BE ANYWHERE
MOVE ANYTHING
CONNECT EVERYONE

ONE COMPANY
ONE VISION
ONE WORLD
4.2.1. Geometry

The geometry of the tube depends on the choice of either the passenger version of Hyperloop or the passenger plus vehicles version of Hyperloop.

In either case, if the speed of the air passing through the gaps accelerates to supersonic velocities, then shock waves form. These waves limit how much air in front of its nose and increasing drag until the air pressure builds up significantly in front of the capsule. With the increased drag and additional mass of air to push, the power requirements for the capsule increase significantly. It is therefore very important to avoid shock wave formation around the capsule by careful selection of the capsule/tube area ratio. This ensures sufficient mass air flow around and through the capsule at all operating speeds. Any air that cannot pass around the annulus between the capsule and tube is bypassed using the onboard compressor in each capsule.

Figure 13. Hyperloop Capsule in tube cutaway with attached solar arrays.

Passenger Hyperloop Tube

The inner diameter of the tube is optimized to be 7 ft 4 in. (2.22 m) which is small enough to keep material cost low while large enough to provide some 46.2 ft² (3.91 m²) giving a capsule/tube area ratio of 36% or a diameter ratio large as possible, even though the pressure in the tube is extremely low. As
POD

TRACK

FULLY ENCLOSED IN TUBE
LOW PRESSURE
NONCONTACT LEVITATION
ELECTROMAGNETIC PROPULSION
SPEED > 1000 KM/H

Hyperloop Technologies Inc. Business Confidential
SEAMLESS
DIRECT TO DESTINATION
ON-DEMAND EXPERIENCE
LV Locations
PROPULSION OPEN AIR TEST (POAT)

- Linear electric motor
- Power electronics
- Power delivery

- Power delivery
- Sub-stations
- On board batteries

- Embedded systems
- System level control

TECHNICAL SYSTEMS

- POWER
- THERMO
- HYPERPOD
- TUBE
- SUPPORT
- ROUTE
- CONTROLS
- PROPULSION
- LEVITATION

Hyperloop Technologies Inc. Business Confidential
CONTACTLESS
REGENERATIVE

Electromagnetic Propulsion Designed for 300m/s
OPEN AIR TEST - POAT

Hyperloop-One Inc.
Business Confidential
FULL SIZE
FULL SPEED
TEST TRACK - DEVELOPMENT
4TH QUARTER 2016
Hyperloop One Inc.
Business Confidential
Structural TUBE Designed for Scalability
LOW PRESSURE

HIGH SPEEDS

POD ARE O D Y N A M I CALLY
Designed for 100 Pa
LOW DRAG

Halbach Array

Electromagnetic Levitation
Designed for Efficiency
RACING towards commercialization

- **2014**: Company Founded
- **2016**: Full System Test
- **2017-2018**: Bankable Feasibility & Design of First Freight and Passenger Routes, Advanced Engineering & Safety Systems
- **2020**: 1 loop operational, 3 loops under construction
- **2021**: Moving Cargo, Moving People

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Hyperloop-One Partners
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Hyperloop One

Capital Cost (USD Billions)
including risk and overheads

- Stockholm (0km): $25.9B
- Göteborg (425km): $39.4B
- Jönköping (295km): $71.7B
- Malmö (560km)

Comparison:
- OldTech HSR: 1h 45m (Göteborg), 1h 10m (Jönköping), 2h 30m (Malmö)
- Hyperloop One: 30m (Göteborg), 18m (Jönköping), 40m (Malmö)

Notes:
1. $37.3M/Mkm - KPMG study for FE Linka, July 2016
2. Swedish Negotiation est. to 85% certainty, 2016
3. $160.1M/Mkm - UK HS2 budget, Nov. 2015