AEGIS Certification

The Positive Choice

AEGIS Case Study

TPWS NoBo DeBo Certification

Client name: Mors Smitt

AEGIS Certification Services
29 Brunel Parkway, Derby DE24 8HR
www.aegiscertification.com

info@aegiscertification.co.uk
+44 (0) 1332 384 302

SCOPE/OBJECTIVE

Mors Smitt have developed a Train Protection and Warning System (TPWS), the national protection system used on the UK rail network. Their solution offers a range of modular configurations, allowing for flexibility in the choice of both hardware elements and customisable control software.
Each configuration must comply with the latest TPWS Railway Group and Industry Standards which are:

- GE/RT8075 issue 3 – AWS and TPWS Interface Requirements
- RIS-0775-CSS Issue 2 – AWS and TPWS Application Requirements

AEGIS Certification Services have been appointed as Notified Body (NoBo) and Designated Body (DeBo) across a range of project applications.

Stadler Class 755 trains fitted with Mors Smitt TPWS onboard system.

TECHNOLOGY USED

The aim of TPWS is to reduce the consequences of a Signal Passed at Danger (SPAD). The Mors Smitt system consists of both the TPWS and an Automatic Warning System (AWS). The AWS assists in the observation of upcoming signals using electro and permanent magnets on the trackside. The onboard system receives information from the trackside and gives the driver an indication of whether the upcoming signal aspect is showing Clear (green) or Caution/Stop (yellow/double yellow or red).

TPWS uses trackside electromagnetic loops, referred to as grids, which emit 'arming' and 'trigger' frequencies which the on-train aerial receives. When energised if the trigger frequency is picked up after the arming frequency in a shorter time than that of the designated timer setting, an emergency brake will be applied. There are two TPWS subsystems; the Overspeed Sensor System (OSS) and Train Stop System (TSS) used to enforce speed limits and to protect red aspects, respectively.

The Mors Smitt TPWS system consists of a TPWS control unit, AWS receiver and TPWS antenna as its core with configurable options for the in-cab display and sound unit, depending on the rolling stock requirements. The system can also be configured to work in standalone mode or be integrated with an ETCS onboard control system which interfaces via a Specific Transmission Module (STM).

Mors Smitt TPWS and STM.

HOW WE HELPED

AEGIS have developed an in depth understanding of the Mors Smitt TPWS system through a range of projects. This expertise has allowed us to interpret system changes effectively and efficiently when appointed as NoBo and DeBo to assess TPWS upgrades. We undertake line by line reviews of Mors Smitt's well-presented documentation, provide feedback and use our professional knowledge to assess the system against the applicable TPWS/AWS standards. We then produce the required Technical Files and Certificates for the TPWS system.

OUTCOME

Our strong relationship with our client and system expertise aids in our information reviews and allows for efficient production of Technical Files for Mors Smitt. We have produced both Type Examination and Quality Management System Approval Certificates which have enabled various evolutions of the TPWS system to be entered into service.

With AEGIS appointed as NoBo/DeBo, Mors Smitt's TPWS system has gained certification across a range of applications such as:

- Mersey Rail (Stadler Rail Group)
- East Anglia (Stadler Rail Group)
- Heathrow Express (Bombardier Transportation now Alstom)
- Electrostar (Bombardier Transportation now Alstom)
- FLIRT Train/Wales and Borders (Stadler Rail Group)

Following the delivery of two simultaneous certifications in 2020, Craig Payne, Lead Systems Engineer at Mors Smitt said:

> 'I just wanted to extend my thanks [to AEGIS] for working so hard to get the approvals and compliance completed today for the 2 TPWS projects. This was a significant challenge, and I am very grateful and appreciative of your hard work.'

AEGIS Certification Services
29 Brunel Parkway, Derby DE24 8HR
www.aegiscertification.com

info@aegiscertification.co.uk
+44 (0) 1332 384 302