

DESIGN OF FEHMARNBELT FIXED LINK

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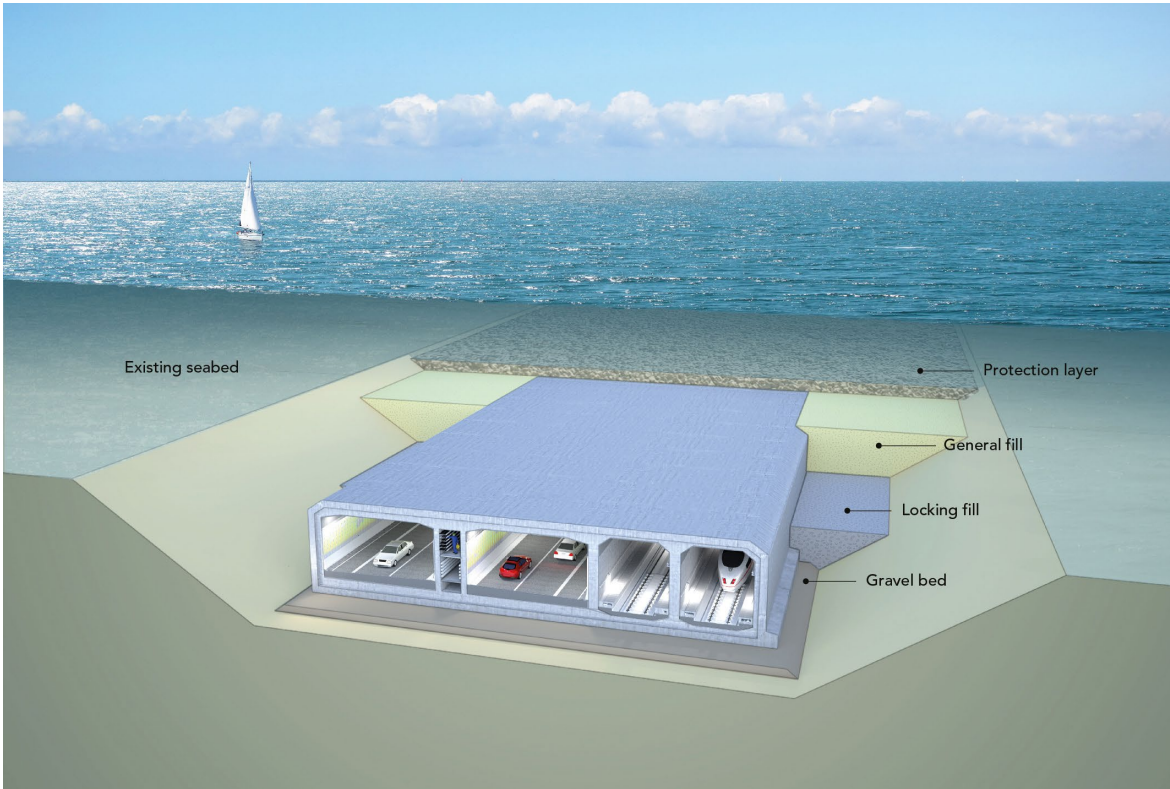
Abstract

The ongoing construction of the Fehmarnbelt Fixed Link, connecting Denmark and Germany through an 18 km long immersed tube tunnel (IMT), will be presented with emphasise on design challenges linked to various geotechnical aspects with focus on the Palaeogene Clay.

The Fehmarnbelt project plays an important role in the modernisation of the European infrastructure and will deliver an upgraded railway, which will be far more competitive both within a European and a regional perspective than today. The project eliminates one of the bottlenecks in the Scandinavian-Mediterranean Corridor that stretches between Northern Scandinavia and Malta. The Fehmarnbelt link is part of the so-called European TEN-T network whit the objective of enhancing the efficiency of the infrastructure so that the EU Single Market will function better and with less environmental impact.

Designing and constructing an 18 km long IMT crossing the Femernbelt is a huge challenge. The whole production of the tunnel elements must be extremely efficient and at the same time assuring 120 year service life with limited maintenance. The presentation will address the construction methods, the key design aspects of the IMT and how these are influenced by the geotechnical conditions.

The geotechnical conditions various across the Femernbelt. After excavation of the tunnel trench the IMT will be placed on upper and lower till, sand or Palaeogene clay. The tunnel elements and the connections must be designed to handle the long term behaviour of the ground. The evaluation of the long-term behaviour of the Palaeogene Clay will be compared to existing infrastructures also founded on similar Palaeogene Clays.



Immersed tube tunnel



Figure 1. Production Facility (PFA)