

HYPERLOOP OR 'HYPED' LOOP?



India Steps Into The Future Of High Speed Travel With Hyperloop

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With IIT Madras developing the world's longest hyperloop test track, India is making a bold bet on the future of high-speed travel. A game-changer or just another futuristic dream? Let's find out.

What is a hyperloop?

A hyperloop is a futuristic transport system that uses magnetically levitated pods inside a vacuum tube that travels at extremely high speeds. Since there is no air resistance or friction, the pods can move much faster than trains, potentially reaching speeds of over 1,000 km/h. This could make travel much faster and more efficient. Simply put, the pods are suspended above the track using magnetic forces, eliminating friction between the pod and the track, while the electromagnets propel the pods forward along the track, enabling high speeds.

Where did it all start?

In 2013, Elon Musk published his white paper - 'Hyperloop Alpha' - which initiates a high-speed transit system aiming for speeds of up to 760 mph. He called it the 'fifth mode of transportation' and put it in the public domain to encourage innovation. Since then, several countries, such as the United States, the UAE, Canada and China have experimented with the hyperloop technology. Some tests have been successful, such as Virgin Hyperloop's passenger trial in 2020 at its DevLoop test site in Las Vegas, where people travelled

safely in a test pod. But many projects have struggled due to high costs, technical difficulties, and infrastructure problems. In the UAE, for instance, plans for a hyperloop between Dubai and Abu Dhabi were announced, but the project has been delayed due to cost concerns. The hyperloop corridor between Calgary and Edmonton in Canada is still in the early stages, while both China and Netherlands are struggling with full-scale commercial implementation due to funding and regulatory challenges.

Why is it futuristic?

Apart from achieving exceptionally high speeds, hyperloop has many advantages over traditional transport. It is more sustainable since it runs on renewable energy sources like solar power, reducing carbon emissions. The vacuum tube system eliminates air resistance and minimises friction, making it a quieter and smoother ride compared to trains and airplanes. Additionally, hyperloop systems need less land space than highways and railways, reducing infrastructure congestion.

How did India step in?

In 2017, the Maharashtra government signed an agreement with Virgin Hyperloop to explore a hyperloop corridor between Mumbai and Pune, reducing travel time from 3 hours to just 25 minutes. The real hyperloop revolution is being led by IIT Madras which has developed, in collaboration with the Ministry of Railways, India's first hyperloop test track, a 422-meter-long facility at its Madras campus.

Initial tests on the hyperloop track demonstrated that a distance of approximately 350 km could be covered in just 30 minutes. This could allow passengers to travel from Delhi to Jaipur - a journey of around 300 km - in less than half an hour if implemented on a larger scale. IIT Madras has already received two grants of \$1 million each, and is all set to receive a third grant of \$1 million to continue its work on the hyperloop project. A collaboration with the Research Designs and Standards Organisation (RDSO) is ensuring top-notch research and high-precision engineering. Chennai's Integral Coach Factory (ICF) is playing a pivotal role in crafting the essential electronic components, cementing India's position as a key innovator in the hyperloop domain. Collaborations with university researchers in Munich and Neoways Technologies are helping fine-tune propulsion, levitation, and infrastructure.

What makes us different?

India's approach is focused on affordability and large-scale connectivity. Unlike other countries where private companies are leading the project, India is working with government initiatives and academic institutions to find efficient solutions. India is also looking to utilise existing railway corridors to reduce land costs, whereas many Western projects require expensive new infrastructure. India envisions a comprehensive Hyperloop network spanning major cities, like Delhi, Mumbai, Jaipur and Indore, making the country a high-speed hub. It is reported that the Indian Railways



News

IIT Madras and Indian Railways launched India's first hyperloop test track

Location

IIT Madras campus, Tamil Nadu

Track length

422 meters

Technology

Electromagnetically levitated pods in vacuum tubes

Speed potential

Up to 1,200 km/h

Travel impact

Reduce intercity travel under 30 minutes

Next step

Identify a 40-50 km stretch for commercial deployment

Significance

Positions India at the forefront of futuristic transportation technology

would launch the first commercial hyperloop project once the technology is fully tested and ready for deployment.

If India succeeds, it would turn the tide in transportation, proving that research, innovation, and bold ambitions can make high-speed travel, ours to claim.

