

Tube Logistics

Propelled by technological progress in driving systems as well as growing congestion in megacities, there is renewed interest in the use of existing and new tube infrastructures for cargo transportation. Innovations such as the Hyperloop could one day provide rapid cargo transit within and between cities for express shipments or even passenger traffic.



KEY DEVELOPMENTS & IMPLICATIONS

Tube logistics is a visionary trend which has received increased media attention in recent years mainly due to key announcements to build a Hyperloop network between San Francisco and Los Angeles in which passengers and freight would be transported in pods propelled at supersonic speeds. The 600-km journey could take less than 30 minutes.¹⁸ Furthermore, cities, startups, retailers, and postal providers such as Swiss Post are also exploring underground cargo alternatives due to slowing and more expensive road transport in urban areas. Logistics providers could soon utilize these breakthroughs for faster modes of inner- and intercity transportation.

Long-distance Hyperloop systems can accelerate capsules in a tube using magnetic propulsion technology to potentially reach speeds of over 1,200 km per hour. A similar technology is already being successfully used in Maglev trains. The spread of these systems could one day enable ultra-express delivery between major cities (e.g., for medical deliveries).

Underground urban freight systems consist of special, dedicated freight pipeline networks that are either newly built or integrated into modified and existing pipes. Driverless freight pods can be loaded with euro-pallets or parcels and can run autonomously in dedicated tracks (e.g., between consolidation centers located in the outer rim of cities and to inner city nodes). This enables high-volume movement of freight into highly congested areas with no impact on surface transportation systems (see Mole Solutions). Further benefits can be reaped from reductions in noise and air pollution.

Utilizing capacity on public metro systems to transport goods is already happening in megacities such as Tokyo and New York City.¹⁹ During off-peak hours, for example during the night, freight capsules or existing trains can be loaded with cargo for delivery. This is especially practical in cities where night-time street-level delivery is not permitted due to noise pollution.

KEY OPPORTUNITIES

- Express delivery between and within cities for urgent goods without relying on costly air freight options
- Underground concepts reduce the land demand for road freight lanes, parking lots, and other facilities
- Systems could operate around the clock without impacting noise levels, and also reducing accident risk
- Environmentally friendly

KEY CHALLENGES

- Tube logistics systems are still difficult and expensive to build
- Depots and storage premises would be needed wherever the tubes surface
- Tube systems require additional first- and last-mile delivery services; these create additional transportation costs



Delivering the Future – Delft Hyperloop

- Delft Hyperloop was the winner of the SpaceX Hyperloop competition – it can reach speeds of over 1,200 km/h and can carry both passengers and freight
- Aim of the Hyperloop project is to significantly reduce travel time between two locations and be more cost effective than other means of transportation
- DHL was the logistics partner and assisted Delft University to determine the potential impact of Hyperloop on the logistics industry

Source: DHL

Trend Assessment

Timeframe: > 5 years

Impact: Low

Sector Relevance:



AUTO



E&M



TECH



ENERGY



LSH



RET&CON

18. <http://www.techtimes.com/articles/99369/20151027/elon-musks-ultra-high-speed-hyperloop-bullet-train-to-begin-construction-in-november.htm>
19. <https://www.fhwa.dot.gov/publications/publicroads/94fall/p94au21.cfm>