TSI Package 2023
TSIs LOC&PAS, PRM, NOI, WAG
Q&A Session n°2 – 10 November 2023
Some more questions received at TSI-QA-2023@era.europa.eu

• Transition: application of TSIs to new variants?
• Projects in the list of advanced stage of development
• Case of projects already in “Phase B”
Additional answers after the 1st Q&A

• The TSIs requirements are mandatory for all projects with design phase starting after the date of entry into force, be it for a new type or a variant

• Projects for variants that are in Phase A at the entry into force of the TSI Package 2023 may decide to switch to the new TSIs, but...

• …a variant ‘inherits’ the limited validity of the type it derives from - LOC&PAS point 7.1.2.2 (11)

• The unlimited validity of certificates doesn’t concern SB/CB/type examination certificates already delivered

• Projects in Phase A that decide not to apply the TSI package 2023 don’t need a derogation, neither those that apply the package 2023!
Some more questions received at TSI-QA-2023@era.europa.eu

- Can you provide a list of the main changes in the TSIs 2023 compared to the previous versions?
Changes are listed in the TSIs!

- TSI WAG Appendix A
- TSI LOC&PAS Appendix L
- TSI PRM Appendix P
- TSI NOI Appendix H
- TSI CCS Appendix B

See Q&A Session n°1 for more information:

TSI Revision Package 2023 Q&A #1: Rolling Stock & On-Board CCS | European Union Agency for Railways (europa.eu)
Authorisation for placing on the market of passenger coaches not limited to a particular area of use
Questions received at TSI-QA-2023@era.europa.eu

- What was the objective?
- Which TSIs apply?
Before TSI LOC&PAS amendment 2023, no provisions and authorisation of coach was requiring:

- Compliance with TSIs and **National rules** of EU Members.
- **Several vehicle authorisation applications**: First authorisation and extension of area of use.
- Involvement of **several authorising entities**: ERA and National Safety Authorities.

To facilitate free circulation of passenger coaches, conditions for having an authorization for placing on the market for an area of use **European Union** were lay down in point 7.1.1.5 of LOC&PAS.
Objectives with amendment 2023

Authorise a train in all EU with a single authorisation.

- One set of harmonised TSIs rules
- No National rule
- No Designated Body
- Authorisation delivered by ERA
- No National Safety Authority
LOC&PAS TSI 1302/2014 amended by regulation 2023/1694

• 7.1.1.5. Conditions for having a vehicle type authorisation and/or an authorisation for placing on the market of passenger coaches not limited to a particular area of use.

  • 7.1.1.5.1 Conditions applicable to coaches intended to be used in predefined formations

  • 7.1.1.5.2 Additional optional conditions applicable to coaches intended to be used in general operation
Questions received at TSI-QA-2023@era.europa.eu

• Is it applicable to existing coaches (e.g RIC)?

• What type of coaches?
• Unique authorisation conditions applies **on top** to coaches compliant with **TSI LOC&PAS, TSI PRM and TSI NOI** as **amended by regulation 2023/1694:**

• Newly developed vehicle design.

• Existing type if compliant with TSIs amendment 2023. Such type may need to be modified or not to comply with point 7.1.1.5.
Coaches without driving cab:

- Coaches carrying passengers incl sleeping, couchette and restaurant cars.

- Coaches that are not carrying passengers (Van, Cars carriers) integrated in a passenger trains.

- Fixed Rake of coaches.
Train formation
LOC&PAS 7.1.1.5(2)

• Coaches intended to be operate in pre-defined formation (point 7.1.1.5.1):
  • Train formation(s) **(defined at design stage)** of **coaches coupled together** and can be **reconfigured during operation**.

  ![Diagram of train formation](image1.png)

    - 2nd class
    - Restaurant / 2nd class
    - 1st class / 2nd class
    - 1st class / wheelchair spaces
    - LOCO

    No specific interfaces to specify – point 7.1.1.5.1

• 7.1.1.5.2 additional optional conditions for coaches intended to be operate in generation operation:
  • Train formation(s) **(not defined at design stage)** of **coaches** intended to be coupled with **other coach(s)**.
  • **Aims to facilitate exchange of units**

  ![Diagram of train formation](image2.png)

    - 2nd class Manufacturer A
    - 2nd class Manufacturer A
    - Restaurant / 2nd class Manufacturer B
    - 1st class / 2nd class Manufacturer B other type
    - 1st class / wheelchair spaces Manufacturer C
    - LOCO

    Different coaches type
    Interfaces are specified in addition to the other regs
    Point 7.1.1.5.2 in addition to 7.1.1.5.1
Questions received at TSI-QA-2023@era.europa.eu

• What are the conditions applicable to coaches in predefined formation?

• What happens in case of non-compliance with some provisions?
Conditions applicable to coaches in predefined formation?

**LOC&PAS 7.1.1.5.1**

- **Specific coach characteristics such as:**
  - **Not equipped with:**
    - CCS onboard
    - Traction equipment’s (thermal or electric)
  - **Equipped with:**
    - Forged and rolled Mini $\varnothing$ above 760 mm
    - Train Communication Network (IEC 61375-1)
  - **Speed up to 250km/h**
  - **Compatible with:**
    - Track gage: 1435 and/or 1668mm
    - Rail Inclination: 1/20 and/or 1/30 and/or 1/40
    - One of the reference profile: G1, GA, GB, GC or DE3 including for lower part GI1, GI2 or GI3.
  - Train detection system
    - ERA/ERTMS/033281 - V 5.0
Conditions applicable to coaches in predefined formation?

LOC&PAS 7.1.1.5.1

- **Specific provisions** as:
  - If unit is category B, it shall be equipped with full cross partition section.
  - Possibility to activate/deactivate the use of some equipment as flange lubricators, eddy current track brake, magnetic track brake..
- **Specific environmental conditions defined in 7.4 to be considered**
- **Specific cases** to be considered as:
  - **Austria** : wheel-rail contact geometry
  - **Italy** : aerodynamic effect, fire containment and control systems
  - **Germany** : step position for vehicle access and egress, Cross wind curve, gradient above 40 ‰, emergency exit, wheel-rail contact geometry
  - **France/Sweden** : trackside Hot axle box detection
  - **Spain (1668mm)**: quasi static guiding force, flange thickness
• Some non compliance to mandatory requirements should trigger request for non-application of TSIs, as example:
  • Coach fitted with EN-UIC brake shall be tested following EN17065.
  • Coach of category B shall be equipped with fill cross section partition.
• Some non compliance to requirements can result into exclusions of some MSs from the area of use or conditions for use and other restrictions, as example:
  • Non compliance with Trackside HABD (specific case 7.3.2.3) shall exclude France and/or Sweden from the area of use.
  • Non compliance of the units with the German network characteristics on wheel-rail contact geometry shall result in restriction of the speed.
Questions received at TSI-QA-2023@era.europa.eu

- What about National rules?
For following parameters, national rules are still need to be applied:

- **Fire safety**:
  - **AoU Italy** (7.1.1.5.1(20)(c)): FCCS are checked according to NR about fire automatic extinguishing systems and are assessed by DeBo.
  - **AoU Channel Tunnel** (7.1.1.5.1(20)(d)): Running capability: braking and traction functions impacted by a ‘type 2’ fire can be assessed in the following conditions:
    - 1. for a duration of 30 minutes at a minimum speed of 100 km/h, or
    - 2. for a duration of 15 minutes at a minimum speed of 80 km/h under the condition specified in the NR and assessed by DeBo.

- **For sleeping coaches of category B** (7.1.1.5.1 (9)) shall be equipped with other Fire Containment and Control Systems (FCCS). The assessment procedure is an open point: NRs apply and are assessed by DeBo.

- **Compatibility with train detection system** (7.1.1.5.1 (16)), pending the notification of specific cases, NRs apply and are assessed by DeBo.
Some more questions received at TSI-QA-2023@era.europa.eu

- Where are the requirements on train detection specified?
- What is the content of that interface document?
• Introduction

• How the interface document is subdivided?

• Differences between version 4 and version 5 in « Vehicle design and operation part »

• Differences between version 4 and version 5 in « Electromagnetic compatibility part»

• How is the transition regime?

• What is next?
Introduction

• This document defines the interoperability requirements that shall be applicable at the interface between the Control-Command and Signalling Track-side and other subsystems

• ERA website:
  Interface between control-command signalling trackside and other subsystems (v.5 24-03-2023)
How is the document subdivided

3.1. Vehicle design and operation
- 3.1.2. Axle distances
- 3.1.3. Wheel geometry
- 3.1.4. Use of sanding equipment
- 3.1.5. On-board flange lubrication
- 3.1.6. Use of composite brake blocks
- 3.1.7. Vehicle axle load and metal construction
- 3.1.8. Shunting behaviour and shunting assisting devices
- 3.1.9. Impedances between wheels

3.2. Electromagnetic compatibility
- 3.2.1. Electromagnetic fields
- 3.2.2. Conducted interference
- 3.2.3. Use of magnetic / eddy current brakes

4. Conformity assessment
- 4. Conformity assessment and 4.1. IC axle counter

5. Non TSI compliant TDS
- 5.1. Technical characteristics and 5.2. Compliance

(*) The interface document is also referred in L&P TSI, WAG, TSI, OPE TSI
### Difference in “Vehicle design and operation” (version 4)

<table>
<thead>
<tr>
<th>3.1.1. Vehicle design and operation</th>
<th>3.1.2. Axle distances</th>
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<td>3.1.1.2. Axle distances</td>
<td>3.1.2.1. Maximum axle distance</td>
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<td>3.1.2.2. Minimum axle distance (I)</td>
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<td>3.1.2.3. Minimum axle distance (II)</td>
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<td>3.1.3.5. Metal and inductive components-free space between wheels</td>
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<td>3.1.3.6. Wheel material</td>
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<td>3.1.4. Use of sanding equipment</td>
<td>3.1.4.1. Maximum amount of sand</td>
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<td>3.1.5. On-board flange lubrication</td>
<td>3.1.5. Possible to activate/deactivate. Characteristic[open point]</td>
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<tr>
<td>3.1.7. Vehicle axle load and metal construction</td>
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<td>3.1.9. Resistance 0.05 Ohm</td>
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|                                    | 3.1.3.2. Minimum wheel diameter |
|                                    | 3.1.3.3. Minimum flange thickness |
|                                    | 3.1.3.4. Flange height |
|                                    | 3.1.3.5. Metal and inductive components-free space between wheels |
|                                    | 3.1.3.6. Wheel material |

| 3.1.4. Use of sanding equipment   | 3.1.4.1. Maximum amount of sand |
|                                    | 3.1.4.2. Sand characteristics |

| 3.1.5. On-board flange lubrication| 3.1.5. Possible to activate/deactivate. Characteristic[open point] |


| 3.1.7. Vehicle axle load and metal construction | 3.1.7.1. Vehicle axle load |
|                                               | 3.1.7.2. Vehicle metal construction |

| 3.1.8. Shunting behavior and shunting assisting devices | 3.1.8. The use of shunting assisting devices is not required |

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### 3.1. Vehicle design and operation

#### 3.1.2. Axle distances
- 3.1.2.1. Maximum axle distance
- 3.1.2.2. Minimum distance between following axles
- 3.1.2.3. Minimum distance between first and last axle
- 3.1.2.4. Max. distance between front/ rear end of train and first/last axle
  - for trains running exclusively on High Speed lines
  - for trains running on other lines

#### 3.1.3. Wheel geometry
- 3.1.3.1. Geometric dimension of the rim width
- 3.1.3.2. Minimum wheel diameter
- 3.1.3.3. Geometric dimension of flange thickness
- 3.1.3.4. Geometric dimension of the flange height
- 3.1.3.5. Metal and inductive components-free space between wheels
- 3.1.3.6. Wheel material

#### 3.1.4. Use of sanding equipment
- 3.1.4.1. Maximum amount of sand
- 3.1.4.2. Sand characteristics

#### 3.1.5. On-board flange lubrication

#### 3.1.6. Use of composite brake blocks

#### 3.1.7. Vehicle axle load and metal construction
- 3.1.7.1. Vehicle axle load
- 3.1.7.2. Vehicle metal construction

#### 3.1.8. Shunting behavior and shunting assisting devices

#### 3.1.9. Impedances between wheels

<table>
<thead>
<tr>
<th>3.1.2. Distance “ai”</th>
<th>Table Max. speed / Minimum axle distance “ai”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance “L - (b1 + b2)”</td>
<td>Distance “bx” (v &gt;= 250km/h)</td>
</tr>
<tr>
<td>Distance “bx”</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>3.1.3. Updated table: Track gauge/Wheel diameter/Rim width</th>
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</thead>
<tbody>
<tr>
<td>Table speed / Massive wheel diameter/Spoked wheel</td>
</tr>
<tr>
<td>Updated table: Gauge/Wheel diameter/Flange thickness</td>
</tr>
<tr>
<td>Updated table: Gauge/Wheel diameter/Flange height</td>
</tr>
<tr>
<td>Updated sensitive area, steel springs and rubber springs</td>
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<tr>
<td>Ferromagnetic and are electrically conducting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.1.4. Modified amount of sand for all track gauges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified sand characteristics for all track gauges</td>
</tr>
</tbody>
</table>

| 3.1.5. Possible to activate/deactivate. Characteristic defined. |


<table>
<thead>
<tr>
<th>3.1.7. Load in function # of axles for all track gauges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex A1 and A2 for 1435mm, for others no requirement</td>
</tr>
</tbody>
</table>

| 3.1.8. The use of shunting assisting devices is not required |

| 3.1.9. Resistance 0.05 Ohm |
### 3.2. Electromagnetic compatibility

#### 3.2.1. Electromagnetic fields
- 3.2.1.1. Frequency management
- 3.2.1.2. Vehicle emission limits and evaluation parameters
- 3.2.1.3. Evaluation of exceedances of limits defined in table 10
- 3.2.1.4. Measurement specification

#### 3.2.2. Conducted interference
- 3.2.2.1. Vehicle impedance
- 3.2.2.2. Substation impedance
- 3.2.2.3. Traction current at fundamental power supply frequency
- 3.2.2.4. 25kV AC, 50Hz EMI limits for traction current
- 3.2.2.5. 15kV AC, 16,7Hz EMI limits for traction current
- 3.2.2.6. 3kV DC & 1.5 kV DC, EMI limits for traction current
- 3.2.2.7. Measurement, test and evaluation specification

#### 3.2.3. Use of magnetic / eddy current brakes
- Defined for all track gauges
- Updated limits and parameters for evaluation
- Table to increase limits in case of exceedance
- Updated measurement specification

### 4. Conformity assessment

#### 4.1. Interoperability constituent axle counter
- Parameter assessed for SS and IC certification
- IC axle counter shall apply table 16
3.2.1. Electromagnetic fields
- 3.2.1.1. Frequency management
- 3.2.1.2. Vehicle emission limits and evaluation parameters
- 3.2.1.3. Evaluation of exceedances of limits defined in table 10
- 3.2.1.4. Measurement specification

3.2.1. Defined for all track gauges
- Updated limits and parameters for evaluation
- Table to increase limits in case of exceedance
- EN50592 presumption of conformity

3.2.2. Conducted interference
- 3.2.2.1. Vehicle impedance
- 3.2.2.2. [DELETED]
- 3.2.2.3. Traction current at fundamental power supply frequency
- 3.2.2.4. 25kV AC, 50Hz EMI limits for traction current
- 3.2.2.5. 15kV AC, 16,7Hz EMI limits for traction current
- 3.2.2.6. 3kV DC & 1.5 kV DC, EMI limits for traction current
- 3.2.2.7. Measurement, test and evaluation specification
- 3.2.2.8. Partial application of the frequency management

3.2.2. AC and DC vehicle impedance
- [DELETED]
- No requirement
- Updated in-bands interference limit
- Updated in-bands interference limit
- Updated in-bands interference limit
- ENS0728 presumption of conformity
- NoBo provides information in the technical file

3.2.3. Use of magnetic / eddy current brakes
- 3.3.1. Wrong side failures

3.3.1. Informative and out of scope of the document

4. Conformity assessment
- 4. Conformity assessment
- 4.1. Interoperability constituent axle counter

4. Updated table and additional comments
- 4.1. IC axle counter shall apply table 16

5. Non TSI compliant Train Detection System
- 5.1. Technical characteristics of non TSI compliant TDS
- 5.2. Compliance with non TSI compliant TDS

5.1. Specific cases or Annex B1
- 5.2. NoBo provides information in the technical file
How is the transition regime for the interface document?

First authorization:
- The interface document, except point 3.2.2, is directly applicable with the entry in force of CCS TSI.
- The complete interface document is applicable 2 years after the entry in force of CCS TSI.

### Table B1.2

#### Transition Regime (*) for RST Subsystem

<table>
<thead>
<tr>
<th>No</th>
<th>TSI point(s)</th>
<th>TSI point(s) in previous version</th>
<th>Explanation on TSI change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Index 77</td>
<td>V4 - Frequency management not fully defined for the vehicle</td>
<td>V5 - Frequency management fully defined for the vehicle &lt;br&gt;Directly applicable with the exception of point 3.2.2. This point is applicable 2 years after the entry into force of the TSI on newly developed vehicle designs requiring a first authorisation as defined in Article 14 point 1(a) of Commission Implementing Regulation (EU) 2018/545; &lt;br&gt;Applicable 7 years after the entry into force of the TSI on modified vehicles designs requiring a new authorisation as defined in Article 14 point 1(d) of Commission Implementing Regulation (EU) 2018/545;</td>
</tr>
</tbody>
</table>

#### 3.2.2. Conducted interference
- **3.2.2.1.** Vehicle impedance
  - **3.2.2.2.** [DELETED]
  - **3.2.2.4.** 25kV AC, 50Hz EMI limits for traction current
  - **3.2.2.5.** 15kV AC, 16,7Hz EMI limits for traction current
  - **3.2.2.6.** 3kV DC & 1.5 kV DC, EMI limits for traction current
  - **3.2.2.7.** Measurement, test and evaluation specification
  - **3.2.2.8.** Partial application of the frequency management
What is next?

• Application guide for the interface document
• Extension of the application not only at « influencing unit » level
• Specific cases for non TSI compliant train detection systems
Derailment Detection Devices
Questions received at TSI-QA-2023@era.europa.eu

- Are the derailment detection devices mandatory in WAG and LOC&PAS TSI?
- What exactly are the functions of these devices?
LOC&PAS TSI
- 4.2.9.3.7 Derailment detection and prevention signal processing
- 4.2.9.3.7a On-board derailment detection and prevention function

WAG TSI
- 4.2.3.5.3 Derailment detection and prevention function
  - 4.2.3.5.3.1 General requirements
  - 4.2.3.5.3.2 Derailment prevention function (DPF)
  - 4.2.3.5.3.3 Derailment detection function (DDF)
  - 4.2.3.5.3.4 Derailment detection and actuation function (DDAF)

All the clauses above are voluntary? Yes!
However, if derailment detection and protection is fitted, it has to be in accordance with the TSI.
The DPF/DDF can be fitted in the locomotive in accordance with clause 4.2.9.3.7a of TSI LOC&PAS.

Signal processing in accordance with point 4.2.9.3.7 of TSI LOC&PAS.

The precursor to derailment detected.

Derailment detected.
Derailment Prevention

DPF

The DPF/DDF can be fitted in the freight wagons in accordance with clauses 4.2.3.5.3.2/4.2.3.5.3.3 of TSI WAG.

Derailment Detection

DDF

Signal processing in accordance with point 4.2.9.3.7 of TSI LOC&PAS.

 precursor to derailment detected

derailment detected

DPF and DDF both in Locomotive and freight wagon
Additional issues related to DDF/DPF

Derailment
Prevention
DPF

The DPF/DDF fitted in the freight wagons may send the signal to the driver’s cab of the locomotive via an electronic tool (e.g., a tablet).

Derailment
Detection
DDF

In such case, the requirements of signal processing set out in TSI LOC&PAS do not apply (the tablet is outside the scope of the TSI LOC&PAS)
Additional issues related to DDF/DPF

Is it possible to couple freight wagons fitted with DDF/DPF with a locomotive not fitted with DDF/DPF?

Yes! – The result will be a freight train without DDF/DPF (which is anyway allowed)

Is it possible to couple freight wagons not fitted with DDF/DPF with a locomotive fitted with DDF/DPF?

Yes! – The result will be a freight train without DDF/DPF (which is anyway allowed)
Other function available

Derailment Detection and Actuation DDAF

Application of brakes
No driver override →
The risk of false derailment detections shall be limited to an acceptable level.
DDAF can be isolated directly in the wagon when stopped.

It is allowed to combine functions:

• DPF and DDF
• DPF and DDAF
Application of the TSIs to Special Vehicles
Questions received at
TSI-QA-2023@era.europa.eu

• What are the special vehicles concerned?

• How TSIs apply to them?
Special vehicles such as OTMs

TSI amendment 2023 introduce definitions of special vehicles:

• **On Track Machines**: designed for construction and maintenance of the track and infrastructure.

• **Infrastructure Inspection Vehicles**: monitor the condition of the infrastructure.

• **Environment vehicles**: designed for clearance of the track from environmental conditions.

• **Emergency vehicles**: designed for specific emergency use such as evacuation, firefighting, and recovery of trains.

• **Road-Rail vehicles**: self-propelled machines able to move on rails and on the ground.
• **In the scope of RST TSIs when:**
  • running on its own rail wheels (in running mode self-propelled or hauled), and
  • intended to be detected by a track-based train detection system.

• **For hauled special vehicle:**
  • Applicant can apply either the **WAG TSI** or the **LOC&PAS TSI** depending on the characteristics and the intended use of the vehicle in question in comparison with the technical scope of the respective TSIs.

• **Not in the scope of RST TSIs:**
  • Special vehicles in **working mode, travelling mode**.
  • **Road-Rail** vehicles.
How TSIs apply?
LOC&PAS 7.1.1.3
NOI

• Area of use of more than one MS (7.1.1.3(1)):
  • Compliance with TSI LOC&PAS and the TSI NOI is mandatory.
  • Transition regime of 7 Years (table L1)

• Area of use of one MS (7.1.1.3(2), 7.1.1.3(3)):
  • Compliance with TSI LOC&PAS and TSI NOI (except for assessment of the driver's cab interior noise level) is not mandatory:
    • Applicant may decide to apply TSIs.
    • Applicant may apply NRs as regards the basic parameters of TSIs with following conditions:
      • If NRs “different to TSIs” do not exist, compliance with TSIs is mandatory.
      • If NRs “cover partially TSIs parameters”, the application of TSIs is mandatory for parameters not covered. NoBo delivers certificate limited to parameters assessed.
      • If NRs “different to TSIs exist”, special vehicle may be authorised against NRs.
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- How TSI NOISE apply to special vehicle?
• **TSI NOI is mandatory** when AoU is **more than one MS.**

• **TSI NOI is not mandatory** when special vehicle comply **only with NRs** as allowed in 7.1.1.3(2) **except for** assessment of the driver's cab interior noise level as referred in point 4.2.4 of TSI NOI:
  • Table 5 of TSI NOI provides Limit values for driver's cab interior noise.
  • These limit values **are not mandatory** for special vehicles. However, the demonstration of conformity referred to in point 6.2.2.4 shall be **performed** and the resulting values shall be **recorded in the technical file.**
Questions received at TSI-QA-2023@era.europa.eu

- How ongoing projects are impacted?
- What about extension of area of use?
How my ongoing projects may be impacted by point 7.1.1.3(1)?

Application to ongoing projects:

As defined in table L1, compliance with the previous TSI does not imply compliance with the version of this TSI:

- Projects already in **design phase** shall comply with the requirement of this TSI from the date of entry into force of this **TSI + 7 years**.
- Projects in **production phase and rolling stock in operation** are **not affected** by the TSI requirements listed in Table L.1.

For special vehicle where national rules where applied instead of TSIs, the **design phase** is the period starting once a **DeBo** is contracted by the applicant and ending when the certificate of verification is issued.
What happens in case of extension of AoU? LOC&PAS 7.1.1.3

- **Case of Extension of area of use:**
  - When a special vehicle will have its area of use extended, the applicant can also decide to use NRs instead of the applicable TSI requirements if for the previous authorisation it also decided to apply NRs.
Acoustic assessment of composite brake blocks at IC level
What are the new acoustic characteristics to be assessed at IC level for composite brake blocks?
Where in the TSIs?

**TSI NOI**

- 4.2.3.a. Friction elements for wheel tread brakes
- 5. INTEROPERABILITY CONSTITUENTS
  - 5.2.1. Friction element for wheel tread brakes
- 6. CONFORMITY ASSESSMENT AND EC VERIFICATION
  - 6.1.2.1. Friction element for wheel tread brakes of freight wagons
- Appendix F - ASSESSMENT OF ACOUSTIC PERFORMANCE OF A BRAKE BLOCK
A new (and existing) IC

- IC ‘friction element for wheel tread brake’ (brake blocks) already had requirements in the TSI WAG (for braking performance)

- In the revised TSI Noise, there are additional requirements for the acoustical certification.

- The same component needs to be assessed at IC level against both TSIs
  - The testing process (bench test) is very similar, so the economical cost is kept controlled.
  - Existing exemptions for the TSI WAG are kept for the requirements of the TSI WAG only
  - New exemptions are defined in the TSI Noise for the requirements of the TSI Noise only

If a freight wagon under assessment is fitted with acoustically certified blocks, this means that such wagon fulfils the TSI Noise?

No! The wagons must be assessed at subsystem level against the TSI Noise (pass-by Noise) in any case.
Standards in the TSIs
Questions received at TSI-QA-2023@era.europa.eu

Many can be summarized as:

• Are standard referred to in TSI mandatory?
Standards in European Railway regulation can be:

**Mandatory** when a direct reference to the standard is made in the TSIs (or in the documents quoted in TSIs).

The application of standards quoted in TSI is mandatory. The version quoted in TSI is the one to be applied even if a new revision of the standard is available.

**Voluntary** when the standard provides presumption of conformity to a TSI requirement. The standard should then be listed in the European Union Official Journal (OJEU) and should contain an annex ZA/ZZ defining the presumption of conformity.

The application of these standards is not mandatory, the applicant can use other specifications to demonstrate the compliance to the TSI requirement. This demonstration will be assessed by the notified body.

The list can be found here: https://single-market-economy.ec.europa.eu/single-market/european-standards/harmonised-standards/rail-system-interoperability_en
How many Standards

**Mandatory Standards:**
- In the TSI package 2023 there are 168 Mandatory Standards.
- Some standards are quoted in several TSI. Therefore, there are around 220 references to standards in all TSIs.

**Voluntary standards:**
- Voluntary standards: the official list of voluntary harmonised standard for publication in the OJEU is still under discussion and is composed for the time being of 123 standards.
- 144 standards are quoted in the application guides.
Mandatory harmonised standards

- **Scope and definitions**
  - Chapters 1+2

- **Links with essential requirements**
  - Chapter 3

- **Functional and technical specs subsys.**
  - Chapter 4

- **Interoperability Constituents**
  - Chapter 5

- **Conformity assessment + EC verification**
  - Chapter 6

- **Implementation strategy**
  - Chapter 7

[Art. 4.8 IOD]:
“TSIs may make an explicit, clearly identified reference to European or international standards or specifications or technical documents published by the Agency where this is strictly necessary in order to achieve the objectives of this Directive [...] “

- Mandatory clauses of referenced standards are summarised in an Appendix of the TSI
  (e.g. Appendix J in LOC PAS TSI and Appendix D in WAG TSI)
References to standards are detailed in a specific Appendix, except for specific cases.

### 4.2.3.4.1. Safety against derailment running on twisted track

1. The unit shall be designed to ensure safe running on twisted tracks and cross level deviations.
2. The conformity assessment procedure is described in clause 6.2.3.3. This conformity assessment procedure is applicable for axle loads in the referenced in Annex J-1, index [9].

It is not applicable to vehicle designed for higher axle load, such cases may require testing in Chapter 6 of this TSI.

### 6.2.3.3. Safety against derailment running on twisted track

#### ▼ M3

1. The demonstration of conformity shall be carried out in accordance with one of the methods specified in the specification referenced in Appendix J-1.

### 7.3.2.5. Running dynamic behaviour (4.2.3.4.2, 6.2.3.4)

Specific case Spain ("P")

For the normalisation of the estimated value to the radius \( R_m = 350 \) m according to point 7.6.3.2.6 (2) of EN 14363:2016 the formula \( Y_{a,n,f,qst} = Y_{a,f,qst} - (10 \ 500 \ \text{m}/R_m - 30) \ \text{kN} \) shall be replaced by \( Y_{a,n,f,qst} = Y_{a,f,qst} - (11 \ 500 \ \text{m}/R_m - 33) \ \text{kN} \).

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Questions received at TSI-QA-2023@era.europa.eu

Many can be summarized as:

• How to identify a harmonized standard giving presumption of conformity
Voluntary harmonised standards

Note
TSI Application guides explain how TSIs may be applied and list voluntary standards giving presumption of conformity to TSI requirements.

Voluntary harmonised standards referring to TSIs

- Voluntary harmonised standards may refer to TSI chapters when they give presumption of conformity to them (in addition to the mandatory clauses referred to in the TSIs). In this case their Annex ZA/ZZ shall reflect this.

- All harmonised standards are listed in the OJEU.
Voluntary harmonised standards


EN14813:2006+A1:2010 is referred to in communication 52018XC0810(06)

⇒ List of harmonised standards

Annex ZA of EN 14813-1 refers to clause 4.2.9.1.7 of TSI Loc&Pas, and quote chapter 9.5 of the standard.
Voluntary harmonised standards

Extract from the Loc&Pas TSI Application guide

2.4.67. Clause 4.2.9.1.7: Climate control and air quality

“(2) At the seated driving position (as defined in the clause 4.2.9.1.3) of the driver’s head and shoulders, there shall be no air flows caused by the ventilation system having an air velocity exceeding the limit value recognised to ensure a proper working environment.”

An acceptable limit value for the air velocity is set out in EN14813-1:2006+A1:2010, clause 9.5; the measurement procedure of air velocity is specified in EN14813-2:2006+A1:2010, clause 6.2. It is permitted to provide to the driver a means to adjust the air velocity and/or to direct the air flow for his own comfort; in that case, the acceptable limit should be reached for at least one position of the adjustment system.

There is no requirement in the TSI regarding the temperature in the cab, excepted when the applicant covers severe climatic conditions as described in clause 4.2.6.1. In any case, real operating and working conditions should be taken into account by the railway undertaking (user of the vehicle) and are outside of scope of this TSI.

Extract from EN 14813-1:2006+A1:2010

9.5 Air speed

The air speed in the comfort envelope shall be between the maximum and minimum values defined in Annex A.

In stabilised operation the fluctuation of the air speed at the supply air outlets shall be in a tolerance range of ±20 % of the mean air velocity.

Important: The guide can provide further information for the usage of standard but the official list is the one provided in the Official journal.
Questions received at TSI-QA-2023@era.europa.eu

Many can be summarized as:

- How is ensured the timely update of the references to mandatory standards in TSI.
Starting point in May 2020:

- 162 standards quoted in all TSIs.
- 29 standards ok (latest version quoted, precise clauses quoted...).
- 133 Standards with issues (not latest version quoted or unprecise clauses).

Status in TSI Package

168 up to date (as of 03/2023) standards quoted in TSIs.

Note: specific cases were updated on request of the Member state.
• Review the new standards and keep the TSI up to date.
  • ERA will issue once a year a Technical Opinion on standards, where new version of standards will be assessed and, where appropriate, declared as an alternative acceptable means of compliant toward TSI, waiting for a TSI update.

• Review the number of mandatory standards.

• Contribute to the development of the next standardisation request.
Q&A
THANK YOU

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