



Hyperloop Technology

[Source: IE](#)

Recently, **hyperloop technology** was highlighted for its energy efficiency and sustainability.

- Hyperloop is a transportation concept developed by [Elon Musk](#) in 2013 that would use **pressurised tubes and capsules** to connect mobility hubs in large cities.
 - The capsules, called **Pods**, would float at high speeds using contactless levitation and **electromagnetic propulsion systems**, along with low **aerodynamic drag** (the force which is faced by the vehicle as it moves through the air).
- Hyperloop would be a green way to travel that could reduce the need for driving or flying and could also free up traditional train lines.
- Hyperloop technology faces several challenges, including the **high cost of building and maintaining the infrastructure**, the technical complexity of maintaining a vacuum in the tubes, and the safety concerns associated with operating a high-speed transportation system.



दार्शनिक
The Vision

MAGNETIC TRAIN IN VACUUM CAN MOVE AT SPEED OF SOUND

The hyperloop train in its current version was conceptualized by billionaire inventor Elon Musk, who publicized it in 2012, open-sourced it and encouraged others to take the ideas and develop them. Hyperloop One, now called Virgin Hyperloop One, which has entered into an agreement with Maharashtra, is a private company founded in 2014 with the aim of placing hyperloop trains around the world by 2021



In December 2017, Hyperloop One's pod reached a top speed of over 385 kmph on its test track in the Nevada desert, north of Las Vegas. The targeted speed is 1,223 kmph

THE POD

Hyperloop One's first-generation pod combines a carbon fiber shell around a custom-built levitating chassis

Aeroshell Made of carbon fibre panels. The material is much lighter and stronger than steel



Levitating chassis Is made of aluminium and houses the propulsion system and magnets for levitation and guidance. Its design is similar to a Formula 1 car. It is built like a shell to be lightweight but strong

Dimensions

Length |

8.7 m
(28.5 ft)

Width |

2.7 m
(8.9 ft)

Height |

2.4 m
(7.9 ft)

SCALE

Hyperloop tube



Metro tunnel



Pod | A pod or several pods will carry passengers through the tube with most of the air removed to reduce friction

Tube | A partial vacuum tube will be supported above ground and supplied with energy by solar panels

HOW SPEEDS COMPARE

Concorde* 2,180 kmph

Speed of sound

1,235 kmph

Hyperloop

1,223 kmph

Aircraft

780 kmph

Bullet train

450 kmph

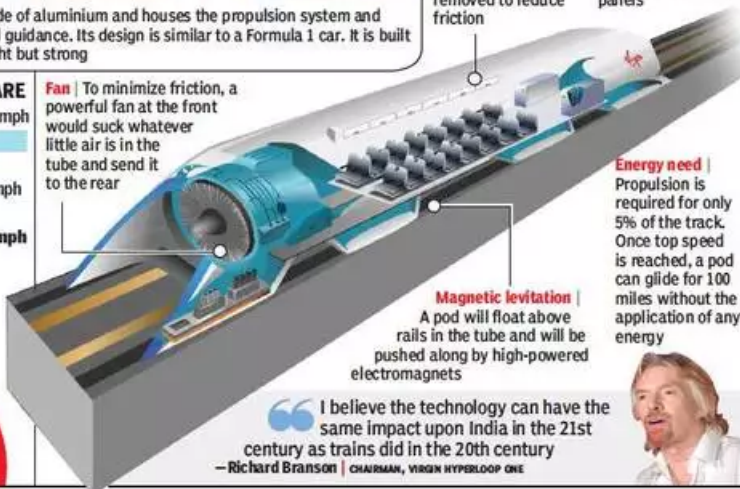
*No longer in service

JOURNEY TIME

Mumbai to Pune |

20 minutes

Fan | To minimize friction, a powerful fan at the front would suck whatever little air is in the tube and send it to the rear



Energy need | Propulsion is required for only 5% of the track. Once top speed is reached, a pod can glide for 100 miles without the application of any energy

Magnetic levitation | A pod will float above rails in the tube and will be pushed along by high-powered electromagnets

“I believe the technology can have the same impact upon India in the 21st century as trains did in the 20th century”
—Richard Branson | CHAIRMAN, VIRGIN HYPERLOOP ONE



[Read more...](#)

PDF Refernece URL: <https://www.drishtias.com/printpdf/hyperloop-technology>