Vinschgaubahn electrification takes concrete shape

Flirt EMU ETR 170 102 owned by Südtiroler Transportstrukturen AG (STA, South Tyrol transport company) was on show at the rolling stock exhibition in the Trenord depot Milano Fiorenza in late May 2016 on the occasion of the 11th World Congress on Railway Research. This EMU, made up of six cars with the TSI numbers 94 83 4 170 107 – 112 I-SAD, has been converted from a two- into a three-system unit suitable for 3 kV DC, 15 kV AC / 16.7 Hz and 25 kV AC / 50 Hz, with the three train control systems SCMT for RFI, PZB for ÖBB and ETCS L2 for STA in the Vinschgau / Val Venosta as of 2019. The intention is to acquire all required certifications by November 2016. The necessary certification runs will be carried out on the Romanian test ring at Făurei where Stadler had already tested the Flirt units for Serbia.

STA currently has a fleet of 13 Flirt EMUs (description see RU 5-6/2010, p. 95). The additional seven Flirts ordered by Trenitalia in April 2015 are being factory-equipped for 25 kV; their delivery, probably with the designations ETR 170 211 – 217, is due to start in November 2016. Of the total 18 Flirts available, the five units owned by STA (ETR 170 102 and ETR 170 101, 104, 105 and 107) will then be adapted. According to STA, twelve three-system trains are thus due to be available for the operational changeover in late 2019.

Trenitalia will probably also have its three trains ETR 170 103, 106 and 108 converted. However, this is still uncertain in the case of the two units ETR 170 109 and 110 which belong to Trentino Trasporti, in other words to the province of Trento/Trient. A Stadler poster at the Milan exhibition put the future number of three-system units at 20. The Flirt EMUs numbered 170 001 – 008 delivered back in 2008 will definitely not be upgraded since they have a type certification that differs from that of trains 170 101 – 110.

The eleven GTW 2/6 articulated DMUs ATR 100 001 – 006 and 008 – 012 of the Vinschgau line are to be sold as of late 2019. The intermediate power car and one end car of ATR 100 007, which was involved in a serious accident on 12 April 2010, are still used as spare-part donors.

Initial work is in progress on the electrification of the Vinschger- or Vinschgaubahn, which was decided in December 2014 (see RU 3-4/2015). New outside-track platforms and platform underpasses are under construction at Marling, Laas and Spondinig. Installing the foundations for the catenary masts is expected to begin in 2018. Over the next three years the Meran/Merano – Mals/Malles line will be totally closed each summer and a replacement bus service provided. In both Marling and Töll tunnels it will first be necessary to create the necessary clearance for electrification with a rigid overhead conductor rail by lowering the track level and installing a slab track. Track route corrections are being carried out between Schlanders and Laas which will enable the speed to be increased from 70 to 100 km/h. In order to stabilise the half-hourly timetable the stop at Staben proper will be abandoned and boarding/alighting moved from there to the nearby passing point Schnalstal. At many stations the platform length, designed only for trains made up of two GTW 2/6s, will have to be extended to 125 metres.

It is interesting to note that the 25-kV catenary system is being designed for a current collector pan width of 1950 mm, which is standard for 15 kV electrification in Austria and Germany. This approach is TSI-compliant and already usual in many countries, especially in eastern Europe. It also saves the need for an additional pantograph on the Flirt and in particular allows longer spacing between masts. However, the EMUs for 25 kV already in service in Italy with their non-TSI-compliant pan width of 1450 mm will not be able to operate in the Vinschgau.

The future power feeding of the STA Vinschgau line has different circuitry compared with the single-track, AC-electrified main lines in Germany, Austria and Switzerland. Two 132/25-kV transformers rated at 7.2 MVA each at the Goldrain substation of provincial power supplier Selnet feed power into the contact wire about half way along the STA line. Power right to the two end points of the line will be transmitted only via the catenary of the open track and the through station tracks, via 80 mm² silver alloy contact wire and 50 mm² conducting bronze carrier wire. There will be no parallel feeder line and no station bypass lines. If the contact wire is interrupted, an emergency feeding capability with limited power is provided for the following section of the line from its end points at Mals and Algund.

The system separation between 3 kV DC and 25 kV AC will be installed on the open STA track after the RFI (Rete Ferroviaria Italiana) station boundary of Meran in the Algund direction. The rails' reverse current situation further on towards Bozen/Bolzano is tricky with regard to the RFI block system BAcc/RSC which functions with coded 50-Hz track circuit currents. Among other things, this requires a number of insulated rail joints along the track which cannot be bridged by passing trains. STA relies on the support of the Italian state infrastructure operator RFI for implementing system separation as well as ERTMS/ETCS L2 and GSM-R. For transmitting signals to the train radio antenna mast, STA uses the existing radio relay network of Rundfunkanstalt Südtirol (public broadcasting/relay service for the majority German-speaking South Tyrol) which brings the German-language TV programmes of Austrian ORF, German ARD and ZDF, and Swiss SRG to the local stations. (hpe/lüt)

Flanked by a Trenitalia ETR 400 and an ATR 465 for service in Sardinia, ETR 170 102 equipped for ETCS L2 and the 25-kV system was on show late-May / early-June in the Trenord depot Milano Fiorenza on the occasion of a Railway Research Congress (photo: M. Fantini).