

# Swiss Section



## IRSE Swiss Section event and AGM held at Zweisimmen

Report by Patrick Sonderegger

On 18 June 2021, BLS (Bern–Lötschberg–Simplon railways) invited the IRSE Swiss Section to take an in-depth look at the so called “Umspuranlage” solution, i.e., the system that changes the gauge of the wheels and connects the correct electrical supply to the locomotives. The BLS also offered to demonstrate their innovation of LED signals which are installed on the line between Spiez and Zweisimmen.

Planning of an AGM and technical meeting is always an issue. Usually, the Swiss AGM is held at the beginning of March. In 2020, we were able to hold it physically, just before the lockdown in Switzerland. For 2021, we were thinking to hold it in May or June because, due

to the pandemic, it was not possible to meet physically in March. We decided for June. Luckily, the Swiss government lifted some restrictions by the end of May, so that we could hold our AGM as planned.

Nearly forty persons travelled to Zweisimmen in the valley of the river Simmen. BLS transports people with its trains either from Bern, the capital of Switzerland, or from Interlaken, a lovely town between two lakes, to Zweisimmen. Zweisimmen is also a lovely tourist town, where the railways of BLS end. But the end of something, is often the beginning of something else. In Zweisimmen, the narrow-gauge railway of MOB (Montreux Oberland Bernois) starts. Through interesting scenery with views of different snowy mountains in

the Swiss alps, the trip from Zweisimmen ends in Montreux, a city by Lake Geneva.

The train service between Montreux and Interlaken started in the year 1905. Today, this line is still in operation, but in Zweisimmen people need to change train because trains with narrow gauge cannot continue on normal gauge and vice versa. In order to offer a more comfortable journey to the tourists, BLS and MOB are providing a solution so that it will be possible to change the capability of the coach to run on narrow gauge or normal gauge. While the solution is technically installed, it is still in the final testing phase and the documents for the homologation have been submitted to the FOT (Federal Office of Transport). Introduction into commercial service is planned for the end of 2022.

Map of Switzerland showing the rail connection between Montreux and Interlaken.





Roger and Roland explaining the digital signal system.  
 Photo Peter Hefti.

Roland Stäuble and Roger Aebi, both from Thales, explained the new techniques of LED signals and the digital signal system already successfully in service on this line for several years. A signal normally consists of three lamps, i.e., a red, an orange and a green LED. The installation is very easy. Although the better reliability of the LED compared to signals with filament lamps was expected and could be confirmed, there was a strong customer requirement that it should be possible to change a broken LED with just one person in order to reduce overall costs.

The lifetime of an LED is calculated to be over 65 years, and experience suggests even 80 years maybe possible. The lifetime of a (red) lamp, which is normally 'always on', is said to be a year. The advantage of a lamp with a second filament is, that when one filament is out of service, the lamp can still continue in service with the second filament. So, the maintainer has some time to change the lamp before the second filament is broken and no immediate action is necessary to repair it. According to the presenter's experience, it is – if all costs, including the labour for the repair actions, are considered – less expensive to use the LED solution, even if every 20 years all LEDs are replaced as a preventive action.

The presenters also showed a LED matrix indicator, which is a unit with a matrix display capable of displaying speeds and symbols as part of signal aspects. The LED matrix indicator is used together with LED signals to communicate the permitted speed or a special situation to the driver.

Anne Lehnert from BLS presented the "Umspuranlage". She showed the principles of the construction and how the distance of the wheels can be changed automatically when the coaches are pushed or pulled over the system to change the wheel width.



The LED signal and LED route indicator.  
 Photo Daniel Pixley.





Changing the wheel width in Zweisimmen.  
*Photo Daniel Pixley.*





Daniel Wyssen explaining the principles of the power supply system.  
Photo Peter Hefti.

While a train with a BLS locomotive is arriving from Spiez, i.e. from the normal gauge, an MOB locomotive will be waiting on a separate track to push the coaches at the requested time. The BLS locomotive will pull the coaches in front of the system to change the wheel width. Once the coaches are at the correct place, the BLS locomotive will be moved to a track where it will no longer be able to influence the process.

In addition to different gauges, the power system for the locomotive is also different in the regions of BLS and MOB. For this reason, the power supply for the BLS locomotive, which can only drive with 15kV AC (16 2/3 Hz), is separated from the track where the MOB locomotive has to push the coaches.

Before routes for the waiting MOB locomotive towards the coaches can be set and signalled, the power supply on the tracks where the width of the wheels are changed, must also be set to 900 V DC. The change of the power supply to "MOB voltage" is shown on a special signal. The driver has to confirm the voltage is set to the expected value. Now the route can be signalled and the MOB locomotive can move towards

the coaches and push them over the gauge changing system. The train is now ready to continue its journey towards Montreux with the passengers not required to leave the coaches.

Daniel Wyssen from BLS presented the mechanisms and principles of the power supply system. The change of the power supply for the locomotives is synchronised with the actions performed in the interlocking which are normally performed automatically. Several checks ensure that the proper electric supply is applied to the appropriate locomotive. There is also a check if the locomotive's pantograph is in the correct (down) position before the feed is changed from BLS voltage to MOB voltage or vice versa. The information from the power supply system is also transferred to the interlocking. The interlocking needs some information for route setting checks and transmits relevant information to the control system on which the operator – located in Spiez – can influence, but normally only following the process to change the wheel width and the power feed to the locomotive.

When a train needs to drive in the other direction, i.e., arriving from Montreux and heading for Spiez, the same process and checks are applied in the opposite way.

In the afternoon and after the interesting presentations, the IRSE members and guests moved to the restaurant "Brasserie zur Simme" in Zweisimmen for a reception. After the last person had arrived in the restaurant, heavy rain started. Luckily everybody was in and the planning seemed to be good. The AGM chaired by Daniel Pixley, who was confirmed as president, then took place. For the 10th anniversary of the IRSE Swiss Section, a local present was also given to the attendees. Finally, the IRSE members and guests could enjoy a good dinner with local specialities. It was a pleasure to talk about today's and other experiences after not having seen each other for more than a year. The last train to leave Zweisimmen was scheduled for 9pm. So, while some people had to leave on time due to the long journey back home, we still had the opportunity to talk and enjoy the journey into the late evening.