



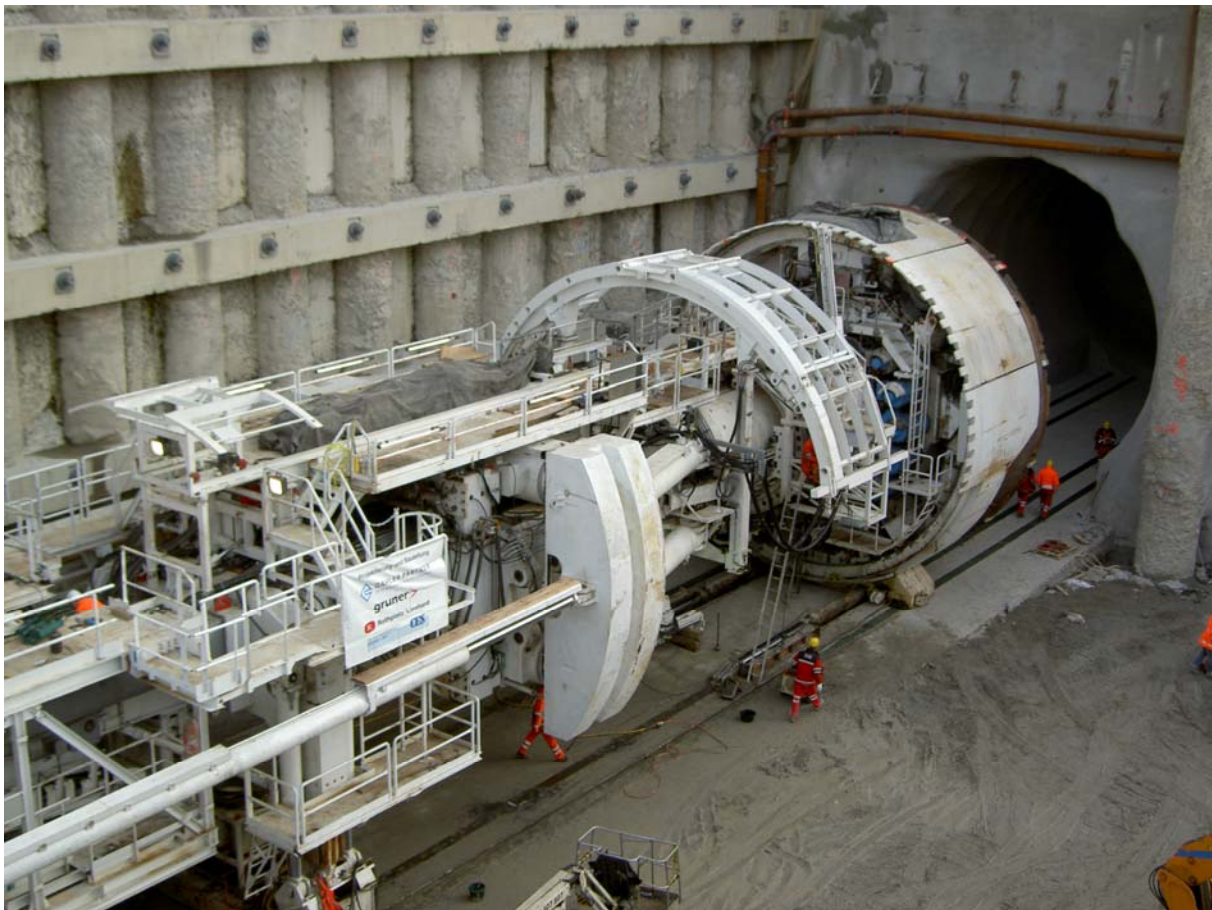
20th International Zurich Symposium on Electromagnetic Compatibility

Technical Excursion on Friday, 16 January

Buses start at 7:30 and at 11:30 in Zurich, ETH

AlpTransit Gotthard

EM considerations in the world's longest tunnel



Switzerland is committed to protecting the delicate alpine environment by promoting the increased use of railways for freight traffic, particularly by the use of fast but heavy trans-European trains. Traditional railways climb steeply along mountain passes before entering tunnels, which are as short as possible, beneath the summit. These climbs limit the weight and speed of trains and thus the line capacity. The construction of base tunnels at a lower altitude provide a flat route enabling greater loads to be carried at high speed through much longer tunnels.

One of the two new routes is through the St. Gotthard Massif involving two base tunnels under the Gotthard and the Ceneri. Our visit will be to the Amsteg adit of the Gotthard tunnel, some 90 minutes south of Zurich, where there is access to both the Erstfeld and Sedrun sections of the tunnelling. The guide will explain the entire concept and the major geological challenges to this impressive civil engineering feat as well as pointing out various EM issues in respect of in-tunnel GSM-R signalling and communications at high speed deep in rocks which emit background EM radiation.

When operational at the end of 2016, the Gotthard Base Tunnel will be 57 kms (35½ miles) long and thus the world's longest tunnel. The currently estimated total costs of AlpTransit Gotthard are CHF11,830 million (Gotthard CHF9,590 million and Ceneri CHF2,240 million) but are subject to change dependent on unforeseen geological difficulties.

*Please note that this visit will include time spent underground in construction site working conditions (appropriate informal clothing is recommended: boots, helmet and overalls will be provided on-site). The visit is unsuitable for those who suffer from claustrophobia.

