel and its customers, partners and knowledge institutes are working on new, fast and energy-efficient mobility concepts. One example of this is the hyperloop: a lightning fast and sustainable means of transport for people and goods.

Background

The hyperloop is a high-speed ground transportation system for passengers and cargo, designed for both long and short distances. The system consists of sealed tubes from which most of the air has been pumped out. This creates a very low resistance, which also allows low energy consumption. The hyperloop connects mobility hubs in large urban areas, for example, Amsterdam with Berlin or Paris. In the hyperloop, train sets (or pods) can travel faster than an aeroplane: the low pressure allows people or cargo to reach their destination at speeds of up to 1,000 km/h. The infrastructure for the hyperloop is relatively easy to set up: a single hyperloop tube is approximately 3.5 metres wide and would fit perfectly next to existing train tracks, or on the central reservation of the motorway. The system uses non-contact floating and propulsion systems and low resistance.



The hyperloop would enable you to travel from Amsterdam to Paris in about 30 minutes

By using this technology, travel time can be significantly reduced compared to current modes of transport. In addition, the hyperloop would be completely climate neutral to operate if the pods are powered by renewable energy. This can be provided by solar panels on top of the tube. This is a crucial advantage over aeroplanes.

Why is this relevant?

- **25%:** Almost a quarter of all global CO₂ emissions come from transport. Even if we electrify our current transport, total emissions would increase by 60% until then.
- **250%:** According to the OECD, the Organisation for Economic Co-operation and Development, the need for transport is set to grow considerably over the next

25%
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come from transport

250%
increase in need for
transport until 2050

10 times
increase in need for
transport until 2050



The hyperloop is a very energy-efficient type of transport that, moreover, does not have any CO₂ emissions.

decades: by 250% until 2050. Because of this growth, our transport will have to be smarter and more sustainable. Steel plays an important role in this because of its sustainable properties.

- **10 times:** At any speed, the hyperloop is at least ten times more energy efficient than our current road & air transport; so also the 700 km/h of an aeroplane. The classic car does not appear in this comparison at all.

What we are doing?

Tata Steel is one of the drivers for the hyperloop in the Netherlands, and supplies steel for the tubes. To this end, Tata Steel has developed high-quality, new steel grades: thanks to this steel, the tubes remain strong and airtight. They also stay straight over long distances. In addition to the new steel grades, Tata Steel is also working on completely new tube concepts to make the overall design as light as possible. As a result, less material is needed to build the infrastructure, which offers advantages both economically and in terms of sustainability.



In addition to the tubes, the magnetic guide rails of the floating system will also be made of special electric steel. Thanks to the special

properties of this type of steel, it can be used well for electromagnetic conduction.



EUROPEAN HYPERLOOP CENTRE

In July 2022, Tata Steel delivered the first sample for the test track of the European Hyperloop Centre in Groningen. A milestone in the development of the hyperloop. The tubes will be fitted with the rails and other facilities in the Netherlands this autumn. These will then be welded together in 2023 at the European Hyperloop Centre, which is part of the Hyperloop Development Programme, to form a test track with which Hardt Hyperloop will test their hyperloop technology and hyperloop mobility concept. Tata Steel's tubes are made entirely of low-CO₂ steel, also called Zeremis Carbon Lite.



THE POWER OF STEEL

Want to know more about the role of steel in the hyperloop? Read **the article** 'Hyperloop: doorbraak in duurzame mobiliteit' with Bert van Wee, professor of Transport Policy at Delft University of Technology, and Mars Geuze, chief commercial officer at Hardt Hyperloop. Read the article at: tatasteel.nl/dekrachtvanstaal

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