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# Zweisimmen Gauge Changer Successfully Tested

Der Beobachter reports on a major step forward in the Goldenpass Express project

The gauge changer at Zweisimmen is a crucial component in the project being developed by the MOB and the BLS to run through carriages from Montreux to Interlaken Ost. The original intention to lay a third rail over the BLS portion of the line was abandoned on grounds of cost in 2008, when the MOB presented their alternative concept of a gauge-changing bogie. Such bogies are not new. One thinks of the Talgo concept in Spain but there the difference in gauge is only some 230mm (1435mm to 1668mm), whereas the difference between metre gauge and standard gauge is greater and a totally new design has been developed. As well as changing the gauge the system also changes the floor height of carriages to match platform heights which vary by 180mm.

The first prototype of the new bogie was developed by the MOB in 2008 and production examples from Alstom were extensively tested on the Zweisimmen installation last March. A total of 550 passages over the equipment were completed without a single failure. In addition the bogie has been tested for a total of 850km on metre gauge tracks. On 1st May the entire process was publicly demonstrated for the first time.

The joint project between the two companies is budgeted to cost CHF 76m, divided between the two companies, with support from the Federation and Cantons Vaud, Bern and Freiburg. Through trains between Montreux and Interlaken Ost are scheduled to start in December 2020.

## How it works

The patent for the new bogie was filed on 18th February 2008. It has individual wheels, which are each mounted on one side in a triangular half-frame. These are each affixed to a stub shaft and connected to each other via a crossbeam. This crossbeam is raised during the gauge changing process and vertical lugs then engage channels between the tracks to shift the half frame and thus the wheels to the requisite gauge. In addition rams raise the height of the carriage body to cater for the varying platform heights of the two gauges. It is not an easy process to describe in print. There is a Youtube video at <https://youtu.be/jJLRo4ao33k> which is recommended for a "worm's-eye" view of the process.

## Rolling stock

The original intention was to run seven variable gauge carriages between two of the new Stadler-built (A)Be 4/4 power cars of the 9000 series. However, for reasons explained in the next section, the rolling stock plan has now been substantially

altered. A total of nineteen new carriages have been ordered from Stadler as follows:

Type	Quantity
First class driving trailer variable gauge (Ast)	4
First class variable gauge (As).	4
Second class variable gauge (Bs)	4
Second class driving trailer variable gauge (Bst)	4
Interface carriage standard gauge only (Bs)	3

In addition four existing MOB carriages will be rebuilt to provide low-floor accommodation for persons of reduced mobility. These will be integrated into the *Goldenpass Express* fleet.

The train composition will now be: Ast – As – Bs (rebuild) – Bs – Bst. Four such trains can therefore be formed. Three will be needed for the standard service and one will be held in reserve. Traction on the MOB route will be one of the three remaining 1995-built SLM/ABB Ge 4/4 of series 8000. (The original series of 8001-4 has been reduced by one with the sale of 8003 to the RhB – see *Swiss News*.)

## Potential difficulties

Whilst the MOB are happy with progress, the carriages and bogies are yet to receive approval from the Bundesamt für Verkehr (BAV).

Furthermore, the intended reduction in train length to just five passenger carriages produces its problems. The prototype bogie developed by the MOB in 2008 weighed 2.7 tonnes. The actual bogie built by Alstom weighs 3.9 tonnes. The additional weight per carriage is significant and is the main reason for the limited train formation. The 9000 series railcars would have been incapable of providing sufficient brake power on the steep descent to Montreux (maximum 73‰). The new trains will contain not just first and second classes but also a premium class section as well as catering facilities. The passenger space lost by using a locomotive rather than a power-car as motive power will reduce capacity further. Given that the new service will be a major attraction to tour groups as a rival to the *Glacier Express*, one could well expect that turn-up-and-go accommodation will be somewhat limited.

## Acknowledgment

The author relied heavily on an article in *Schweizer Eisenbahn-Revue* 12/2018 for details of the proposed rolling stock. 