

# New infrastructure and new trains for Appenzeller Bahnen

Appenzeller Bahnen (AB) are in the midst of a far-reaching renewal process. In St. Gallen the new through line (Durchmesserlinie DML) will connect the two routes St. Gallen – Trogen (TB) and St. Gallen – Gais – Appenzell (SGA). In Appenzell a new workshop is planned as a replacement for the facilities in Herisau and Gais. Additionally, new rolling stock is being procured for deployment on the DML as well as the Gossau – Appenzell – Wasserauen route. Within just a few years, roughly 300 million CHF will be invested.

## Infrastructure reconstruction and extension

The reason for the construction of the DML was the need to eliminate the last rack section on the route to Appenzell, which is located within St. Gallen's urban area. For this purpose, a new line with a 700-meter-long tunnel is being built at Ruckhalde. This infrastructure reconfiguration has also been used to link up the lines from Appenzell and Trogen at the St. Gallen terminus. In the future, it will therefore be possible for passengers coming from Appenzell to travel directly into the city centre of St. Gallen and reach the Marktplatz stop without having to previously change trains at the main station.

The estimated project budget of 122,6 million CHF will likely be undercut by about 5 million CHF. All major structures have been built in such a way that in about 25 years the width of new trains can be enlarged from 2,40 m to 2,65 m, which has been the established loading gauge on the SGA route.

Another 60 million CHF are available to implement additional infrastructure measures as part of the operational reconfiguration. However, merely the modernization of all level crossings between St. Gallen and Trogen, and the implementation of current safety norms on distances between road and rail, would require 80 million CHF.

The Appenzell is being comprehensively revamped. The number of points will be

reduced from 25 to 13. This will result in significant cost savings, especially as the replacement of a run-down switch costs about 250 000 CHF, including signalisation integration.

In Teufen a third track is being added to the station layout, as rush hour booster trains will terminate here in addition to the other timetabled trains crossing each other at regular intervals. The passing loops at the Lustmühle and Schützengarten stations will also be extended. At several other stations, raising the platform height will become necessary as well.

In order to deploy the new Tango tram-trains on the railway line St. Gallen – Appenzell, the guide rails must be raised at all points.

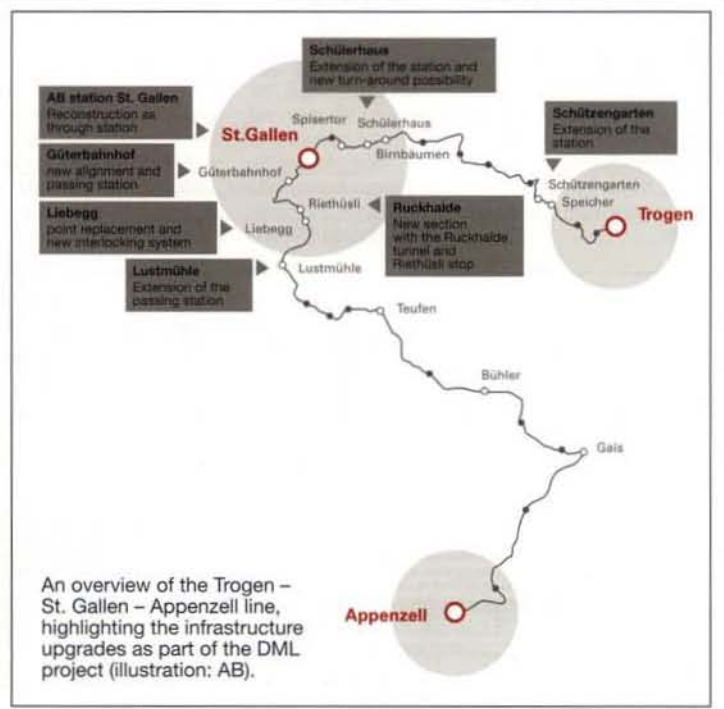
Until now, operations between Teufen and Trogen have been managed by seven signal boxes. These will now be replaced by two new facilities, which will be located on the lower portal of Ruckhalde tunnel as well as at a site along the TB line that is still to be determined. Some components from the newly developed, decentralised Siemens systems architecture "SiGrid" will be used for the first time. Implementation and commissioning will follow a phased approach, commencing in Teufen in 2019 and in Speicher in 2020.

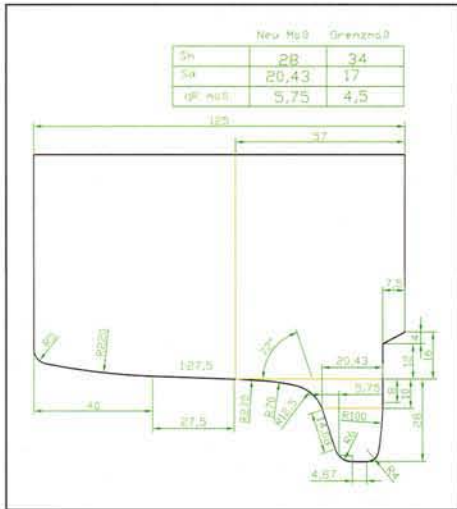
As of late 2021, the current route alignment at the St. Gallen freight yard will be replaced by a new double track section along the SBB main line. At the same time, a new stop will open there. The start of construction is planned for early 2020.



Above: Be 4/8 33 departs Trogen station bound for St. Gallen. These five TB trains will be sold to the Neuchâtel – Boudry line in Western Switzerland (photo: E. Suter, 21 September 2017).

Below: In Teufen the new Tango trains will need to squeeze through the village centre on the main road. On 3 September 2014 a three-coach commuter train from St. Gallen to Appenzell is seen at this site (photo: E. Suter).

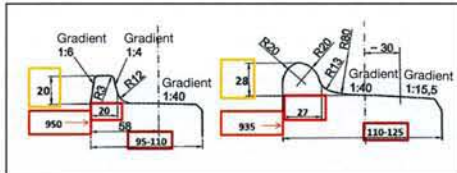




**New EMU for Rorschach – Heiden line**

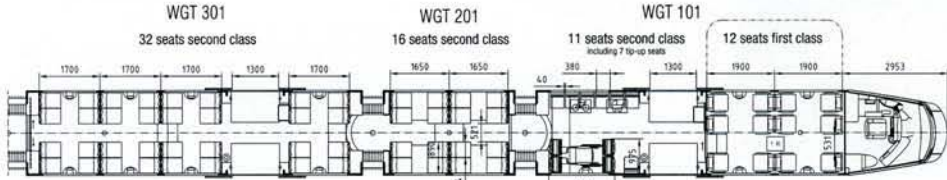
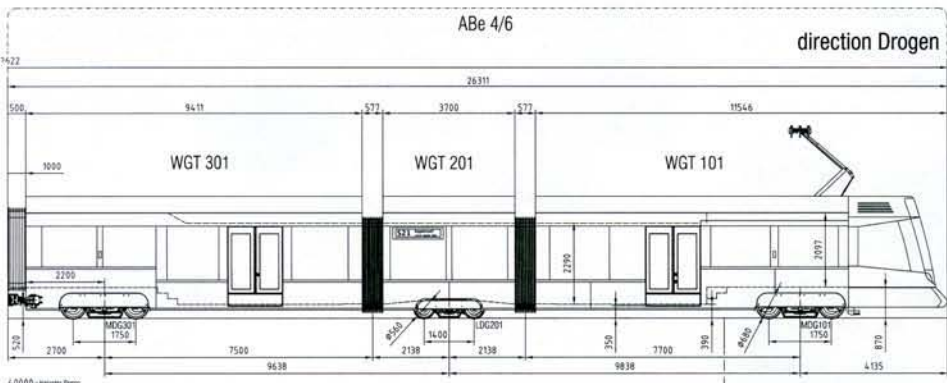
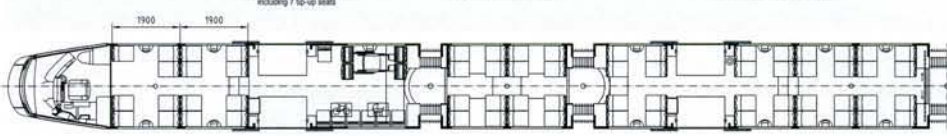
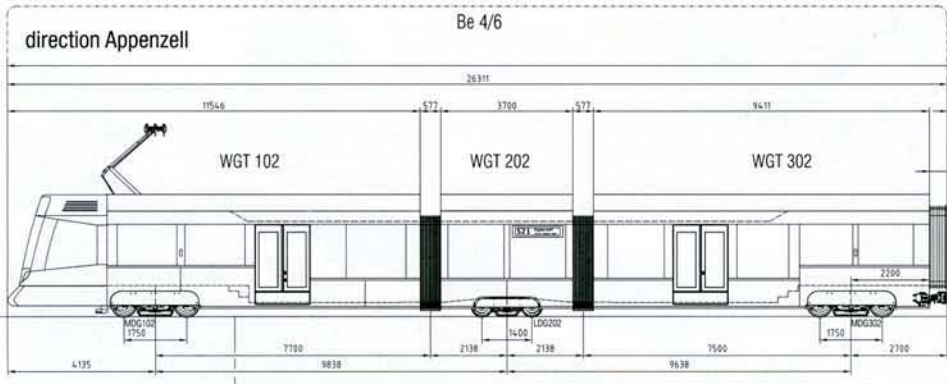
On the standard gauge rack railway Rorschach – Heiden the power cars BDeH 2/4 23 and 24 from 1953 and 1967 will soon require replacement. The two four-axle railcars are starting to show their age and the line’s stalwart vehicle BDeH 3/6 from 1998 will soon require a major overhaul. The half-open, two-axle summer coaches will continue to be used. Originally built in 1875, these are amongst the oldest railway vehicles still in regular revenue service worldwide. (lüt)

Above: Wheel profile of a new Tango vehicle for use on the DML line (illustration: AB).



Left: A comparison of the wheel profile of the Trogenerbahn Be 4/8 (left) and the standard AB vehicles (right), used on the rest of the meter gauge network (source: AB).

Below: Type drawing of an ABe 8/12 for the future Trogen – Appenzell service (source: Stadler).



**New workshop**

Due to the historic development of the amalgamated railway, AB has narrow gauge workshops in Herisau, Gais and Speicher. It has been a long-held ambition to merge these facilities at least partially. A few years ago, the idea was floated to build a new joint workshop with Schweizerische Südostbahn (SOB) in Herisau, but eventually this concept proved impractical. Now a new building is being constructed in Schwende, between Appenzell and Wasserauen. The modern workshop will cost 20 million CHF, feature four tracks and also serve as a base for the railway’s works gang. The plot of land is located half a kilometre from the Appenzell station, south of the railway line.

AB will fit the new workshop with a wheel-set lathe, which will be indispensable for the new Tango vehicles, as their “Karlsruhe profile” requires reprofiling at least once a year. Until now, the AB had to re-profile all wheelsets at the RhB workshop in Landquart, due to the lack of infrastructure. Even though the Speicher depot will be slightly enlarged, it will only function as a light maintenance facility for the Tango fleet. All other maintenance work on all other vehicle types will be carried out at the Schwende depot in the future.

The existing workshop in Gais will be closed and the infrastructure reduced to a mere stabling point. The vacated land will be built over. In Herisau only three tracks with their platforms will remain, the rest of the land will also be used for real estate development.

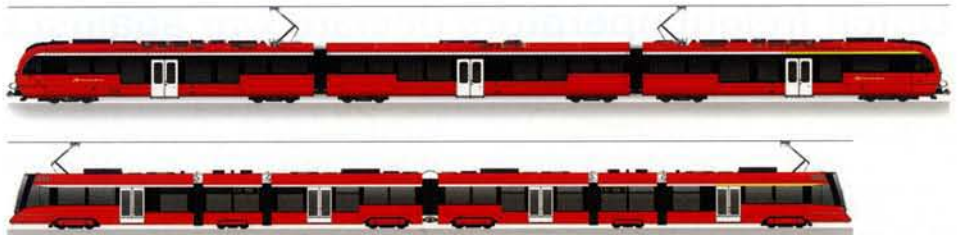
**New vehicles**

Until late 2018 Stadler will deliver five new ABe 4/12 EMUs worth 40 million CHF. These will be deployed on the Gossau – Appenzell – Wasserauen route only and are technically similar to the trains produced for Transports Publics Fribourgeois (TPF), although the low-floor centre section on the AB units will be longer by one compartment. Therefore, the total length of the vehicles will be 58,8 instead of 55,2 m, while 176 instead of 160 seats will be available, including 15 seats in First Class plus tip-up seats. Because four trainsets will suffice for running all timetabled services, these new vehicles will make it possible to replace most of the older fleet.

**No toilets**

Unlike AB’s original intention, the new Tango fleet will not be fitted with toilets. Equipping these 2,4 m wide tram-trains with a PRM-toilet, as required by the Swiss Disabled Equalization Act (BehiG), would have been difficult to implement, because only 60 cm would have remained for the side corridor. It would also have meant the loss of at least eight seats. Therefore, those 99 % of passengers that are not bound to a wheelchair will have to make due without a WC. For elderly travellers, which surely make up a double-digit percentage of all travelers, this lack of facilities can become a potential problem, especially with travel times up to 45 minutes. Only passengers boarding in Appenzell, Sammelplatz, Gais, Bühler or Teufen will have the opportunity to “take care of business” at the station, before boarding the train. (lüt)

Above: A comparison between a three-coach commuter train of the Gossau SG – Appenzell – Wasser- auen route and a six-part tram-train for DML services of the Trogen – St. Gallen – Appenzell line (source: AB).



Centre: In St. Gallen the new through station has been in use since December 2016, even though no direct through trains are yet running. On the track electrified with 1500 V, a train is ready to depart to Appenzell, while to the right is a train running on 600 V to Trogen. The tracks to the right are part of the closed SGA terminus (photo: D. Widmer, 15. December 2016).



The new Stadler EMUs will be able to run in multiple with each other, but will not be compatible for operations with the older vehicles. From the existing fleet three modules will be formed of a Bt driving trailer and one or two B coaches. These will be based in Wasser- auen and used to strengthen the new EMUs, when required. Therefore, the new Stadler trains will be fitted with GF couplings, which are typical on this AB route. These modules will remain compatible with the rest of the fleet.

Due to spatial limitations at the depot, the delivery of the new trains must be coincide with older vehicles being removed from the network, especially the older 2nd class coaches dating from the 1960s but also the newer shuttle trains from the 1980s. AB is ready to sell off this older rolling stock to potentially interested buyers at commercially favorable rates.

For DML operations, ten trainsets will be required to run all timetabled services. Because the Be 4/8 31 – 35 (delivered to Trogenerbahn in 2004/2008) will now definitely be sold to Neuchâtel, another four Tango tram-trains have been ordered from Stadler just a few months ago. These will complement the base order of seven ABe 8/12 from 2014. The total contract for these tram-trains is valued at 90 million CHF. The AB Tangos will be different than the previously produced series for Baselland Transport AG or Transports Publics Genevois as they can be separated in the middle and feature an additional powered bogie. The traction equipment has been designed in a redundant way, allowing both halves to be individually powered and therefore function independent of each other. Additionally, the front-end has an enhanced crash resistance.

Because the Tangos will run over tram tracks in St. Gallen before switching onto conventional metre gauge rail on the route to Appen- zell, the wheelsets feature a wheel profile that is based on the “Karlsruhe model” and is suitable for both types of track. As the last old type of Trogenerbahn vehicle, BDe 4/8 22 will be sold to the Rittnerbahn in Südtirol (Alto Adige), thereby following its former fleetmates to Italy.

The Milani design studio has developed a new livery for all AB vehicles, using red (RAL 3020) and black (RAL 9004) as the base colours, with touches of white (RAL 9016) and yellow (RAL 1023). Inside, the First Class seats will mainly be black, while those in Second Class will be red. Along the inside walls, stylized mountains and folkloric images will provide

As part of the 2019 timetable, the peak time 15-minute interval from Trogen to St. Gallen will be extended as far as Teufen. In the long term, an all-day 15-minute interval is planned as far as Gais (source: AB).

a strong visual link to the Appenzell and its traditions.

**Future operations**

Prior to the DML inauguration in late 2018, the St. Gallen – Teufen line will be closed from April to October 2018, with rail replacement buses covering public services. Since January 2017, a commissioning organisation is being built up.

Presently, there’s an all-day 30-minute headway on TB, which is boosted to a 15-minute interval during morning, midday and evening rush hour. On the SGA route, there is a solid half-hourly service pattern, with additional express trains during rush hour on weekdays. As of December 2018, direct through trains will run from Trogen via St. Gallen to Appenzell every half-hour, while on the Trogen-Teufen section a 15-minute headway is planned. Additionally, two express trains will run between St. Gallen and Appenzell in

the load direction every weekday during peak periods.

In the long term, an all-day 15-minute headway is planned as far as Gais, with every second train running through to Appenzell. Additionally, several booster trains will run in the load direction for students during week- day peak hours between St. Gallen Schüler- haus and Appenzell.

One of the great challenges has been the matter of onward connections. Even with the new DML timetable, which will enter into effect in late 2018, travelling from Wasser- auen to St. Gallen will include 9 minutes of transition time in Appenzell. Coming from Altstät- ten Stadt, the wait in Gais will even be 13 min for the St. Gallen-bound train. Nominally, 3 minutes to change trains would suffice at either station. Once the new double-track alignment opens at the St. Gallen freight yard in 2021, certain timetable improvements should become possible. (lüt)

