Swiss Section

Technical Visit to the new interlocking at Geneva Report by Chris Glättli



In September 2024, the Section had the opportunity to visit Swiss Federal Railways (SBB) in Geneva. The team provided an insightful introduction to the Léman 2030 railway programme, followed by a tour of the station where we saw the new interlocking system, which controls nearly 900 field elements. We were also joined by IRSE 2024-2025 president Jane Power, making it a memorable event for the Swiss Section.

Geneva history

The Swiss station was originally constructed in 1858 by the French company PLM (Paris-Lyon-Méditerranée). Following a fire in 1909, the station building was rebuilt by the SBB, though its layout still allowed entry from the French side, reflecting its international connections. Over time, it has become the third-largest railway station in Switzerland, serving 171,000 people daily. Remarkably, only half of these are actual passengers, the rest are pedestrians and people shopping. Located along the Lausanne-Geneva axis, known as the Léman region, the station handles 70,000 commuters who rely on it daily without alternative options in the event of a disruption. SBB has committed to annual investments of CHF400m (£349m, €415m, \$453m) through to 2030 to maintain and upgrade the station, including the renewal of 74km of track.

As a key transportation hub, the station offers Swiss InterCity and InterRegio services, as well as international EuroCity and TGV connections across Europe. Local transit options, including tram, trolleybus, and bus services, further enhance accessibility. It also houses the largest maintenance facility in western Switzerland, complete with extensive sidings and a continuous cleaning system to ensure smooth operations.

From vision to programme

Léman 2030 began as a visionary plan to enhance connectivity between Lausanne and Geneva, including Geneva's airport, for over 100,000 daily travellers. The goal is to double available seating and provide a train service every 15 minutes. Achieving this will require significant upgrades to infrastructure and station facilities, enhancing comfort, safety, and new amenities around the railway station.

To remove the bottlenecks, particularly at Geneva's station, the programme includes the construction of a new underground station. Scheduled for completion in 2038, Léman 2030 encompasses over 16 major projects, all designed to be carried out in a densely populated area without interrupting ongoing rail services. Among these projects are the renewal of Geneva's interlocking system and the construction of a new underground station.

The new underground station requires the construction of two tunnels: a 1.2km tunnel extending toward Lausanne and a 3.2km tunnel toward the airport, featuring a total of seven emergency exits. A middle platform will serve two outer tracks on the lower level, while a new mezzanine will connect the ground-level station to the underground area, facilitating passenger flow throughout the station and up









to the main square. The total walking surface will be tripled. The new tracks will accommodate InterCity and TGV services, enhancing both national and international connections.

New interlocking

To enable the construction of the new station the relay interlocking will be replaced with an electronic interlocking to better adapt to the construction phases. It will be the biggest interlocking in Switzerland, with close to 900 field elements. These are 75 optical signals, 113 balises of the French (KVB) and Swiss (ETCS) system, 226 dwarf signals, 22 electromagnets, 195 points, 36 motors to switch the power in the overhead catenary from French (25kV) to the Swiss 15kV system, and 406 axle counters. The Simis W requires a few developments. This includes the switching of the overhead supply and the ability to drive the KVB balises from the signalling system.

The construction of the new interlocking started in 2020 and included building a new interlockings building, and excavating cable tunnels with a micro tunnel boring machine. Cable pulling



took nearly a year. The interlocking was powered up in January 2024, when the correspondence testing started. A four-day track possession is planned for the switch to the new interlocking, involving over 400 people working in multiple shifts. During this time, rail traffic will pause for twenty hours, after which operations will gradually resume in a controlled, step-by-step manner. The interlocking will then be in operation and incorporate the modifications to integrate the new underground station.

We were honoured to have IRSE president Jane Power joining the technical visit, which truly highlighted Switzerland's rich multilingual landscape. With presentations by SBB in both French and German, and simultaneous translations into English, there was even a delightful moment where English itself was translated into English for clarity!