

# Swiss Section



## Technical visit to Forch railway and 2024 AGM

Report by Chris Glättli

**This report covers the Swiss Section 2024 AGM and the technical visit to Forch railway to look at its tunnel refurbishment, the complex level crossing configuration, and the mixed tram/train-operation of the railway.**

The Forch railway line opened in 1912 to bring people from Esslingen to Zürich Stadelhofen by an electrical train in 67 minutes. This opened earlier than the Gotthard Railway, which was 'only' electrified in 1924. In the 1970s a major project in the village of Zumikon provided the facility to separate the train and road traffic, together with other measures to reduce the travel time down to 35 minutes. Today six million passengers a year use the service. The so-called Frieda (the name for the train service used by local people) has two kinds of service, one being the intercity and the other regional trains, but of course this is only a very small cosmos and intercity is rather 'big thinking' for the beautiful Forch railway.

The tunnel from the 70s was showing its age and required a major refurbishment. Serious wear was detected on the ballast, sleepers, rail, catenary, and points. The tunnel had water

ingress everywhere, with water running in the cable ducts. The project rectified this problem. Unsurprisingly the tunnel construction did not meet today's structural norms, but this was overcome by the use of the latest 'glue-on rebars' to meet current Standards. The ballast was replaced with slab track using Low Vibration Track, High Attenuation (LVT-HA) sleepers to reduce vibration for the neighbours next to the railway.

The relay technology level crossings Binzstrasse and Trichtenhauserstrasse, also received an upgrade, to improve the integration with the road traffic lights to handle the increased heavy road traffic using the crossings. Barrier-booms were required to comply with the current Standards, and the lineside signalling was replaced with LED signalling. The signals were moved closer to the level crossings to enable shorter boom closing times. A special challenge for the design was the mixed railway traffic, with some trains stopping in the station before the level crossing and other trains not stopping.

The 3.3km track from Stadelhofen to Rehalp is shared with the ZVV (the organisation that regulates public transport in the canton of Zürich) tram. Rehalp is the transition location from tramway to railway. With this transition several things

Yves Marthaler explaining the situation at the intersection of Forchstreet and Binzstreet.





Hosing down the concrete dust during construction in the Forch tunnel. *Photo Peter Hefti.*

change: the voltage from 600V DC to 1200V DC; the ATP from none to Zugsicherung mit Linienleiter (ZSL-90 LZV) (which uses magnets to locate the train); and the centralised train control from cabin command (Sesam dialog) to ILTIS with train describers. For the tramway the ‘dots’ type of signal is used whereas the railway uses signalling system ‘L’ with distant and main signals. In Rehalp station, used for the Forch railway only and not for the tram, the driver can switch the voltage used by means of a button in the cab. An indicator shows that the catenary has switched to 1200V DC, and passengers can join or leave the train whilst this is happening.

The Forch railway uses the Automatic Train Protection ZSL90 provided by Siemens. Static track data is stored onboard the train, and data about point position and signal aspects are transmitted via a track conductor system. The driver enters the train’s specific data before the journey and the position is managed via odometer and magnets in the track. With all this information the onboard unit compares the actual speed to the permissible speed, and produces a warning and applies brakes when an overspeed is detected. Due to the ETCS Standard the ZSL90 system was not widely used, with only three systems installed in Switzerland and one on the KLIA Ekspres railway in Kuala Lumpur. Four IRSE Members on the visit had been part of the initial commissioning team back in the 90s and they wore their specially created opening T-shirt. The maintainer explained in their presentation that they try to keep all information on the operational system together, and they made reference to a good article published in *Signal+Draht* (1996) and the user manual (2022). The authors of these were in the audience, so a good relationship was established.

The IRSE Swiss Section AGM was opened by chair Daniel Pixley with the normal AGM business handled efficiently. The AGM had to elect a new chair and a new treasurer, and the elections resulted in Daniel Kesseli being appointed as the new treasurer and Chris Glättli the new section chair. Henrik Roslund (secretary) and Patrick Sonderegger (events co-ordinator) were confirmed in their existing roles, and Daniel Pixley, Rolf Seiffert, Beatrice Müller, Monika Schrempp, and Beat Keller were gracefully sent into a well-deserved retirement with an incredible gross total of 53 years of serving in the IRSE – many thanks for your highly appreciated service. The meeting concluded with a social dinner where past and present experiences were shared.



Daniel Pixley handing over the Swiss Section chair role to Chris Glättli at the 2024 AGM. *Photo Patrick Sonderegger.*



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