



The Backbone of DB AG Infrastructure

Axle Counters for electronic and relay interlocking

Axle counters were first introduced to the German Railways in the late 1960s. Since then, many passenger carrying lines of the DB network have been modernised and migrated to the latest generation of Thales Axle Counter Systems.

Most of the main lines and high-speed lines of the German railway network are being equipped exclusively with axle counters and operated at speeds up to 300 km/h. Thales is the main supplier who will upgrade the high-speed line Erfurt–Eisenach. Some 50 km of line is being fitted with 350 detection points of the fully redundant Thales Multiple Section Axle Counter (Az LM).

Digital fault tolerant transmission and modern TCP/IP connections are used to allow for increased train speeds such as the current 200 km/h upgrade. This technology has really shown its superiority against historic modes of train detection in several projects in Germany, especially in a completely different application project: **STUTTART 21**.

Being one of the largest railway construction sites in Europe, the Stuttgart terminal station with its 16 platforms will be put 11 metres below the current track level and be transformed into a 8-track through station. All 16 platforms had to be moved forward by several hundred metres to make way for the



Az LM in Stuttgart's relay interlocking

underground construction of the new through terminal, positioned at 90° to the present terminal. A large portion of the 506 point machines, 1018 colour light signals and 699 track sections driven by approximately 70,000 signalling relays were affected by this relocation.

To allow for this modification to be done while maintaining passenger services a large, complex and challenging stage works programme was put in place.

By maintaining the 1977-commissioned SEL type route relay interlocking, it was only possible to move around the affected 160 track sections by introducing the flexibility of the Thales Multiple Section Axle Counter System: overlapping installation, independent

commissioning and compatible relay interface circuits.

Without this flexibility of the new Thales Axle Counter, the preparation works for the new 57 km of track and the construction of the 33 km new tunnel sections would have been a logistical nightmare. Today, this interim axle counter solution has not only increased the operational availability of the train detection system, it has also drastically reduced the maintenance efforts in this complex terminal station area.

Main facts on Stuttgart 21

Reconstruction of the Stuttgart rail node

- 3 new railway stations: Stuttgart Main Station, Flughafen/Messe and Mitnachtstraße
- 57 km total line length
- 33 km tunnel
- Max. speed: 250 km/h

New line Wendlingen–Ulm

- 59 km total line length
- 30 km tunnel
- Max. speed: 250 km/h

For more details:

www.bahnprojekt-stuttgart-uhl.de/english/