

1. Introduction

This annex is intended to present the analysis made by ERA in order to close the open point related to 'Running dynamic behaviour' in section 6.2.2.3 of the WAG TSI, based on a proposal of CEN WG10 and the release of EN 14363:2016.

2. Background of the proposed approach

The objective was to close the open point related to "Running dynamic behaviour", in WAG TSI, taking the same principles used to close the identical one in the LOC&PAS TSI.

As we can compare below, for the related open point in WAG TSI, the same open point was part of the repealed RST TSI's.

In clause 6.2.2.3 of WAG TSI (321/2013):

"The required test conditions for on-track tests, as set out in EN 14363:2005, are not always fully achievable concerning

- track geometric quality, and*
- combinations of speed, curvature, cant deficiency.*

In cases this is not fully achievable the demonstration of conformity is an open point"

In clause 4.2.3.4.2 of CR LOC&PAS TSI (2011/291/EU):

"(c) Quality of the track for tests and on-track tests:

Tests conditions: EN14363 defines test conditions for on-track tests which have been agreed as a reference.

However these test conditions are not always achievable, due to constraints related to the zone where the test is performed, in the following areas:

- Track geometric quality.*
- Combinations of speed, curvature, cant deficiency (clause 5.4.2 of EN 14363).*

Regarding the track geometric quality, the specification of a reference track for tests, including limits of the track quality parameters which are defined in EN 13848-1, is an open point..."

In clause 4.2.3.4.1 of HS RST TSI (2008/232/EC):

"The EN14363 takes account of the present state of the art. However the requirements are not always achievable in the following areas:

- track geometric quality*
- combinations of speed, curvature, cant deficiency.*

These requirements remain as open points within this TSI"

3. Work done for the LOC&PAS TSI

Four open points related to dynamic behaviour were part of the former RST TSI's:

- Track quality for running dynamic tests (EN 14363 test conditions);
- Fulfilment of all test conditions of the proposed test method (EN 14363) in regard of combinations of speed, curvature and cant deficiency;
- The limit value of the quasi static guiding forces, Yqst (EN 14363 assessment criteria);
- In-service values of equivalent conicity.

All these open points were relevant for both the high speed and the conventional rail rolling stock TSIs except for the limit value of the quasi-static guiding forces, which was previously closed in CR LOC&PAS TSI.

The first three open points were linked with the test method chosen, which followed the approach of the EN 14363.

Even if this method is considered a validated method to prove the running safety of rolling stock, it poses several problems, as the test reports are rarely complete, as experienced. Therefore a report could never be assessed properly by a notified body and thus open points have been included in the old RST TSI's.

Furthermore, the track geometric quality levels where the test has to be performed, has been difficult to find in the past. Especially considering that the right track conditions has to be found at the right combinations of curvature and cant deficiency.

With the remit of the closure of these open points, a working group was launched by the Agency, composed by experts from both rolling stock and infrastructure side: WG DYN (2011 and 2012).

This working group was also aimed to support the work performed in the main working groups merging the high speed and conventional rail RST TSI's and those of the infrastructure subsystem.

CLOSURE OF THE OPEN POINTS:

The mentioned open points, on the testing of rolling stock dynamic behaviour, were proposed to be closed by simplifying the test conditions in regard of the number of conditions to be met. This analysis on simplifying the test conditions was held by the standardization working group CEN WG 10.

The deliverable for materializing this objective was by mean of a list of conditions, methods and track geometric quality for the running dynamic behaviour testing, provided for inclusion in an annex of the (merged) LOC&PAS TSI, and amending the EN 14363:2005: ERA/TD/2012-17/INT: Running Dynamics - Application of EN 14363:2005 – Modifications and Clarifications.

This document is intended to complement the LOC&PAS TSI, pre-empting the publication of the appropriate EN 14363 revisions, at which point the TSI will refer to them and this technical document will be withdrawn.

SURVEY GROUP "TRACK GEOMETRY QUALITY"

Furthermore, the Survey Group "Track Geometry Quality" was created in order to clarify the description of track geometry from both sides: Vehicle-Track Interaction (usually active in WG 10) and Track Maintenance (usually active in WG 28).

The aim of this group has been assigned in two practical objectives:

- stage 1 (short term): using the current description of track quality, propose a provisional way to close the open point;

- stage 2 (long term): define a new description of track quality, better correlated to wheel-rail forces and accelerations measured on the vehicles, and propose associated threshold values for EN 14363.

It was observed that, regarding track geometric quality, there will always be discrepancies between the values specified in EN 14363 for vehicles acceptance (test conditions), the values specified in track maintenance standards and the real values experienced by the vehicles in service (operating conditions).

In spite of these differences, it is assumed - and confirmed by experience - that the vehicles tested in compliance with EN 14363 (with the test track quality conditions achievable in practice) can be operated safely on the lines maintained in accordance with existing track maintenance standards:

- up to a certain level of track deterioration, these vehicles can be operated at their design speed and cant deficiency values;
- beyond this level, the general operating rules (for example speed and/or cant deficiency restrictions) applied by the Infrastructure Manager ensure running safety of all vehicles.

However, it was also concluded that there was an important gap between EN 14363:2005 specified test conditions and real track qualities (both on the European networks and on the currently used test routes), making the requirements inadequate in terms of feasibility and representativeness.

It was observed, sometimes that tests at worse track quality in a lower speed class may represent a more critical situation than a test at maximum speed at better track quality. This could be reflected in future test procedures.

As a conclusion of this work, WG 10 will use the results of WG 28 survey and TQC (track quality classes) defined in Part 6 of prEN 13848 to replace the current QN1 and QN2 thresholds specified in EN 14363 by new target values or ranges, consistent with the actual European track qualities.

Note: EN 14363:2005 defines 2 quality levels: QN1 and QN2.

4. The closure of the open point, related to running dynamic behaviour, in WAG TSI

As for LOC&PAS TSI, specific references could be made to the produced technical document (ERA/TD/2012-17/INT) on the WAG TSI; however, this document has a provisory status as explained above. The revision of EN 14363 is finished with the published EN 14363:2016 and in accordance to Recommendation N. ERA-REC-120-2015/REC, the Agency proposed to withdraw the referred technical document (ERA/TD/2012-17/INT).

In conclusion, with the publication of EN 16235:2013, the revised EN14363:2016, the amended EN 15839:2012, and the necessary adjustments in the WAG TSI, an effective proposal for the closure of the concerned open point is made in the Agency's Recommendation N.ERA-REC-117-2016/REC.