**ERTMS Independent and reliable services**

Installation - Testing - Commissioning - Maintenance - System Integration - Migration

As an international service provider of rail systems, Strukton Rail has significant in-house ERTMS experience. Remarkable is that we work on both wayside and onboard equipment. Strukton Rail co-operates with most suppliers in several projects, thus contributing to the future interoperable European railway network as an independent system integrator and maintenance partner.

**Installation**

Strukton Rail installs, connects and pre-tests the complete chain of ERTMS equipment (interlocking, radio block centre, on-board equipment, communication networks, wayside equipment units, balises, train detection, traffic management, monitoring) on any scale.

**Testing & commissioning**

Strukton Rail performs field tests during the commissioning phase. We also provide the health and safety organisation. For testing with running trains, we have both ERTMS-equipped locomotives and an enthusiastic team of experienced ERTMS test drivers available.

**Maintenance**

The deployment of ERTMS has a serious impact on the maintenance process of the railway providers and the carriers. Strukton Rail’s pro-active attitude guarantees a smooth transition from maintaining conventional signalling systems to maintaining any ERTMS system. The on-board equipment, the RBC, the neighbouring RBC and GSM-R might all be from different suppliers (represented by different colours in the figure). It is a great advantage that Strukton Rail is independent from these suppliers, because it allows to centralise maintenance for different suppliers in a single maintenance organisation.

**Maintenance organisation**

The maintenance of rail infrastructure is performed on the basis of the client’s quality levels.

The regional setup of fault teams is the same for ERTMS and conventional signalling. New for ERTMS is the second-level team of highly skilled electronic engineers. They monitor all systems remotely and assist the first-level team when necessary. They can assist on location if required. The supplier is responsible for spare parts, repair, assistance in case of software problems and training of the second-level team.
Monitoring
Strukton is the largest asset monitoring supplier in Europe. Our POSS system is used for monitoring over 6,500 assets in various countries. We adapted the POSS concept for ERTMS maintenance in such a way that the entire ERTMS chain can be monitored. This will make the work of the fault teams considerably more easy and efficient.

Migration
Through our broad ERTMS experience, Strukton understands both ERTMS functionality and railway operations. Introduction of ERTMS on any infrastructure has impact on almost all aspects of the railways. The migration from any traditional signalling system to ERTMS therefore requires a comprehensive and co-ordinated approach to ensure a smooth transition from traditional operations to ERTMS operations. Strukton is currently developing its migration approach in the Danish ERTMS signalling programme.

Reference projects
ERTMS projects with involvement of Strukton Rail:

- The 150 km long Betuwe Route in the Netherlands. This newly built dedicated freight line forms the Dutch part of the freight corridor A from Rotterdam to Genoa. The line is equipped with ERTMS level 2
- The 40 km long Harbour Line in Rotterdam. This line connects to the Betuwe Route and is equipped with ERTMS level 1
- The 40 km long 4-track mixed traffic line from Amsterdam to Utrecht. This line has a dual signalling system, allowing conventional trains and level 2 equipped trains
- The 45 km long Hanzelijn connecting Lelystad and Zwolle. The Hanzelijn is equipped with ERTMS level 2. The line has a dual signalling system, allowing conventional trains and level 2 equipped trains
- The 155 km long S-bane network in Copenhagen. This passenger network will be equipped with CBTC, the metro version of ERTMS. Strukton started with the installation in 2012; the project should be completed in 2020
- Through the acquisition of Balfour Beatty Rail Scandinavia, Strukton has become involved in the Fjernhane West contract of the Danish national ERTMS signalling programme (to be finished in 2021).