TSI Revision Package 2023: Key Changes
Part I – Rolling stock and CCS

15 June 2023
12.00 [CEST]

Welcome! Webinar to start soon!
Speakers

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TSI package 2023 - status

Texts adopted by the Railway Interoperability and Safety Committee (RISC) on 30 March 2023 (Comitology Register (europa.eu))

1. Commission Implementing Regulation amending Commission Regulations (EU):
   • No 321/2013 (WAG TSI),
   • No 1299/2014 (INF TSI),
   • No 1300/2014 (PRM TSI),
   • No 1301/2014 (ENE TSI),
   • No 1302/2014 (LOC&PAS TSI),
   • No 1304/2014 (NOI TSI)
   • and Commission Implementing Regulation (EU) 2019/777 (RINF)


3. Commission Implementing Regulation repealing Regulation (EU) 2016/919 (CCS TSI)

4. Commission Implementing Decision amending Implementing Decision 2011/665/EU (ERATV)

Translations ongoing - Publication and entry into force expected during summer 2023
Focus on some aspects of the TSI package for the subsystems rolling stock and CCS:

• Unique authorisation for passenger coaches;
• Derailment detection and prevention for freight wagons;
• Noise assessment of composite brake blocks at IC level;
• New transition regime for TSIs applicable to rolling stock and CCS;
• Framework to manage the specification changes;
• Enhancements (ATO, FRMCS and DAC readiness) and system versions;
“Unique authorisation” for passenger coaches
• 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
What did we want to achieve?

Authorise a

in all

with a single

Authorisation delivered by ERA

No National Safety Authority

No National rule

No Designated Body
No national rule?

Cleaning up national rules: process ongoing since 2016

Some remaining rules apply to coaches:

- Integration in the TSI
  - General requirement
  - Specific case

- Reduction of scope
Specific issue with national rules: Compatibility with train detection systems

Principle: to express the characteristics of the vehicles/trains and of the train detection systems in an harmonised way, i.e. the frequency management principle

Pending the notification of specific cases referred to in Article 13 of CCS TSI, the notified national rules remain applicable
Difference between coaches used in predefined formations and coaches for general operation

- All coaches are from the same platform of Manufacturer A
  - No Interfaces to specify – point 7.1.1.5.1

- Coaches from different manufacturers
  - Interfaces are to be specified in addition to the other reqs
  - Point 7.1.1.5.2 in addition to 7.1.1.5.1
Derailment detection and prevention for freight wagons
Where in the TSIs?

**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)
The different functions available (1)

Derailment Prevention
DPF

The DPF/DDF can be fitted in the freight wagon in accordance with clauses 4.2.3.5.3.2/4.2.3.5.3.3 of TSI WAG or in the locomotive in accordance with clause 4.2.9.3.7a of TSI LOC&PAS

Derailment Detection
DDF

In any case, the signal processing will be in accordance with point 4.2.9.3.7 of TSI LOC&PAS.
The different functions available (2)

Derailment Detection and Actuation DDAF

Application of brakes
No driver override à
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
Acoustic assessment of composite brake blocks at IC level
Where in the TSIs?

• 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
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.

Important! The wagons must be assessed at subsystem level against the TSI Noise (pass-by Noise) in any case.
The new transition regime defined in TSIs LOC&PAS, WAG and CCS
Where in the TSIs?

LOC&PAS TSI

• 7.1.1.1. Application to newly built rolling stock
• 7.1.1.2. Application to ongoing projects
• 7.1.3. Rules related to the EC type or design examination certificates.
• Appendix L - Changes of requirements and transition regimes

WAG TSI

• 7.1 Authorisation for placing on the market
• 7.1.1 Application to ongoing projects
• 7.2.3. Rules related to the EC type or design examination certificates
• Appendix A - Changes of requirements and transition regimes

CCS TSI

• 7.2.4. EC type or design examination certificates
• Appendix B - Changes of requirements and transition regimes
Application to the Rolling Stock subsystem
Phases of a project

**DESIGN PHASE**
- Contracting NoBo
- ‘EC’ type or design examination certificate issued

**PRODUCTION PHASE**
- INITIAL ASSESSMENT FRAMEWORK = applicable TSIs at that time
- CERTIFICATION FRAMEWORK = applicable TSIs at that time

Humm, looks exactly like phase A/B... again a change for the sake of change
Why introducing new terms?
1st change compared to phase A / phase B

DESIGN PHASE = PHASE A?
Wrong!

PRODUCTION PHASE = PHASE B?
Wrong!

NO LIMIT IN TIME

NO LIMIT IN TIME
Issuing the ‘EC’ type or design examination certificate
2nd change to the phase A/B principles

The notified body shall issue the EC type or design examination certificate referring to the certification framework.
Assessment according to the certification framework requires categorisation of TSIs changes

Essential statement in the TSIs:

Compliance with the “previous TSI” is deemed equivalent to compliance with this TSI, except for changes listed in Appendix*.

Appendix* lists the changes made to the TSI and assigns a transition regime to each change:

• Changes with a **generic transition regime** of 7 years
• Changes with a **specific transition regime**

* Appendix A in WAG TSI, B in CCS, L in LOC&PAS, P in PRM, H in NOI
What happens when new TSIs enter into force during the design phase?

Entry into force of TSIs n+1

Application of changes listed in Appendix*

Changes with a generic transition regime = 7 years

Changes with a specific transition regime = variable per change
What happens when several new TSIs enter into force during the design phase?

**DESIGN PHASE**

- **Entry into force of TSIs n+1**
  - Application of changes listed in Appendix*
  - Changes with a generic transition regime = 7 years
  - Changes with a specific transition regime = variable per change

- **Entry into force of TSIs n+2**
  - Application of changes listed in Appendix*
  - Changes with a generic transition regime = 7 years
  - Changes with a specific transition regime = variable per change

*CERTIFICATION FRAMEWORK*  
TSIs n+2
Only the changes to the TSIs with a specific transition regime can apply to Rolling Stock in production phase or to Rolling Stock in operation and make a type invalid.
• A design phase can cover a type and one or several type variant(s) and type version(s).

• For all type variant(s) and type version(s), the design phase is considered as starting at the same time as for the main type.
  • This means that the Initial Assessment Framework of the variant/version is the same as for the main type (see next slide)
Application to the CCS subsystems
CCS Transition Regimes

Introduced for the first time in the CCS TSI (Appendix B):

• Synchronised approach for the vehicle.
• Cascade principle.

Specific requirements for:

• CCS On-board Subsystems (Table B1.1).
• RST Subsystem (TDC) (Table B1.2).
• CCS Trackside Subsystems (Table B2).
• CCS Interoperability Constituents (Table B3*).

*CCS Subsystem transition periods apply unless specified in this table.
<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>
<th>Transition regime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Design phase started after TSI enters into force</td>
</tr>
<tr>
<td>CMD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4.2.2 (b) – Cold Movement Detection</td>
<td>CMD Optional</td>
<td>CMD Mandatory</td>
<td>Directly applicable when ETCS is installed for the first time into a vehicle design.</td>
</tr>
</tbody>
</table>
CCS TSI
Framework to manage the specification changes
Main changes in the text of the CCS TSI

Framework to manage the specification changes

- Error corrections / specification maintenance (Section 7.2.10)
- Single set of specifications in Appendix A
- Removal of partial fulfilment (Appendix G)

- Stronger and clearer obligations on ERTMS deployment
- Migration and Transition phases (Appendix B)
- Railway Mobile Radio (RMR) and FRMCS concept introduction
  Parts/Interoperability Constituents for new functionalities (ATO part, FRMCS ICs)

\[ RMR = \text{GSM-R + FRMCS} \]
Specifications error corrections workflow

7.2.10.1  
ECT process  
“Art 10” CR List
- Sector agreement on specification errors preventing normal service (also known as “Art 10” CR)\(^1\)
- Questionnaires sent to suppliers, RUs and IMs to analyse the impact on existing products /projects.

7.2.10.3.1  
IMs
- Check list of “Art 10” CRs with the ETCS implementations on their network
- Evaluate impact of “Art 10” CRs on current fleet to optionally implement mitigation measures\(^2\).
- Publish in RINF the final list of applicable “Art 10” CRs required for each section.

7.2.10.3.2  
RUs
- Compare the applicable list from RINF with the system implemented on the vehicles\(^2\) to identify if it is necessary to implement the error correction. If so implement the change on the concerned vehicles\(^3\).

7.2.10.2  
Suppliers
- Suppliers to update the impacted ICs according to transition requirements.

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\(^1\) This is the current process already followed since 2016 for the Agency OPI 2017-02 and 2020-02. In the revised CCS TSI the old “Article 10” about error corrections is now “Article 9”.

\(^2\) The evaluation is done on the basis of information provided in the questionnaires. Mitigation measures can be implemented on a voluntary basis by the IMs.

\(^3\) The change shall be evaluated according with the BDCs if requiring or not a new authorisation.
1. Not keeping specifications with known errors in the legal framework.
2. Decouple the error correction from introduction of new functionalities.

Former sets #1, #2 and #3 removed from Appendix A and will be archived in the Agency website.

**On-Board:** Reduced envelope based on SS-153. Possibility to use baseline 3 sets of specifications #2 and #3 according to transition periods in table B1.1 (rows 9 and 10). It is required to implement applicable error corrections.

**Trackside:** Can be deployed based on all previous system versions based on SRS Chapter 6.

**Single set of specifications**
Obtain a **better alignment** between the products and the specifications.

- In case **new errors** are detected (mostly for newly introduced functionality) proprietary solutions are allowed until an harmonised solution is agreed, based on validation of the CR - Point 6.5 (2).

- “**Overspecification**”: Create a CR to amend the specifications.

- **Exceptional cases**: Appendix G
  - DMI SIL-0 in case of B2 fleet upgrade.
  - Functions for on-board SV 2.1 and 2.2.
  - SS-034 options at IC (catenary independent engines).

- Trigger events for the update.
CCS TSI
Enhancements and system versions
New Features in Appendix A

ATO
Introduction GoA 2

FRMCS v1
ETCS/ATO readiness for FRMCS

Modularity

Level 2
with/without train integrity (merge level 2 and 3)

ETCS DAC readiness

Reduced envelope SS-153 (Single set of specifications)*

Train Detection Compatibility updated to V5.0 (closing all related open points)

*SS-153 still Reserved
ETCS system version 3.0

**Why?**
- Obsolescence of GSM-R / introduction of FRMCS.
- New functionalities (enhancements) requested by the sector (e.g. supervised manoeuvres).

**What it will bring?**
- Possibility to optimise investment when equipping ETCS for first time.
- Opportunity to decouple railway applications from telecom transport layers in the future. (easy update for 6G, 7G, 8G,...)
ETCS system versions

New ETCS system versions introduced:

- **ATO**: introduced in ETCS system version 2.2 as compatible function (backwards and forwards).

**FRMCS/DAC (Supervised manoeuvres) readiness:**
For on-board: introduced as part of ETCS system version 3.0 (backwards compatible).
For trackside:
- As incompatible function (system version 3.0) when only FRMCS is available/no shunting signals.
- As compatible function (system version 2.3) when both GSM-R and FRMCS/shunting signals are available.
On-board reduced envelope and SS-153

Consolidated specifications (SS-153) for the reduced on-board defining the not applicable clauses for envelopes up to 2.1 and 2.2 will be ready during 2023.

Until then, on-board envelopes 2.1 and 2.2 can be based on the full on-board envelope 3.0 minus the individual enhancement CR solutions listed in Appendix G.
Questions & Answers
Your Feedback
Upcoming Events

Safety Leadership Training

19 June 2023, 09.00-17.00
Valenciennes, France
Upcoming Events

TSI Revision Package 2023 - Key Changes
(Part II - Fixed Installations and Operation)

6 July 2023, 12.00-13.00
Upcoming Events

ETCR Seminar

3-14 July 2023
Bruges, Brussels, Antwerp – Belgium
Upcoming Events

European Rail Safety Days 2023

20-22 September 2023
Tallinn, Estonia
ERA is migrating its OSS IT infrastructure to the Microsoft Azure cloud.

ERA has already contacted all the OSS Users, asking specific actions to finalise their account in OSS.

Read carefully all the communication sent to you by ERA and follow the indications provided.

Your access to OSS could be withdrawn.

If you have any issue in performing the actions provided on screen, contact us without any delay.
THANK YOU

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