

*Translation of TBST memo, dated 08-02-2017*

Edvard Thomsens Vej 14  
2300 København S  
Telephone +45 7221 8800  
Fax +45 7262 6790  
info@tbst.dk  
tbst.dk

Note  
TS10503-00055  
08-02-2017

## **Using the CENELEC standard EN50126 in connection with the approval of new light rail vehicles**

When constructing new light rail vehicles, the vehicle manufacturer normally uses the CENELEC standard EN50126. In this connection, a Safety Case (SASC<sup>1</sup>) including a System Definition and an Assessment Report is developed.

This note shortly explains how these documents can apply for the vehicle approval and also how the tasks may be allocated between:

- "ISA" = CENELEC system assessor,
- "AsBo" = CSM RA assessor.

It should be mentioned that before the adoption of CSM RA, railway vehicles were normally approved on the basis of the EN50126 process, cf. historic Executive Order 686.

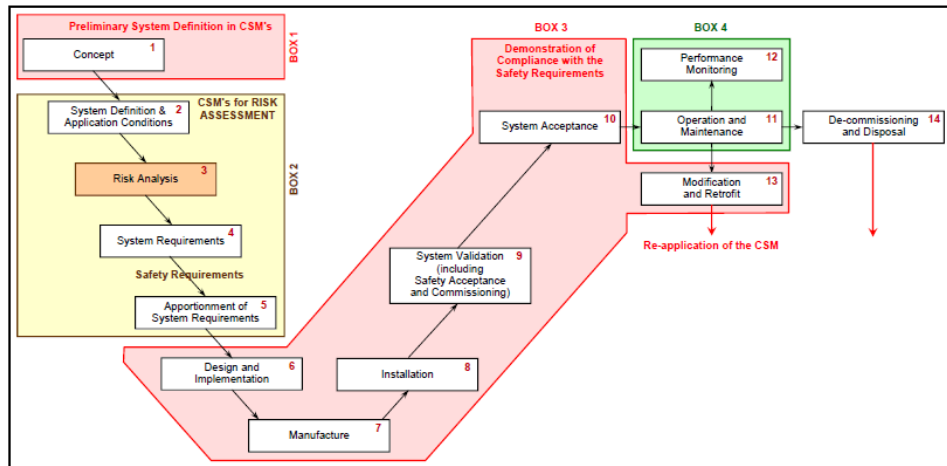
This note is not to be understood such that it is a requirement that EN50126 shall be used. This note explains the expectations of the Danish Transport and Construction Agency to the documentation if EN50126 is used.

### The relationship between the CSM RA and the EN50126 processes

The figure below (see also appendix 1) that is found in the Danish Transport and Construction Agency's Assessor Guide shows the general relationship between CSM RA and EN50126:

---

<sup>1</sup> Specific Application Safety Case, for the complete vehicle. Insofar a mobile train control is also installed; it will be possible to manage the Safety Case for this part separately.



[Link to the Assessor Guide](#)

The figure stems from ERA’s Guide on the use of CSM RA, and it is basically viewed that if EN50126 is used, then in principle, the CSM RA process is also fulfilled.

The use of CENELEC standards in connection with the approval of light rail vehicles

The Danish Transport and Construction Agency accepts EN50126 System Definitions and Assessment Reports from a qualified<sup>2</sup> ISA, supplemented by:

- A CSM RA System Definition that manages the safe integration between the vehicle type<sup>3</sup> and the infrastructure, and a Safety Assessment Report for this part.
- The technical expert’s certificates and other documentation cf. Executive Order 653.

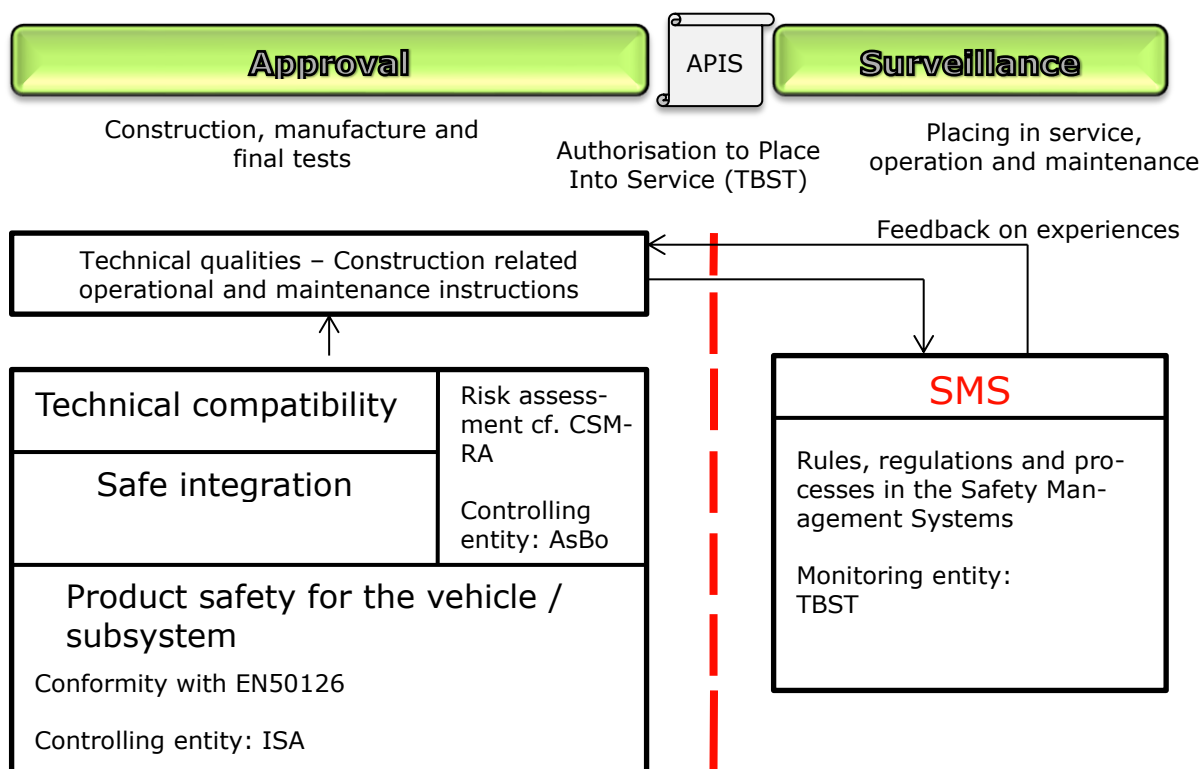
The AsBo should take the ISA Assessment Report into consideration when assessing the vehicle’s safe integration in the light rail system – with the objective of exposing specific conditions that need to be taken into consideration. Thus, the Danish Transport and Construction Agency does not expect the AsBo to assess, if CSM RA has been met, in the areas where the ISA assess that EN50126 has been met.

---

<sup>2</sup> The Danish Transport and Construction Agency recommends that the ISA qualifications are clarified with the Agency as early as possible in the course of the project.

<sup>3</sup> If the vehicle is fitted with mobile train control, the safe integration between the mobile train control and the rolling stock can either be managed according to CSM RA or within the framework of EN50126.

When using the CENELEC standards in combination with CSM RA, the allocation of tasks are shown in the figure below:



Documentation requirements cf. § 6 in Executive Order 653

The application of EN50126 is expected to simplify the overall assessment significantly, in the cases where a vehicle platform, documented and assessed according to EN50126, is used.

In the table below, an explanatory note is entered for each of the documents that are included in the type documentation when using EN50126:

No	Documentation requirement cf. paragraph 6 (1)	Explanatory notes when using EN50126
1	System Definition	The EN50126 System Definition is supplemented by a CSM RA System Definition that manages the safe integration of the vehicle into the light rail system and the technical compatibility between the vehicle and the infrastructure. If the vehicle is fitted with a mo-

		<p>mobile train control, the safe integration with the rolling stock may either be managed in the CSM RA process or in the EN50126 process. In both cases, the EN50126 System Definition for the mobile train control is also enclosed.</p>
2	Type examination certificates (for the subsystem rolling stock and when installed in the vehicle, the subsystem mobile train control)	<p>The technical expert approved by the Danish Transport and Construction Agency uses module SB and the EN50126 System Definition(s) as his starting point.</p>
3	A Safety Assessment Report and the Declaration of the Proposer	<p>Generally, two Safety Assessment Reports (SAR) are enclosed:</p> <p>The AsBo SAR concerning the safe integration and the technical compatibility, and also the ISA Assessment Report concerning the product (vehicle).</p> <p>Furthermore the Declaration of the Proposer is enclosed.</p> <p>If the vehicle is fitted with mobile train control, the ISA Assessment Report for this is also enclosed – unless it has been included in a collated ISA report for the vehicle including the mobile train control.</p>
4	A certificate of compatibility	<p>The technical expert uses the safety requirements identified in the CSM RA System Definition and also the AsBo Safety Assessment Report as his starting point.</p>
5	Operational and maintenance manuals	<p>No specific explanatory notes.</p>

The other paragraphs in Executive Order 653 are not afflicted by the above clarifications.

# Appendix 1

