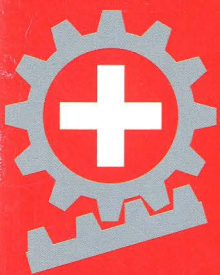
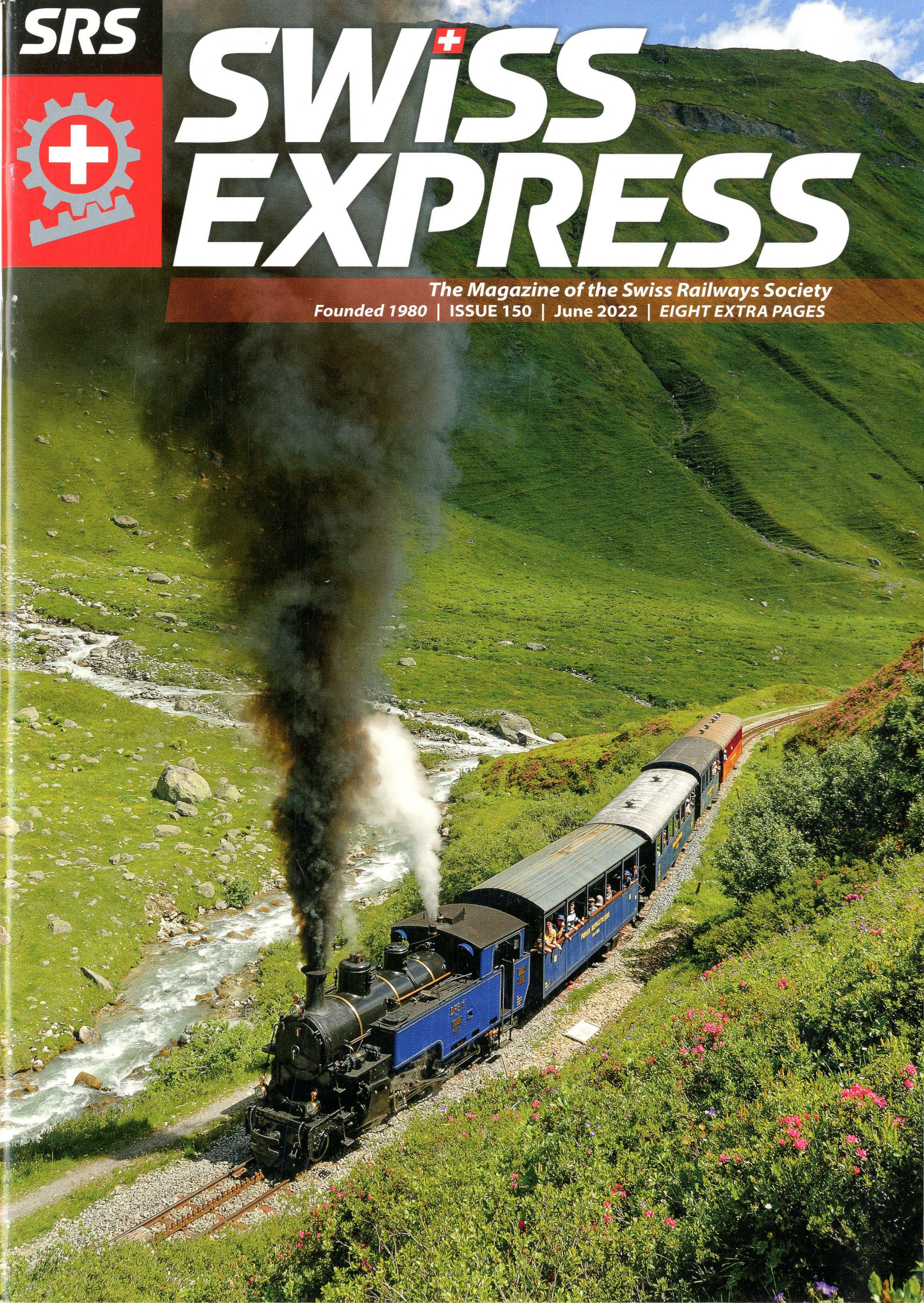


SRS



SWISS⁺ EXPRESS

The Magazine of the Swiss Railways Society
Founded 1980 | ISSUE 150 | June 2022 | EIGHT EXTRA PAGES





30th anniversary of the Dampfbahn Furka Bergstrecke (DFB)

HG 3/4 No.4 in the dramatic scenery of the Furka Reuss valley ascending from Realp on 4 August 2018. Photo: Bernhard Studer

by Brian Hitchcock

THIS YEAR, 2022, is the 30th year that the DFB, formally the Dampfbahn Furka Bergstrecke AG has been operating steam-powered trains on the metre-gauge rack railway that was once part of the Furka Oberalp Bahn (FO). Unlike most stories of a railway that start with a need to connect two places or a royal decree, the story of the DFB starts when the line was abandoned.

There have been many changes to the line over the years. Construction of the original FO line was started in 1914 from Brig on the west side of the Furka pass by the French company Brig–Furka–Disentis Bahn (BFD). Construction of the next section over the pass was interrupted in 1915 by the First World War. After the war, the BFD carried on but was bankrupt in 1923. A new railway company, the Furka Oberalp Bahn (FO) was set up by the cantons the line runs through and the adjacent railways. Swiss federal funds were available and the line was officially completed in 1925. By July 1926 trains were running all the way from Brig to Disentis.



As things used to be. A picture taken on 23 June 1979 of a Furka-Oberalp train hauled by He 4/4 No.36 between Muttbach and Gletsch with the Rhone Glacier in the background. The glacier has retreated substantially since this photo was taken. Photo: Bernhard Studer



In Brig, the FO joined the Brig Visp Zermatt Bahn (BVZ) while at Disentis it joined the Rhätische Bahn (RhB). RhB trains had been running to Disentis under catenary since 1922 and the BVZ was electrified in 1930. In the years leading up to the Second World War there were few tourists but the FO was considered to be strategic at the time. This meant federal funds were made available to convert the FO to electric traction and obtain the necessary new motive power. This was completed in 1930 which was also the year the Glacier Express was started.

The section of the original FO line between Oberwald and Realp was, as you might expect, very hard to keep open in the winter months. The amount of snow and ice easily overwhelmed any effort to keep the railway operational.

Between Furka and Tiefenbach, the FO line crossed the gorge of the Reuss river. In winter this gorge experiences avalanches on a regular basis. In the first spring that the FO was completed, an avalanche swept away the masonry bridge that had been constructed across this gorge. The logical response was to build another stronger bridge, which was wiped away in the spring of the following year. At this point, a different approach was taken and a retractable three-section bridge was designed and installed. The Steffenbach bridge is very unusual and you



Top left: HG 3/4 No.1 between Furka and Tiefenbach on 7 July 2007.

Above left: HG 3/4 No.9 arriving at Furka station on 14 July 2018.

Top right: HG 3/4 No.4 near Realp on 6 August 2018.

Middle upper right: HG 3/4 No.4 near Realp on 6 July 2008 with the Furka Reuss river in the foreground.

Middle lower right: HG 3/4 No.4 between Tiefenbach and Furka on 13 July 2013.

Right: An HG 3/4 on the Steinstafel viaduct between Tiefenbach and Furka on 15 July 2006. All photos: Bernhard Studer

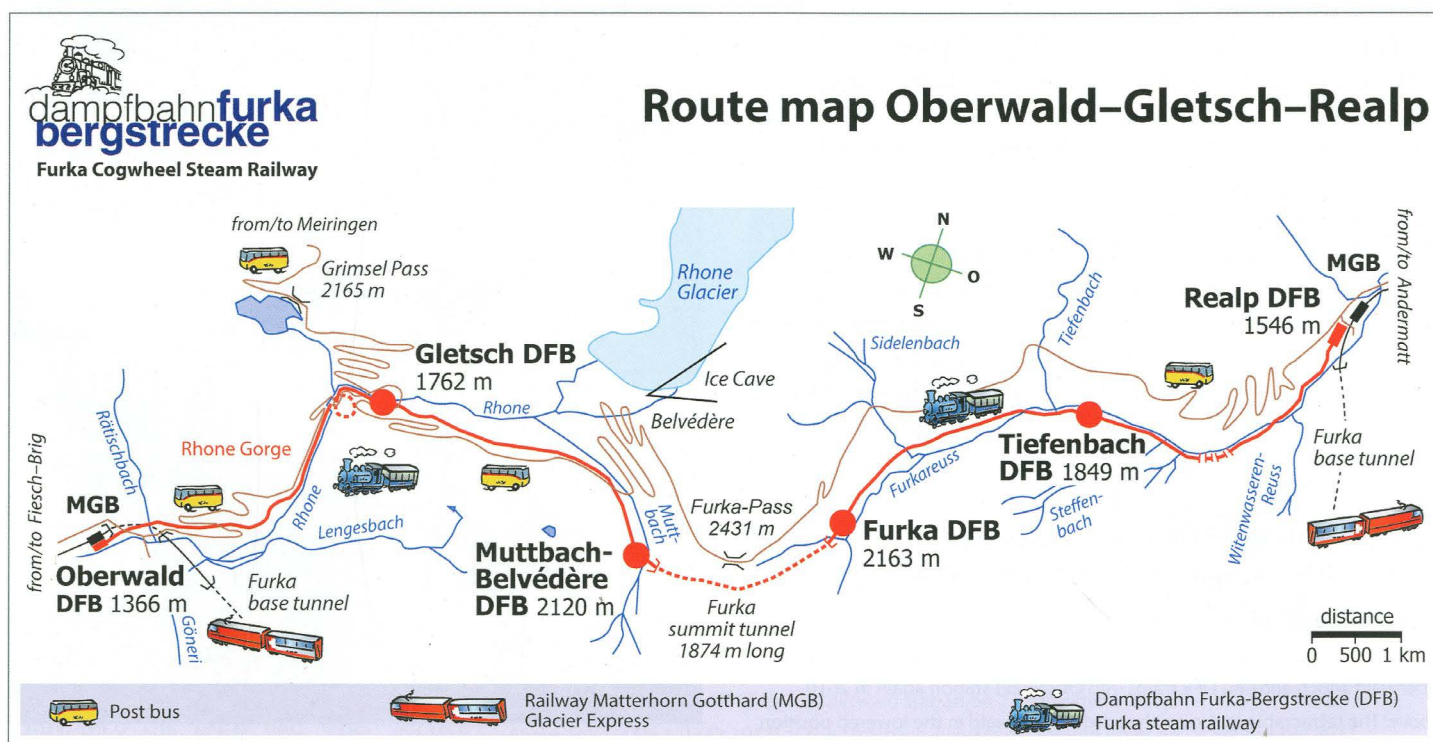


An HG 3/4 on the Steffenbach bridge between Realp and Tiefenbach on 7 July 2013. Photo: Bernhard Studer

need to watch the videos online to understand how the three sections are stored in autumn and deployed in spring. It is one of many unusual aspects of the railway through the Furka pass.

The portion from Oberwald to Realp was abandoned in 1981 and the new Furka Base Tunnel was completed in 1982. The base tunnel connects Oberwald with Realp and obviates all the seasonal weather-related problems that closed the line in winter. Using the new base tunnel, the FO began operating

year-round which supported increased traffic along the route. Completion of the original FO route gave rise to the Glacier Express which carried passengers past the Rhône Glacier as the trains crossed the Furka Pass. Once the Furka Basis Tunnel was completed, the Glacier Express took that route instead. Removal was on the cards for the abandoned line until 1985 when the DFB was formed to restore the railway and operate trains using only steam power.



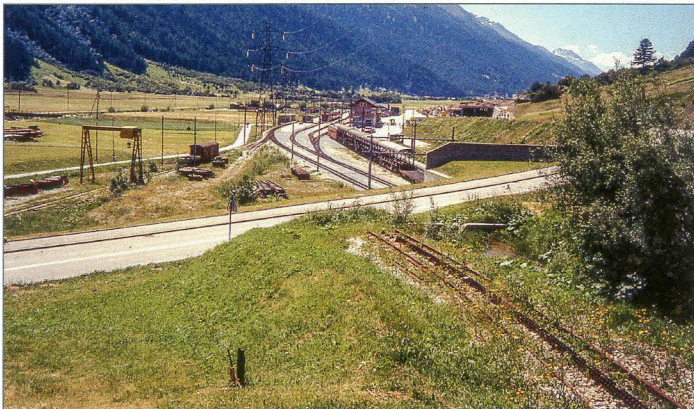
Map of the Dampfbahn Furka-Bergstrecke from Oberwald to Realp. Source: © DFB/Beat Moser

The first time passengers were able to ride was in 1992, on the section from Realp to Tiefenbach, thirty years ago. It would be eighteen years later, in 2010 that the DFB could operate along the entire line, from Oberwald to Realp. Starting at Oberwald southwest of the Furka pass and moving along the line towards Realp northeast of the pass, the line climbs from 1366 metres elevation at Oberwald, through a spiral tunnel to Gletsch at 1762 metres. From here the railway climbs to Muttbach Belvédère at 2120 metres, goes through the summit tunnel to arrive at Furka at 2163 metres (7097 feet). From here the line descends to Tiefenbach at 1849 metres and then through three tunnels to arrive at Realp at 1546 metres.

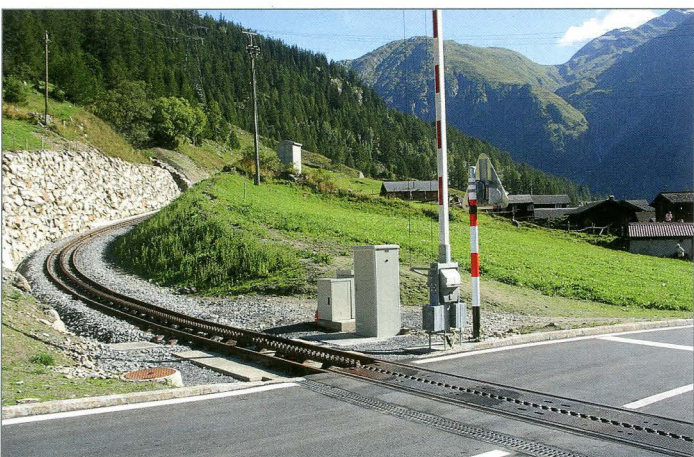
The DFB is the highest part of the original FO and at 18 km long is the longest operational non-electrified railway

in Switzerland. The restored railway crossing the Furka Pass is also the second highest in Europe superseded only by the Bernina Pass at 2253 metres (7392 feet), on the Bernina Railway which is part of the Rhaetian Railway (RhB).

If restoring a steam powered rack railway in the Alps wasn't going to be difficult enough, there were additional challenges to be overcome. A new road was built at Oberwald crossing the original line leading to Gletsch. This section of the original line was rack, so how to restore a rack railway that crosses a road? Not to worry, you simply construct a retractable rack section where the restored line crosses the carriageway. The mechanism that raises and lowers the rack section is activated by radio from the locomotive. As with the Steffenbach bridge, you need to see the videos on YouTube to really appreciate how this section of the restored line works.



Abandoned rack line above Oberwald before restoration of the line, viewed from the northeast (left) and southwest (right).
Photos: Gerd Kroh/© VFB Verein Furka Bergstrecke Section Rhein-Main e.V



Top: Final touches are made to the retractable rack section over the road at Oberwald which allowed DFB trains into Oberwald station again in 2010.

Above: The retractable rack over the road at Oberwald in the lowered position enabling road traffic to cross. Both photos: Hans Kabbe/
© VFB Verein Furka Bergstrecke Section Rhein-Main e.V



The disused track between Gletsch and Muttbach on 27 July 1996.
Photo: Bernhard Studer

In addition, a portion of the restored line passes through a forest that is now part of a nature reserve. As the line was restored, the nature reserve required that a sprinkler system be installed to protect the forest from the sparks and cinders that are problematic when steam locomotives pass by. This sprinkler system turns on as the train approaches and off after the train has passed. As with the retractable rack section, the sprinkler section is activated by radio from the locomotives.

The steam locomotives

The DFB currently has seven steam locos. This becomes eight if you include the steam powered rotary snow plough R.12 that was returned to service in 2020 after eighteen years of restoration (see *Swiss Express* 145). The steam locos are spread across three different types. There are a pair of HG 2/3s, Nos.6 and 7; a trio of HG 3/4s, Nos.1, 4 and 9; and a pair of HG 4/4s, Nos.704 and 708. All of these locomotives were built by the Swiss Locomotive and Machine Works (SLM). As with the entire FO and DFB story, the locomotives rostered on the DFB have a complicated back story. When the DFB was organized, the operating concept was that all passenger trains would be hauled using steam engines only. This required that a fleet of steam powered cog wheel equipped locomotives be procured.

Starting with the HG 2/3s, eight of these were built from 1890 to 1908 for the then Visp–Zermatt-Bahn (VZ) which today is part of the Matterhorn Gotthard Bahn (MGB). As they were built, they were numbered 1 to 8 and each was given the name of a local mountain. For the DFB, HG 2/3 No. 6 is *Weisshorn*, built in 1902 and HG 2/3 No.7 is *Breithorn*, built in 1906. When these locos were originally in service, there were no turntables on the VZ. The locos were always operated facing Zermatt. Number 6 was retired in 1941, its cog mechanism removed and it became a shunter for a local chemical company until 1965 when it was put on display at a school in Chur. It was then donated by the school to the DFB in 1989. It was then taken to SLM where it was overhauled and the cog drive was recreated from the original drawings in the SLM archives. No.6 was also the only loco the DFB had when service started in 1992. No.7, loaned to DFB



Top: HG 3/4 No.1 at Realp depot on 15 July 2007. Photo: Bernhard Studer

Middle: HG 3/4 No.4 (built 1913) in Oberwald station on 23 September 2011.

Above: HG 3/4 No.1 (built 1913) at the Muttbach-Belvédère crossing point on 24 September 2011.

Both photos: Beat Moser/© Dampfbahn Furka-Bergstrecke



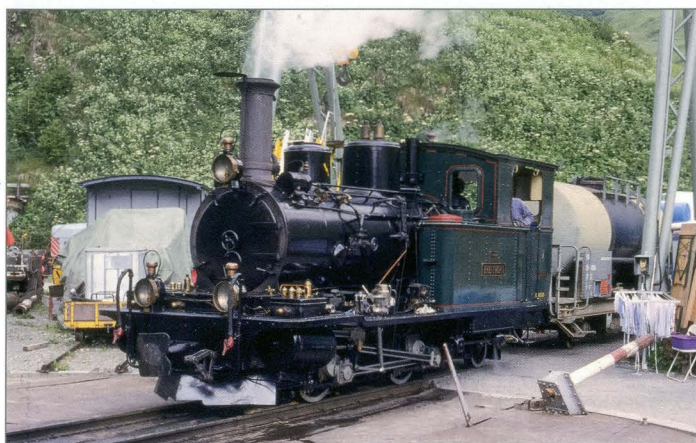
HG 2/3 No.6 Weisshorn (built 1902) heading uphill below Gletsch on 22 July 2011. Photo: Beat Moser/© Dampfbahn Furka-Bergstrecke

from MGB in 2010, became part of DFB in 2018. It was rarely used because it had been converted to use light oil in 2001 and plans are to overhaul this loco after the scheduled rebuild of HG 3/4 No.1.

Turning to the HG 3/4s, ten of them, numbered 1 to 10, were delivered to the BFD, the forerunner of the FO, over the two years 1913 and 1914. When the FO line was electrified, the HG 3/4s were no longer needed. After the Second World War, in 1947, locos 1, 2, 8 and 9 were sold to the French colonial administration where they were used on the Tháp Chàm-Dà Lạt railway in French Indochina, *ie*, Vietnam until 1975. These locos sat abandoned in the Vietnamese highlands for a decade when a Swiss geologist came across them. There has to be a story there! The "Back to Switzerland" campaign was organized to get these four locos back to the DFB. Of the four locos repatriated to the DFB, Nos.1 and 9 (*Furkahorn* and *Gletschhorn*) were restored and are operational. Nos.2 and 8 were used for spare parts. Among all the DFB locos and their attendant stories, HG 3/4 No.4 is truly unique among them

as it is the only one that has never left home. After the FO electrified, this loco provided traction that was not dependent on catenary. It was overhauled and used on trips from 1990 to 1997 when the DFB took it over on loan from the FO. Volunteers put in 18,000 hours to overhaul it again and it was operational in 2006. In 2010 it was purchased from FO by MGB which gave it to DFB as a gift!

This leaves two more steam locomotives, the HG 4/4s 704 and 708. Their story is similar to that of the HG 3/4s. These locos were part of a group of nine, numbered 701 through 709, built from 1924 to 1930 specifically for the Compagnie Générale de Colonies Paris for the same rack railway in Vietnam. Both World War II and the Vietnam war took a toll, only three of these locos remained. Of these three, 704 and 708 were returned to DFB in 1990 as part of the "Back to Switzerland" project. Unlike the HG 3/4s that went from FO to Vietnam and back to DFB, these locos went to Vietnam and then back to DFB. After their return to Switzerland, inspection of the locos revealed the extensive damage that years in the



HG 2/3 No.7 Breithorn (built 1906) outside Realp depot on 8 July 2002. Photo: Beat Moser/© Dampfbahn Furka-Bergstrecke



HG 3/4 No.9 (built 1914) near Furka station on 22 August 2015. Photo: Uri Jossi/© Dampfbahn Furka-Bergstrecke



HG 3/4 No.704 (built 1923) heading uphill below Muttbach-Belvédère on 9 August 2020. Photo: Beat Moser/© Dampfbahn Furka-Bergstrecke

jungle had caused. The impact of this was that both locos needed completely new frames. Recreating the frames required many resources from outside the DFB. 704 has been restored and is in service on the DFB. 708 is currently undergoing refurbishment. Both of these locos were designed and built for the railway in Vietnam, not for the DFB. It turns out the DFB has tighter curves and some differences in the track. This required some changes be made to the HG 4/4 locos as well as the track on the DFB. In addition, there are YouTube videos of the 704 being rebuilt. I watched three videos showing the construction of a new firebox, the re-assembly of the entire loco and the fully restored engine operating out on the line, and as you'd expect, there are many more videos for the 704.

For all of these locomotives, the combination of steel wheel on steel rail adhesion as well as rack adhesion all in a single

steam locomotive result in a fascinating and very complicated piece of kit. The drawings of these locos are worth a look and you can find them online.

As well as the steam locos, the DFB also has eight diesels ranging from small tractors to a HGM 4/4. They are used for snow clearing duties, powering construction trains and the annual building and dismantling of the Steffenbach bridge. Some passenger services are diesel-hauled.

The 30th anniversary of the DFB is an excellent time to reflect on how much has changed in the last three decades. We have the ICE 4 as well as beautifully restored steam powered cog locomotives. These locos, combined with the all-around absurdity of trying to build and maintain a railway in such a harsh environment provides a welcome distraction from the events in the all-too-real world. 



Parade of all six DFB steam locos outside the Realp depot on 28 June 2018.

From left to right, HG 2/3 Nos.6 and 7, HG 3/4 Nos.9, 1 and 4 and HG 4/4 No.704. Photo: Jürg Bolliger/© Dampfbahn Furka-Bergstrecke