

Steam Train Nostalgia in the Swiss Alps Furka Cogwheel Steam Railway



The steam trains run on the Furka mountain line from June till September – crossing the Steffenbach bridge.

Switzerland is a country of many attractions and this issue of INFORM features a report about very special Swiss treat: the Furka cogwheel steam railway (DFB) in the Swiss Alps.

Retracing James Bond's Steps on a Steam Train

If you're keen on getting a first-hand impression of a magnificent landscape with ravines, glaciers and breathtaking panoramas, a ride on one of DFB's nostalgic steam trains is a must. With a blow of the whistle, the steam train begins its journey at Realp station in Urn, which is situated 1,420 meters above sea level. At a leisurely pace, the train then climbs up to one of the highlights along the 18 kilometer route: the famous bascule bridge over the fast-flowing Steffenbach stream. Due to the prevailing danger of winter avalanches, this bridge is taken down, or rather 'folded up', in October of each year. In May, during the spring snowmelt, the bridge is then 'unfolded' again. The folding mechanism of the Steffenbach bridge is probably unique in the world. (Read more about it in "How to Fold Up a

Bridge" on the following page.) The train continues its ascent through blossoming Alp meadows right up to the highest station in Furka (at 2,160 meters above sea level). The Furka Pass connects the Swiss cantons of Uri and Valais and also forms the route along which the European watershed runs between the North and the Mediterranean Seas. Coincidentally, the fantastic landscape also impressed the film industry and a number of scenes in the James Bond movie, 'Goldfinger', were shot at the Furka Pass in 1964. Today, these scenes are considered to be classics of Bond film history. Yet



back to the Furka steam train. After a brief stop, the trains steams through the 1,874-meter Furka Tunnel towards Valais. As the train makes its way down the mountain on a gradient of up to 118 ‰, passengers enjoy a clear view of an incredible spectacle of nature and technology in between the snow-covered peaks: the Rhône glacier. Some 10,000 years ago, the Rhône glacier was the longest Alpine glacier at more than 300 kilometers in length. However, this has changed dramatically in the course of time. In the last 400 years alone, the glacier has melted over a stretch of more than two and a half kilometers. However, the barren



Inauguration of Realp's new station in the summer of 2007 (1,420 meters above sea level).

landscape left in the glacier's place quickly changes its appearance and provides a new habitat for Alpine flora and fauna.

History of the Furka Steam Railway

The exhibition at the historical Hotel Belvédère near the Furka Pass shows photographs that chart the history of the Furka railway, which was founded in 1913. The construction of the bridges, viaducts and tunnels was considered to be a pioneering feat of railway technology at the time. The line was electrified in 1942 and the Swiss steam engines found a new home in Vietnam. However, a number of them were subsequently fetched back to Switzerland and are now in operation again on the Furka steam railway line. When the Furka base tunnel was finally opened, it enabled year-round operation of the line. As a result, the Furka Pass route lost importance and was finally discontinued. Thanks to the effort of numerous steam train enthusiasts, a registered society and public company dedicated to saving the Furka mountain steam railway were founded in 1983. The impassioned commitment of a large number of volunteers is continuing to ensure that white steam clouds can still be seen billowing over the tracks today. Due to the risk of avalanches, the steam railway is only open for passenger trips from the end of June to September. The Furka cogwheel steam railway company (Dampfbahn Furka-Bergstrecke AG) provides many interesting offers and further attractions for anyone who interested in going on this unforgettable steam train adventure. Detailed information can be obtained from:

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The Steffenbach bridge is "folded up" during the winter months due to the danger of avalanches.

How to Fold Up a Bridge

ROTZLER HK 075 winches used on the famous Steffenbach bridge



Bridges fascinate people all over the world. There are countless famous examples of outstanding bridge designs like the Golden Gate, Rialto, Öresund, Pont Neuf, and Bosphorus I – names that just about everyone is likely to have heard or read at some point in their lives. A further example of consummate bridge building to add to the list is the Steffenbach bridge on the Furka cogwheel steam railway line in Switzerland. INFORM found out just what makes this bridge so special.

Folding mechanism protects against avalanche damage

The Steffenbach bridge is famous worldwide because of its unique folding mechanism. This was developed to protect the bridge against

avalanche damage after the first two conventional bridge designs (1913 and 1915) actually collapsed or were damaged so badly that the track became unusable. The Swiss civil engineer Rudolf Dick therefore designed a broadly spanned steel construction without any pylons to be constructed in the streambed. The design was intended to give avalanches the smallest possible area of attack. The three-section bridge was constructed so that it could be dismantled in autumn and re-erected in spring. When the bridge is dismantled, the middle section is folded down and lowered at the edge of the ravine on large hinges attached to the end of the fixed bridge section. The upper section and the lower bridge section with the attached middle section are pulled back to firm ground. The bridge then ‘hibernates’ in this position from October until May. When the snow is cleared on the line in spring, the bridge is re-erected. Depending on the prevailing weather conditions, it takes between 12 and 15 technicians about 5 to 8 hours to complete the demanding task.

HK pulling winches precisely position the bridge sections

Two Rotzler HK 075 winches have been moving and positioning the several-tonne bridge sections since 1990. This has proved to be a considerable convenience in comparison to the former manual winches, which took 20 men and a lot of hard work to operate. The hydraulic winches each



Folded down middle section of the Steffenbach bridge.

Technical Data:	Technical Data:
Steffenbach bridge	HK 075 winch
Year of construction: 1926	Year of construction: 1990
Length: 36.24 m	Pulling force: 62 kN
Gradient: 110 ‰	Rope length: 153 m
Steel weight: 32 m.t.	Rope Ø: 16 mm

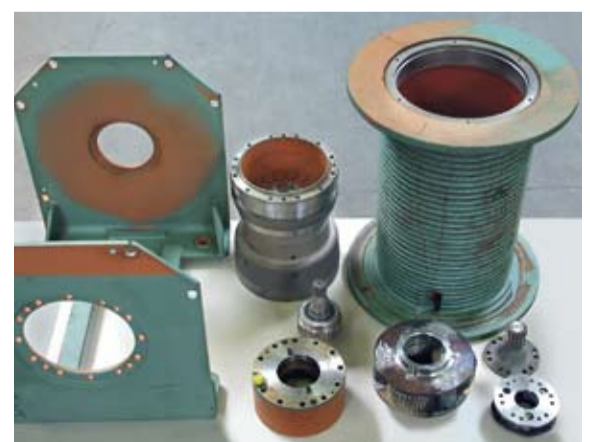
feature a 153-meter, 16-mm wire rope. The ropes are used with a pulley system to move the bridge sections. The smoothness and reliability of Rotzler winches are of key importance for the construction team – after all, the bridge sections have to be positioned very accurately. After 17 years of unflinching service, the winches were taken to the Rotzler plant in Steinen for a general overhaul this year prior to the bridge dismantling operation in October. The winches were inspected by Rotzler’s expert After Sales Service and subsequently overhauled to ensure their continued safe operation at the Steffenbach bridge.



Rotzler HK 075 winches in use for dismantling the bridge.



During dismantling and re-erection of the bridge, the HK winches are positioned on the track (left) and then pull the several-tonne bridge sections into place (right).



General overhaul of the winches at the Rotzler plant.