Newsletter 2014 - 2

2014-03-03

Magnetic-train Scandinavia

News

Welcome to the only inter-Nordic newsletters about magnetic-trains.

Sweden

In early February, the government decided that the Transport Administration would conduct a quick investigation on the extension of a speed line in Sweden. The result of this investigation is now complete and it is becoming increasingly clear that the cost of high speed trains is too high.
Article in DI

Denmark

In Denmark, welcome to a new transport minister, and we hope for increased interest maglev-train issue.
Earlier in late winter has a Danish delegation visited Japan and test rode the Shinkansen and also looked at the SC-maglev.

International

In Russia, interest in magnetic-trains been growing the last few years. Among other winter characteristics investigated with great success, and magnetic-transport-system has been judged to have significantly better winter performance than traditional rail. Russia has examined the potential for low speed, high speed and also container-carrying magnetic-trains.
High-speed maglev
More from russia

General Atomics Test Track

Series – Magnetic trains around the globe

In the USA General Atomics commissioned to develop a new type of magnetic path. A type of magnetic path that can carry large loads, dense departures, good speed, cheap infrastructure and high flexibility. The result was a 120-meter long test track in San Diego.

Above: GA test track outside of San Diego, image source GA.

The track is used for prototype testing of all container-carrying vehicles. The web can lift containers on two levels with a full load and may resign as often as every 3 seconds.
In the future it is planned to utilize technology as a kind of conveyor for containers between terminals with very high traffic to replace rail services primarily in the major cities. A full path is planned in Los Angeles between the port and a container terminal inland of the town. A first stretch of 8km planned to be built, to further expanded to link together several terminals in the area. The system is almost silent and very small operating costs. Top speed is around 150km / h but less appropriate in each container transport.
The system can be configured both for a beating-transport where multiple devices can be locked in the magnetic field, or as a train-like systems where trailers can be coupled to a train.

Oslo to Copenhagen

Part 2: To Copenhagen

Serie – Skandinaviska delsträckor

Proceeds from the newsletter in January in the series on Scandinavian routes.
This is not a professional investigation, but only a few different options over how a stretch would able to walk. Calculations are made with the same program as the official investigation.
Total distance: 270-320km
Estimated cost: £ 65-80 billion
Stations: 7-10
Population Surface: 2.1-2.5 M cents.
Total population: 3.2-3.8 metro
Direct travel documents: ~760k/month
Further connecting: 1100k/month
Km cost directly: 78-97öre/km
+ Connecting Oslo: 62-70öre/km
+ Connection Stockholm: 55-65öre/km
+ connecting both: 50-55öre/km
(estimated using the same model
The model is not optimized for conditions along the route and therefore can distinguish one part against expecting real results)

See map overleaf. Departure from Gothenburg on the way south. Direct from Gothenburg, the web can be coordinated with a path to Stockholm for direct connection to Landvetter (Option Blue), or to go straight down towards Copenhagen. Depending on the destination, trains can stop at the only major stations (Landvetter-Halmstad-Helsingborg (Malmö)), or two-level departures elected may direct trains go the route Copenhagen-Gothenburg (Oslo / Stockholm) and regional trains stop in small towns (Landvetter / Kungsbacka, Varberg-Halmstad-Ängelholm-Helsingborg-Helsingor / Lund-Malmö).
Hallandsås does not preclude a magnetic path and the path may be pulled straight over the ridge without either bridge or tunnel. In Helsingborg, most likely, the last about 4km built with tunnel.
South of Helsingborg, the track can go strait to Helsingor-Copenhagen alternatively southward through the Lund-Malmö.

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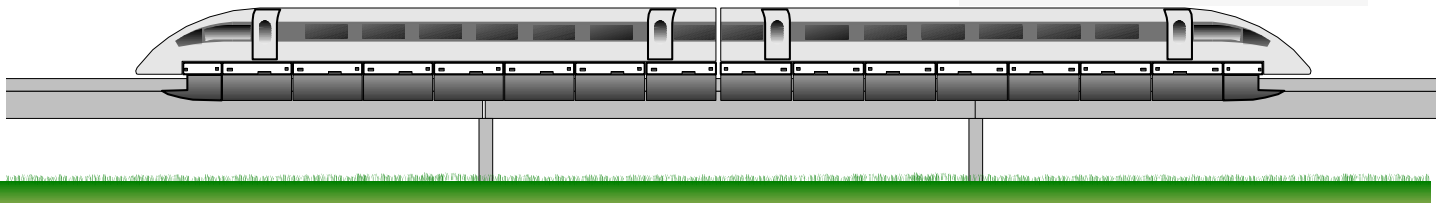

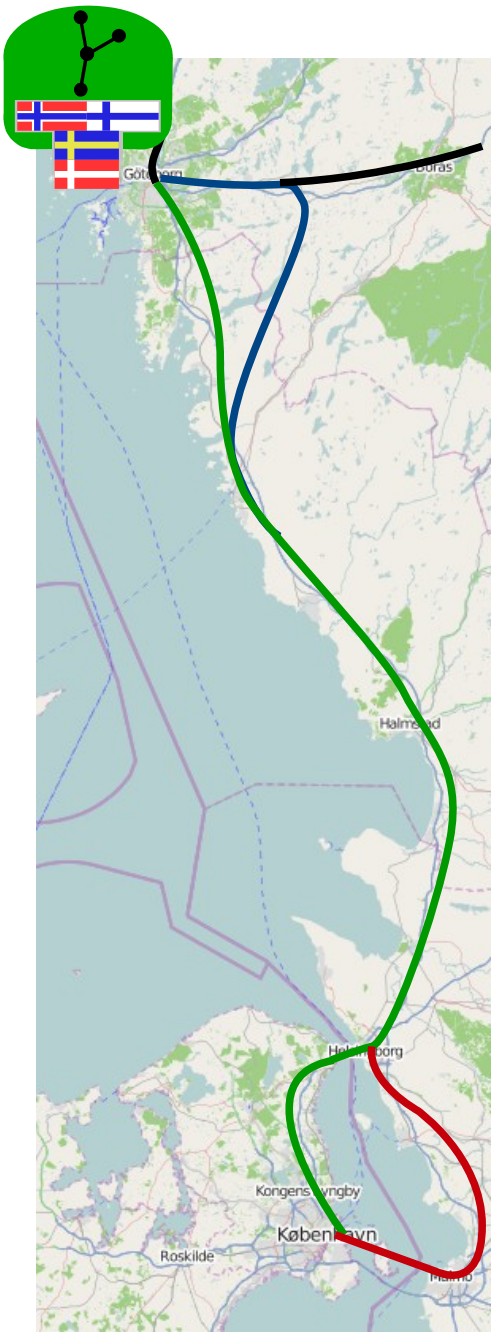

Continue from page 1. Gothenburg to Copenhagen

If we follow the path across the channel (green) so we need a good five kilometers long immersed tunnel and another 2-3 km excavation tunnel at the Danish side.
South in Denmark, the track advantageously further inland to avoid the densely populated coastline, to fold toward Copenhagen in connection with the ramp to continue in the tunnel the last kilometers to the central station.
If desired, you can track later expanded through Copenhagen on towards Copenhagen or Malmö to create a direct connection.
If we follow the red path further from Helsingborg to Lund-Malmö, so opening track from the Helsingborg in the existing track-corridor, then pulled further inland towards Lund.
In and out of Lund, the web can be built directly vertically above the existing tracks on to Malmö.
From Malmö on to Copenhagen and/or Kastrup need a new connection to be built. A magnetic-track can not use the existing connection. A direct link from Malmö to Copenhagen C or Kastrup can be constructed as an immersed tunnel which is significantly more cost effective than following the draw through the City Tunnel and the Öresund-bridge that exists today, it also gives a much shorter journey times with a platform to platform journey time of about 6 minutes.
If a route is selected that does not connect to Malmo, such a connection can be made retrospectively cost-effective
Further connection to Aarhus or Odense can be connected via cost-effective north-connection or an expensive but high preforming southern connection.

Technology Explained

How does General Atomics maglev
General Atomics uses in his system a combination of induction track and LIM motors. The permanent magnets are mounted in the carriages to thereby minimize the need for expensive magnets.
Permanent magnets are used both for lifting the carriage and to dissolve the LIM that drives the trolley forwards. In this way, the cars are fixed to the magnetic field unlike Linimo.

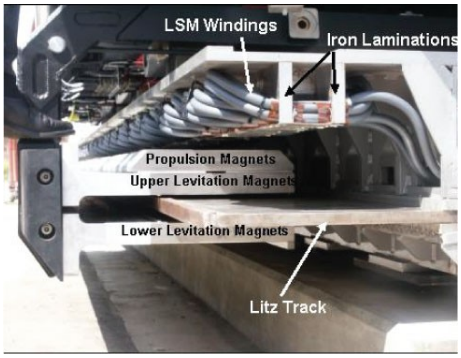

Image Source - General Atomics, the picture shows the two levels of permanent magnets that grips the track.
The permanent magnets operating an induction current in the forward path. The advantage of this method is that the energy required to lift the train is the same regardless of speed. Also the basic speed to get the cart to lift, unlike SC-maglev is enough 2-5 m/s, depending on how heavily loaded the wagon is. Before the wagon lift so it rolls on wheels, but it is also possible to use the second magnets to lift the cart before the required speed is reached.

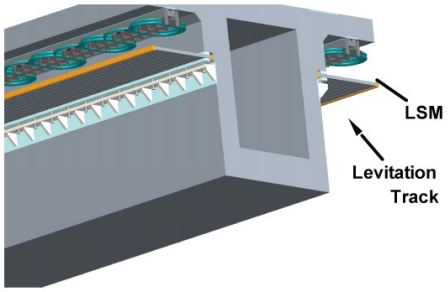

Image Source - General Atomics. The picture is of a hybrid system
Picture above, a system can be seen where the combined GA maglev with a traditional magnetic track. This enables, for example, carry heavier items such as containers, or to use an existing spår as a container "conveyor belt" during night time.
General Atomics

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