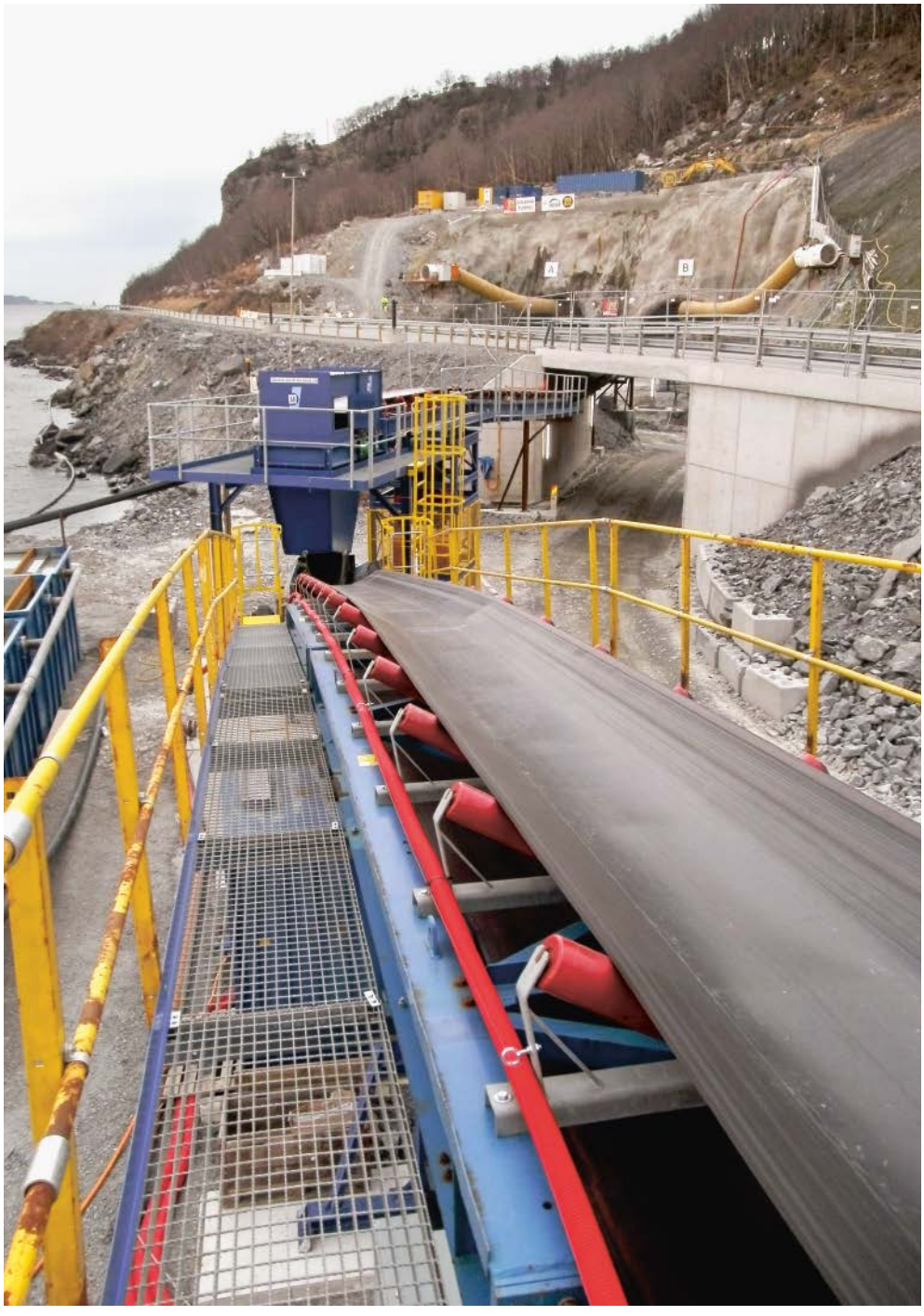
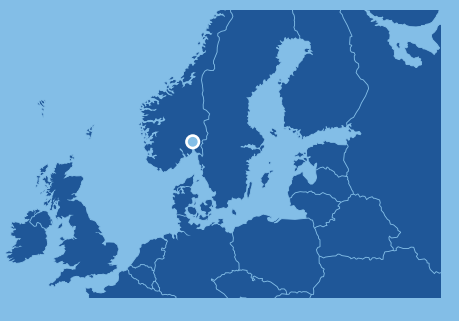
Conveyor belt system Solbakk, Norway

The first conveyor belt system in Norwegian tunneling

By mid-2014, approximately 80 kilometres of tunnel has been tendered for execution in Norway alone. Because the volume of work exceeds the capacity of the local construction companies, the Norwegian government is also welcoming the contribution of foreign companies. Marti has been active in Norway since 2011. It has been building the first batch of the world's longest underwater road tunnel in Norway since 2013: the 14 km long Solbakk tunnel. The tunnel is divided into 2 batches and Marti is responsible for the eight kilometres from Tau in the direction of Stavanger. The excavated material that is transported by conveyor belt is sunk off the portal into the sea, in order to create an artificial peninsula.



Overview
Client: ARGE Marti IAV
Solbakk DA, NO-0278 Oslo
Built: 2013



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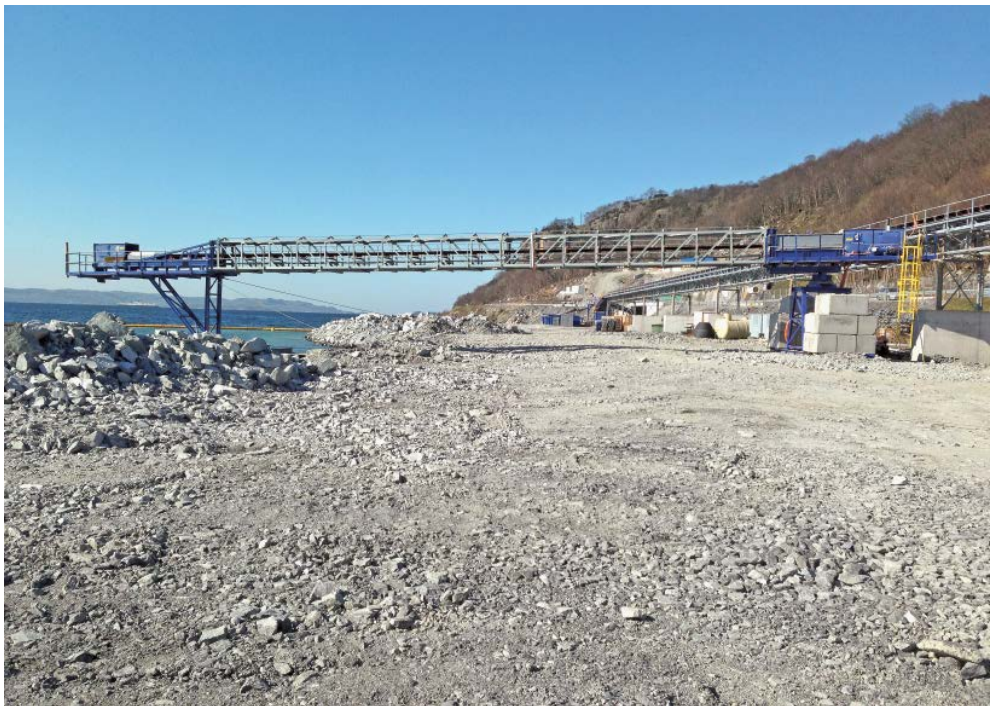

Composition of the system
- 1 Tunnel belt conveyor with an overall length of 8 000 m
- External belt conveyor incl. floating band down to the sea
- Control and electrical installation

Technical data
Total quantity to be conveyed: 2.0 million tonnes
Conveying capacity of the tunnel belt conveyor: 500 t/h
Drive power per tunnel conveyor: 1 590 kW
Belt width of the tunnel conveyor: 800 mm
Belt width of the external belt conveyor: 1 000 mm

Control and electrical system
Fully automatic control of the material flow from the crusher to the sea
Visualisation of the conveyor system
Installation of the power electronics

The Solbakk Tunnel is part of the Ryfast project in Stavanger and is part of the extensive expansion programme for the E39 coastal road. The current ferry crossing from Stavanger to Tau is to be replaced by the new, 14-kilometre-long tunnel with two separate tubes travelling in both directions. Both tubes are extended two-lane routes and are connected every 250 m by cross-cuts. ARGE Marti IAV Solbakk DA, consisting purely of Marti companies, has commissioned us to provide, install and operate a rental unit for 40 months for the mucking of the tunnel material.

From the mountain straight into the sea

The excavated material will be fed directly from the working face or via an intermediate storage into the tunnel on wheel loaders to the jaw crushers. The crusher is located at the last excavated cross-cut and is used every 250 meters. Because short distances ensure short mucking times. The section belt is hung on the side next to the air tube and will be extended from cross-cut to cross-cut. On the tunnel conveyor, the material passes over to an intermediate band to the sea shore. By means of a special loop band with a moving tripper, the material is passed along the beach onto a floating band, which sinks the material in the sea. This floating band is self-contained and resilient; it must withstand the waves, as well as winds of up to 80 km/h and the salt water.

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The continuous installation from the crusher to the sea enables the removal of approximately 350 tonnes of excavated material per hour with a minimum of personnel input and a minimum of high-maintenance devices. A conveyor belt system in tunneling is something truly new in Norway. We have channeled all of our knowledge and experience into this demanding project, so that our installation will fulfil the expected requirements without exception.

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