

Swiss Section

Technical visit to Dolderbahn cog railway and Rigiblick funicular



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On 14 November 2025, the IRSE Swiss Section had the opportunity to visit two special railways in Zurich. We saw both the cog railway Dolderbahn and the funicular Rigiblick in one afternoon. The railways are only 2km apart and offer great city views.

The Dolderbahn was founded 1893 and started operating in 1895 as a funicular leading up to the Restaurant Dolder. The funicular and the restaurant flourished wonderfully, which allowed the Dolderbahn to build the famous Grand Hotel Dolder.

Subsequently the hotel brought more revenue, and the funicular was neglected. The line opened again in 1973 as a 1.3km-long cog railway with new cars. In 2004 the two cars and the line underwent a large overhaul.

In 2024 the cars were repainted with red and gold paint to match the colours of the hotel. The new Stadler cars were tested for six months, but night shifts had to be mostly avoided

because of the very sensitive and influential neighbours. Indeed, the new aggregates (air conditioning) on the car roofs quickly produced complaints.

The line now provides a train every 10 minutes between the city and the mountain station for 71 passengers, 55 standing and 16 seated, in conformity with current access regulations.

Automatic Train Operation was evaluated; however, it was not selected because a station guard would be required at every stop to assist passengers with disabilities, a task that would otherwise remain with the train driver.

The line for the two trains is controlled by an electronic interlocking; it has two hydraulic swing switches for the crossing section, that bend rail and cog rack. The trains are protected against overspeed with the national train protection ZSI 127. The speed uphill is up to 25km/h and downhill dependent on the gradient, 16km/h for 0.2 to 24km/h for 0.1 gradient.



The IRSE Swiss Section participants during the visit.

Rigiblick funicular started operation in 1901. Over time, the wooden cars were replaced by metal cars and also an overhaul of the complete line took place. In total there are five stops on the 385m line which has a maximum gradient of 0.36 and has been fully automatically operated since 1978.

In 2025 the funicular received new cars painted in the iconic Zurich white and blue matching the tram and buses. The services run every six minutes, but only when passengers request the vehicle by pressing the push button. The maximum speed is 18km/h.

The new 480m-long traction cable has a diameter of 32mm and weighs just under two tonnes. It is a Performa traction cable specially developed for urban installations. This high-performance steel cable has plastic profiles between the strands, which almost completely fill the circular area and thus the cable has an almost cylindrical surface structure.

As a result, the cable runs over rollers and pulleys with low noise and virtually no vibration. This type of cable is therefore ideal for systems in populated areas like the funicular Rigiblick.

The Rigiblick funicular alignment has a slight curve including the passing loop with two tracks. Because of this curved geometry, the inner and outer track of the passing loop have different effective track lengths.

This difference in length results in unequal travel distances for the two vehicles when approaching the bottom station. In order to ensure that the downhill vehicle stops in a precisely defined position, with its buffer aligned accurately against the stations buffer stop, a cable length compensation is required.

Compensation is achieved by continuously adjusting the position of the deflection sheave axis during operation. The effective rope length is equalised and compensating for the geometrical discrepancy between the two tracks.

This means that when the curve's inner car is in the downward position, the deflection sheave axis is in its upward position, and for the curve's outer car position in the lower position.

