Swiss Section

Technical visit to the historical interlocking at Kerzers

Report by Chris Glättli

Our previous technical visits were to the Bommersteintunnel, where civil works was the focus, and to the Traffic Management System (TMS) in Olten with algorithms and SBBs vision for the TMS future, but this technical visit was about historical signalling from 1901. This meant cranking handles on the command signal box and pulling levers to set points in the dependent signal box. We also visited the SBB's frequency converter next to the railway station Kerzers.

The frequency converter produces 16.7Hz, 15kV, 2x35MW for the traction power in the overhead line. The big machines in Kerzers have 300 tonne rotating mass, which is powered by a 50Hz motor, fed from the grid. The input power is produced by SBB themselves in hydroelectric power plants elsewhere in Switzerland and sent over third party power grid lines to the frequency converter. At the age of nearly 50 this robust rotary machine should be replaced with power electronics, but that solution will have to prove its resilience first. During short periods where the input falls outside specification the rotary machine's inertia maintains power, the power electronics may not be so forgiving.

The station of Kerzers is a historical marvel and a railway technical rarity. The milestones of the Swiss railway development can be seen in the museum's mechanical interlocking. The railroad age in Kerzers began in 1876 with the opening of the "Chemin de Fer Jura-Simplon" line Lyss-Palézieux (today SBB) and opening of the "Ligne direct" Bern-Neuchâtel (BN) in 1901 (today BLS). A railroad junction was created in Kerzers which is a unique rail crossing in Switzerland. Nowhere else do two main line lines cross at an angle of 30 degrees with 16 trains per day handled by the interlocking. To control the rail traffic, the Bruchsal company has built a mechanical command signal box as well as a dependent signal box (type G). The command signal box was controlling the dependent signal box by cranking handles for routes wire-coupled to the dependent signal box.

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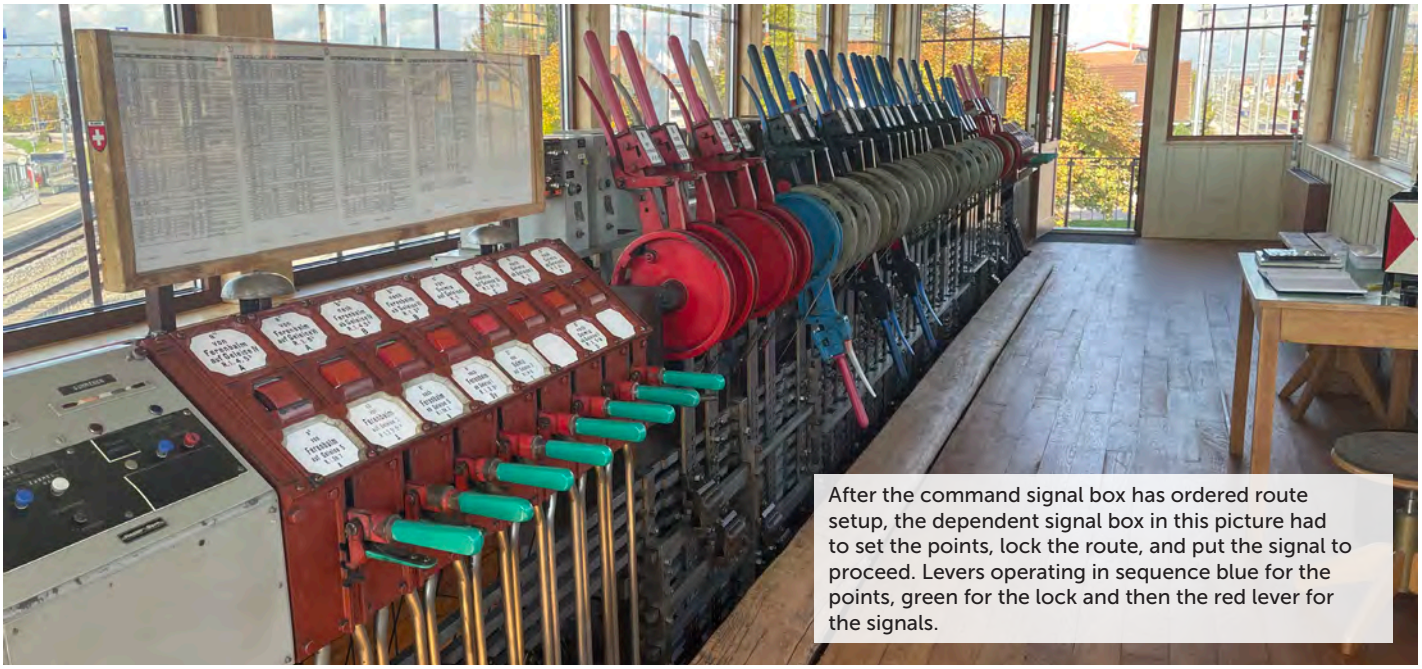
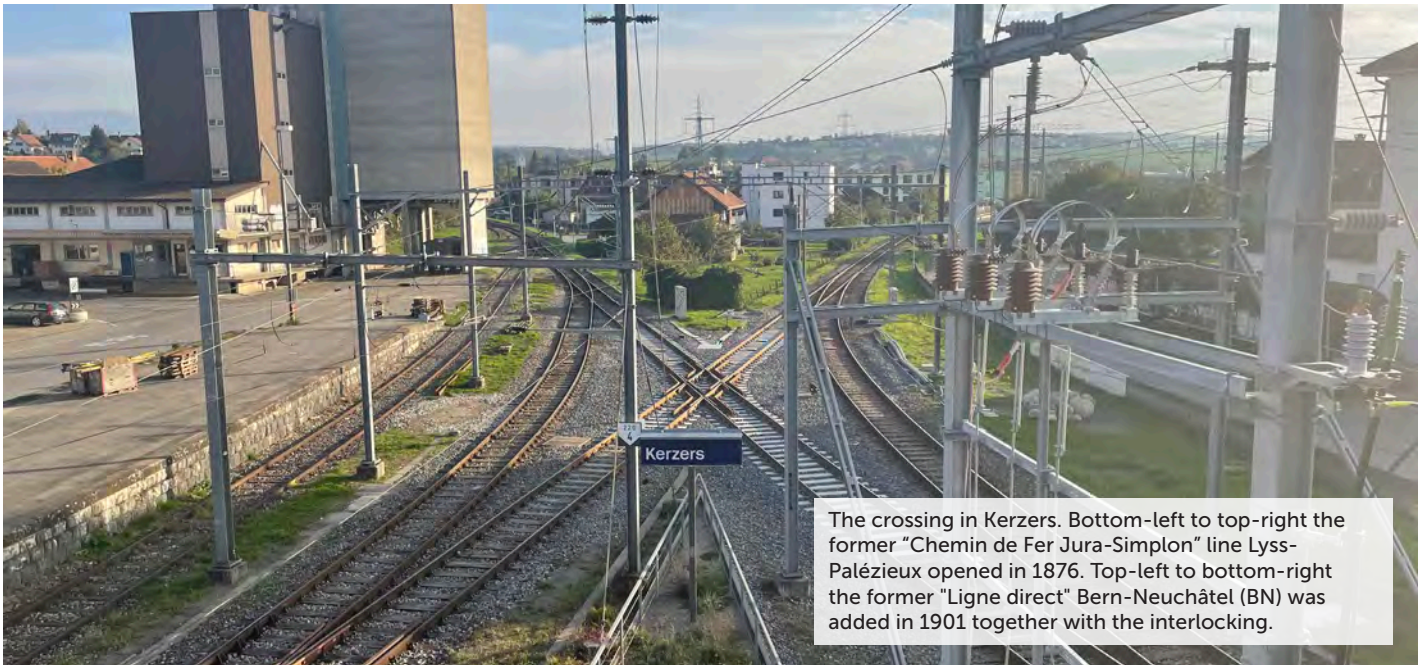
Kerzers Signal Box Tower from 1901 holding the dependent interlocking. On the left side an SBB train on BLS track, on the right, SBB track with the green BLS trains. In front of the tower the shunting semaphore and the point W20, which can be operated from the tower. Track 1 on the right side also houses the command signal box.

Beat Winterberger and "his" command signal box with the crank handles. He started operating Kerzers for SBB in 1996 and today he is president of the Kerzers signal box association. Beat gave an excellent technical tour with vivid memories of daily operation.



After the command signal box has ordered route setup, the dependent signal box in this picture had to set the points, lock the route, and put the signal to proceed. Levers operating in sequence blue for the points, green for the lock and then the red lever for the signals.



The crossing in Kerzers. Bottom-left to top-right the former "Chemin de Fer Jura-Simplon" line Lyss-Palézieux opened in 1876. Top-left to bottom-right the former "Ligne direct" Bern-Neuchâtel (BN) was added in 1901 together with the interlocking.

In splitting up control into two sites, the staffing was doubled, but the two sites helped to ensure a 'safe four eyes' operation. This remained in operation until October 2004 and during that time an incredible 236 trains per day were controlled for the National Exhibition Expo.02. The freight train service for the sugar beet harvest season also peaked around this time.

Afterwards the interlocking was redundant, but thanks to Beat Winterberger it was preserved and he ensured the interlocking was not dismantled. Relations with the Office for Historical Preservation were quickly built and the Office put its protecting hand over the interlocking preventing the demolition. The Kerzers signal box association was quickly founded, so the installation could be bought from SBB.

The iconic interlocking tower with the view over all of the four station tracks from the panoramic windows housed the dependent signal box which operated all the points, routes, shunting signals and signals. Until the year 2000 there was no underground passageway, so all the passengers changing trains had to walk over the tracks. The good view from the tower also enabled some signals to be maintained 'on' to enable the rescue of fallen luggage laying on the tracks.

Another feature of the tower is the four bells on the eastern front telling the signalmen where from the next approaching train would come from using four different chimes, one per direction. The bells had to be wound up twice a day.

A relay room was added at a later stage. The relays were operated by the mechanical interlocking, controlling the electrical point machines and the booms for level crossings, so that the operators did not have to operate the signalling manually.

The newest addition to keep the interlocking operational is to read the axle counters from the new electronic interlocking ELEKTRA2. This enables real traffic to be 'controlled' in museum sessions. The operator can set routes and see them clear. This is thanks to the diagnostic terminal Webride and the so called eBlock which interfaces the old signal box to the electronics of the new interlocking. The feature of operating the signalling from lever to electronics is regarded as one of a kind and only available in the museum at Kerzers.

After the technical visit, featuring over several locations on the station, the participants built up a good appetite for the famous Cordon-Bleu in Kerzers. During the dinner the opportunity was taken to catch up with further technical discussions.

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