

# Steep incline

One of the most powerful narrow-gauge cogwheel locos can now also operate in its Swiss homeland and climb the Furka Mountain Line – a feast for all the senses.



HG 4/4 class steam locos being returned in the hope that one day they could also be operated on the Furka Mountain Line. Nine of these locos were shipped to France between 1923 and 1930 by SLM Winterthur and Maschinenfabrik Esslingen and were destined to be used in the former colony of French-Indochina, now Vietnam. These four-axle locos are some of the most powerful narrow-gauge cogwheel locos in Europe, if not worldwide – after all, each loco boast a power output of 800 hp. Weighing 46 tons and measuring nearly 29.5 ft (9 m) in length, the steam loco is an impressive sight, which might be due not least to the visible valve gear – also for the cogwheel

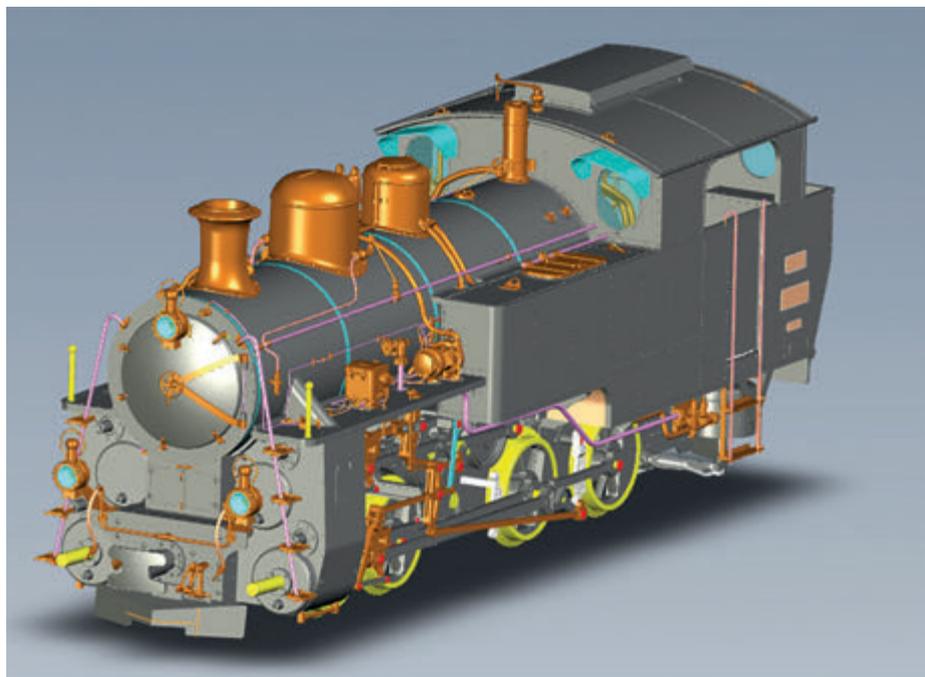
## *Very powerful Furka steam railroad with cogwheel drive*

drive. This valve gear is the very heart of the loco, designed according to the 'Winterthur System'. This means that the loco is equipped with four cylinders; two high-pressure cylinders for adhesion mode and two low-pressure cylinders, which are additionally in operation on the rack rails. In adhesion mode, the loco only runs with the two lower cylinders as a normal two-cylinder loco. When entering a rack section, the partially flashed

steam in these cylinders is directed to the upper low-pressure cylinders, where it is further flashed. And now it gets interesting: Since both pairs of cylinders have the same displaced volume, but the partially flashed steam occupies a larger space than the high-pressure steam flowing into the adhesion cylinders, the cogwheel drive gear unit rotates twice as fast as the adhesion drive, and – since the drive to the driving cogwheels is effected by a corresponding cogwheel gear train – also in the opposite direction to the driving wheels. It is a feast for the eyes to experience this machine running. The drive principle also results in a further curiosity: When in adhesion mode, the ►

**HIGHLIGHTS****Cogwheel steam loco HG 4/4,  
Era VI, Item 26270**

- 1 Finely detailed model with heavy metal construction.
- 2 Fully functional cogwheel drive gear unit with a powerful DC motor.
- 3 mfx/DCC digital decoder with many sound and light functions, such as running sounds and station announcements as well as headlight, firebox and engineer's cab lighting.
- 4 Smoke unit with steam exhaust synchronized with the wheels, cylinder steam and steam exhaust at the whistle and from the brake system.
- 5 Many separately applied details.



**LGB model in preparation:** Construction of the HG 4/4 has been finished and the wonderful model can already be ordered. Matching cars will follow.

loco – like any normal two-cylinder loco – has four exhaust beats per wheel revolution, in cogwheel mode there are eight, which sounds a bit strange. Although it is obviously somewhat larger, the valve gear still operates with the precision of a Swiss watch.

After refurbishing the smaller locos of the HG 3/4 class, it took the Furka Mountain Line Steam Railroad (DFB) until the summer of 2018 before the first HG 4/4 – with the number 704 – was ready to be put back into operation. The loco in a shiny green/black finish is a real gem, rounded off by the fine red decorative lining and the fitted loco plates.

Since the locos had never before been operated in Switzerland – except during possible trial runs – full approval had to be sought from the experts at the Swiss Federal Office of Transport, a process that involved corresponding trials and test runs. The loco also passed the tests on the rack sections featuring an 11% incline and descent with flying colors, and operating approval was issued in October 2018. As a result, this loco can now be used not only on the Furka Mountain Line, but also on the entire network of the Matterhorn-Gotthard Railway and on the main network of the Rhaetian Railway. The sister loco with the number 708 is

still undergoing refurbishment, but one day you will surely be able to experience both locos in operation together.

**The HG 4/4 model**

Cogwheel locos have a long history at LGB – be it the HG 3/4 of the Brünig Railroad or the small electric loco of the Schöllenen Railroad, on many layouts you can find a rack and pinion section featuring these locos. So it comes as little surprise that LGB already began working on a model of the refurbished HG 4/4 of the DFB in the summer of 2018. It soon became clear that this loco, with its highly interesting valve gear,



**Export model returns:** The HG 4/4 was operated in today's Vietnam. Initial approval was only granted in Switzerland after many hours of rebuilding work.



**A feast for the eyes and maintenance friendly:** Visible valve gear with a Winterthur cogwheel, drive in which two cylinders drive the adhesion axes and another two cylinders are additionally in operation when running on rack rails.

would become a model with an awesome metal finish, similar to the rotary snowplow of the Rhaetian Railway that appeared last year. Driven by a powerful DC motor, this model is able to negotiate inclines just like its prototype due to the cogwheel drive. The cogwheel drive gear unit has been authentically reproduced: On the one hand – just like on the prototype – it is only in operation on rack rails, and, on the other hand, it obviously rotates in the opposite direction to the driving wheels, but at twice the speed.

The built-in mfx/DCC decoder ensures many functions: Everything is available from the running sounds – which also

work in analog mode – and the digitally switchable smoke unit with steam exhaust synchronized with the wheels to cylinder steam, steam exhaust at the whistle and steam exhaust from the brake system. Needless to say, the lighting, featuring the Swiss light changeover (a white light burns at the back right), has also been faithfully reproduced, just like the lighting in the engineer's cab and a flickering light in the firebox. Various station announcements and railroad sounds round off the array of functions.

This special model can already be ordered (Item 26270) and will be delivered shortly after the International Toy Fair in 2020. So

by next summer, the wonderful model of the HG 4/4 will already be racing around garden layouts – both uphill and downhill – of course together with the matching cars, which are also in preparation.

### Further version

A small series of the cogwheel steam loco HG 4/4 is planned with the road number 701 in a black finish, as delivered in 1923 by SLM. This model is now available and can be ordered (Item 26271).

**Exclusive first loco:** Back in 1923, SLM (Schweizerische Lokomotiv- und Maschinenfabrik in Winterthur) delivered the first HG 4/4, featuring the road number 701. A small series of this model is now available in a black finish.

