

Hyperloop - How it Works?

Multi-billion dollar projects, and luxurious trains and aircrafts are the best we can think of when we talk about revolutionizing the transport system in this modern age. However, the billionaire founder of PayPal, Elon Musk has envisioned a transportation system that could actually revolutionize 'the way we think' of luxury, and technology!

Sci-Fi Movie or Reality?

A 'High-Speed Transportation System', that will make it possible to travel at almost the speed of sound in air (1,223 kilometers per hour), Hyperloop will now make the Sci-fi movie-modes of transportation, a reality!

This almost-supersonic transportation system will surpass all other means of transport. It will cut down travel time to as low as 35 minutes between Los Angeles to San Francisco, as compared to average time on an aircraft, amounting to 1 hour 19 minutes. It will be built to race like a bullet through a barrel, with thrice the speed of an aircraft; the vision of Hyperloop is a giant leap in terms of technology - almost like a revolt against human intelligence, logic and perception.

External Design and Architecture

Diving straight to the technology of something as bizarre as Hyperloop, will be quite overwhelming. Let us delve, gradually, into the idea of how this latest boom in technology is expected to work.

According to Musk's vision, Hyperloop will carry people in pods, zooming through giant steel tubes, which will be mounted on pillars. These pillars will be spaced every 100 feet and rise to a height, ranging from 20-100 feet, depending on the terrain. Needless to mention, superlative structural engineering employed in their construction will provide reinforcement against natural disasters and other hazards.

Defying Existing Technology!

The extraordinary idea of Hyperloop cannot be built on existing technology. The ambitious visionary of Hyperloop, Musk, has turned down all predictions of possible mechanisms on which it may work.

Pneumatic Tubes

The idea of using powerful fans to push the pods through the tunnels, resembling the system of pneumatic tubes, is not useful in the grand challenge of building Hyperloop. A possible explanation given by Musk himself is that columns as long as 350-miles with air moving so rapidly will create enormous friction. This will crash down the entire idea of generating the extraordinary speed, required to achieve the target of cutting down travel time.

Electromagnetic Suspension

Physicists and engineers first thought of the idea of building a vacuum inside the tunnels, using electromagnetic suspension, to achieve the targeted speed. This technology already exists in the

functioning of Maglev Trains. However, Musk has ruled out the possibility of using this technology because of thousands of pods entering and exiting the tunnel every day. Furthermore, it is doomed to failure even if a tiny crack or leaky seal develops, throughout the length of the tunnel, over time.

Do these explanations, in other words, mean that tunnels in Hyperloop, will contain freely moving air? Surprisingly, no! Another technical fault with freely-moving air inside the tunnel is that it will act like a syringe. The pods will then push the air along their flow, instead of moving past it. This will eventually result in losing the desired speed, unless a much more giant tunnel is created, which might subject the bodies of the passengers to crushing G-forces on just the slightest of bends in the journey!

Well, it was not just an exaggeration when we said; Hyperloop will surpass human intelligence or even latest technology!

It all comes down to an Air Hockey Game- Simple, yet Genius!

The actual proposition of Hyperloop involves the construction of two bi-directional tubes (one going north and another south), reducing the air pressure inside. This is based on a simple theory, the innovative design of Hyperloop, aims to produce one-sixth of the pressure of the atmosphere on Mars, thereby, significantly reducing drag on the speeding pods.

The aim of the design of Hyperloop is to make the pods, the heart of the system, and not giving much functional importance to the tunnels. The vision of construction of the pods resembles the mechanism of an air hockey game. The pods will be designed with metal skis, allowing them to ride and levitate on a cushion of air, being pumped through small holes in the skis. The top-notch speed of the pods will generate air in the tube, supported with electric compressors, constantly pumping the air back.

The initial thrust to the pod will be achieved by intelligent incorporation of magnets on the skis, coupled with electromagnetic pulse. In addition, the system will include linear induction motors. Their function will be to ensure swift and steady movement of the pods. The entire system will be supported with emergency exits, and power generated from motors of Tesla Model S electric car. Furthermore, solar panels will be built on the roof, throughout the length of the tubes. Surely, a master mind technology, innovated by a genius!

Care for a Ride?

The brilliant innovation of this transportation system comes with details on how the journey will be like for the passengers. The pods will be placed 23 miles apart, and will travel through the Hyperloop once every 30 seconds.

The entry and exit will be through the extreme ends and branches along the length of the loop. The pod will hold a maximum number of 28 people, divided into two rows, together with a luggage compartment. The larger pods will also have the facility of holding a car! The price of a one-way ticket is expected to be roughly \$20. Passengers will be required to buckle their seat belts and settle in their comfortable seats, enjoying personal entertainment displays for the entire course of the journey.

The revolutionary idea of Hyperloop is sure to become a reality because of its estimated costs being as low as \$6 billion dollars. Based on flawless and surprisingly simple technological ideas, the vision of Hyperloop is most likely to transform the 'way we think' of luxury and technology in the transportation system of the world today.

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