



C/2025/2766

20.5.2025

## COMMISSION OPINION

of 16 May 2025

**on innovative solution pursuant to Article 10 of Regulation (EU) No 1302/2014 for the application of the EPS wheel profile for speeds higher than 230 km/h and up to 250 km/h**

**(Only the English text is authentic)**

(C/2025/2766)

### Necessity for the opinion

The technical specifications for interoperability ('TSI') on rolling stock and signalling relating to the European railway system provide for specific authorisation regimes to keep pace with technical evolution in the railway sector, e.g. as regards new technologies or materials as well as modern assessment methods. The authorisation of innovative technical solutions may hence be possible despite their deviation from current requirements in the TSI, provided that their interoperability and safety are proven.

The Commission may request an opinion of the European Union Agency for Railways ('the Agency') in accordance with Article 10(3) of Commission Regulation (EU) No 1302/2014 <sup>(1)</sup> on the proposed innovative solution before delivering its opinion as laid down in Article 10(4) of that regulation. In case of a positive Commission opinion on the innovative solution proposed, and pending the review of the TSI, the positive opinion shall be considered as acceptable means of compliance with the essential requirements of Directive (EU) 2016/797 <sup>(2)</sup> that may be used for the compliance assessment of projects.

### Background

On 2 May 2024, the Commission received from Alstom Transportation Germany GmbH ('Alstom'), in accordance with Article 10 of Regulation (EU) No 1302/2014, a request for a Commission opinion regarding an innovative solution for the application of the EPS wheel profiles, for speeds higher than 230 km/h and up to 250 km/h, on the 1 435 mm track gauge networks, with a rail inclination of '1 in 20'.

The proposal from Alstom is to deviate from the equivalent conicity limit values set for the EPS wheel profile and from the assessment methods for the testing and validation of wheel profiles laid down in point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014. Alstom justified its request as the limit values cannot be met by applying the currently available assessment methods.

Alstom declared the respective deviation from the provisions set out in point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014 and proposed alternative assessment methods in accordance with the newly developed standard EN 14363:2016+A2:2022.

The Commission requested the Agency to draw up a technical opinion on the proposed innovative solution pursuant to Article 10(3) of Regulation (EU) No 1302/2014.

### Assessment of the case

According to the Agency's opinion ERA/OPI/2024-6, the EPS profile is a widely used wheel profile in Europe. It allows for high passenger comfort with respect to high speeds and curves as compared to other wheel profiles. Furthermore, the rolling contact fatigue is lower compared to other wheel profiles, hence allowing for reduction of maintenance costs both for the railway undertaking and for the infrastructure manager.

<sup>(1)</sup> Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the 'rolling stock – locomotives and passenger rolling stock' subsystem of the rail system in the European Union (OJ L 356, 12.12.2014, p. 228, ELI: <http://data.europa.eu/eli/reg/2014/1302/oj>).

<sup>(2)</sup> Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (OJ L 138, 26.5.2016, p. 44, ELI: <http://data.europa.eu/eli/dir/2016/797/oj>).

For speeds higher than 230 km/h and up to 250 km/h the EPS wheel profile does not meet the starting limit values for the equivalent conicity for a rail inclination of '1 in 20', as laid down in point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014.

Those starting values for the equivalent conicities were first introduced in 2008 by Commission Decision 2008/232/EC<sup>(3)</sup> and remained unchanged ever since. The values refer to the unworn wheel and do not consider any increase of the equivalent conicity while the wheel is in service.

In the last 16 years, assessment methods have been developed taking better account of the wear of the wheel when in service. The standard EN 14363:2016+A1:2018 describes assessment methods and test conditions taking into account the wheel wear over time in operation, which are stricter and more accurate than the limits provided so far in point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014.

Having also considered the requirements laid down in point 4.2.3.4.3.2 of the Annex to Regulation (EU) No 1302/2014 relating to in-service values of wheelset equivalent conicity, the Agency in its opinion concludes that it is more important to test the relevant range of operation of the vehicle as set out in the EN 14363:2016+A1:2018 standard than establishing the starting values of an unworn wheel as set out in point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014.

The Agency is of the opinion that the EPS wheel profile can be used on 1 435 mm network with rail inclination '1 in 20', '1 in 30' and '1 in 40' for speed up to 250 km/h with some additional conditions. The Agency considers this approach valid for a revision of point 6.2.3.6. of the Annex to Regulation (EU) No 1302/2014.

Pending the revision of Regulation (EU) No 1302/2014, the Agency issued the following alternative provisions for the use of the EPS wheel profile on the 1 435 mm or 1 437 mm track gauge network with rail inclinations '1 in 20', '1 in 30' and '1 in 40' and maximum vehicle operating speeds higher than 230 km/h and up to 250 km/h.

#### Acceptable means of compliance (AMOC) for the application of the innovative solution:

Requirements in Regulation (EU) No 1302/2014	Acceptable means of compliance pending the revision of Regulation (EU) No 1302/2014
<p>4.2.3.4.3.1.(2)</p> <p>A new wheel profile and the distance between active faces of the wheels shall be checked in respect of target equivalent conicities using the calculation scenarios provided in point 6.2.3.6 of this TSI in order to establish the suitability of the new proposed wheel profile for infrastructure in accordance with the TSI INF.</p>	<p>For the use of the EPS wheel profile on the 1 435 mm or 1 437 mm track gauge network with rail inclinations '1 in 20', '1 in 30' and '1 in 40' and maximum vehicle operating speeds higher than 230 km/h and up to 250 km/h the following conditions apply:</p>

<sup>(3)</sup> Commission Decision 2008/232/EC of 21 February 2008 concerning a technical specification for interoperability relating to the rolling stock sub-system of the trans-European high-speed rail system (OJ L 84, 26.3.2008, p. 132, ELI: <http://data.europa.eu/eli/dec/2008/232/oj>).

Requirements in Regulation (EU) No 1302/2014	Acceptable means of compliance pending the revision of Regulation (EU) No 1302/2014																																		
<p>6.2.3.6.</p> <p>For units designed to be operated on 1 435 mm track gauge system, the wheel profile and the distance between active faces of the wheels (Dimension SR in Figure 1, point 4.2.3.5.2.1) shall be selected to ensure that the equivalent conicity limit set out in Table 11 below is not exceeded when the designed wheelset is combined with each of the sample of track parameters as specified in Table 12 below.</p> <p>The evaluation of the equivalent conicity is set out in the specification referenced in Appendix J-1, index [9].</p> <p>Table 11 ‘Equivalent conicity design limit values’, line 4:</p> <table><tr><td>Max. vehicle operating speed (km/h)</td><td>Equivalent conicity limit values</td><td>Test conditions (see table 12)</td></tr><tr><td>&gt;230 and ≤ 280</td><td>0,20</td><td>1, 2, 3, 4, 5 and 6</td></tr></table> <p>Table 12 ‘Track test conditions for equivalent conicity representative of the network. All rail sections defined in the specification referenced in Appendix J-1, index [44]’, lines 1 to 6</p> <table><tr><td>Test condition no.</td><td>Rail head profile</td><td>Rail inclination</td><td>Track gauge (mm)</td></tr><tr><td>1</td><td>Rail section 60 E 1</td><td>1 in 20</td><td>1 435</td></tr><tr><td>2</td><td>Rail section 60 E 1</td><td>1 in 40</td><td>1 435</td></tr><tr><td>3</td><td>Rail section 60 E 1</td><td>1 in 20</td><td>1 437</td></tr><tr><td>4</td><td>Rail section 60 E 1</td><td>1 in 40</td><td>1 437</td></tr><tr><td>5</td><td>Rail section 60 E 2</td><td>1 in 40</td><td>1 435</td></tr><tr><td>6</td><td>Rail section 60 E 2</td><td>1 in 40</td><td>1 437</td></tr></table>	Max. vehicle operating speed (km/h)	Equivalent conicity limit values	Test conditions (see table 12)	>230 and ≤ 280	0,20	1, 2, 3, 4, 5 and 6	Test condition no.	Rail head profile	Rail inclination	Track gauge (mm)	1	Rail section 60 E 1	1 in 20	1 435	2	Rail section 60 E 1	1 in 40	1 435	3	Rail section 60 E 1	1 in 20	1 437	4	Rail section 60 E 1	1 in 40	1 437	5	Rail section 60 E 2	1 in 40	1 435	6	Rail section 60 E 2	1 in 40	1 437	<ol style="list-style-type: none"><li>1. Clause 6.2.3.6. applies but the limits for equivalent conicities can deviate from the limit values stated in table 11 but must stay in the range tested according to EN 14363:2016 +A2:2022.</li><li>2. In addition, the following measures shall be taken:<ol style="list-style-type: none"><li>(a) The vehicle shall be equipped with yaw dampers to guarantee a stable running behaviour, the yaw damper failure will be tested according to EN 14363. A failure of the system shall lead to the reduction of the speed to avoid any instability until the system is brought back to normal functional state.</li><li>(b) The vehicle shall be equipped with Instability Detection System. This function shall fulfil, at least, the safety integrity level SIL2. In the case of an instability detection the train shall be slowed down to be operated in a stable condition. A failure of the system shall lead to the reduction of the speed to avoid any instability until the system is brought back to normal functional state.</li></ol></li><li>3. During the introduction phase, the profile development of the wheel (according to wear) and the ride instabilities shall also be exemplary monitored till the first regular reprofiling of the wheels.</li></ol>
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### Impact assessment

The Agency is of the opinion that the cost for the compliance with the above introduced requirements is balanced by benefits as the wider range of operation of the vehicle equipped with EPS wheel profiles allows for higher speeds and guarantees enhanced passenger comfort as well as lower maintenance cost.

Potentially impacted stakeholders are railway undertakings, infrastructure managers, manufacturers as well as national safety authorities and the Agency regarding vehicle authorisations.

**Conclusion**

On the basis of the opinion of the Agency, the Commission takes the view that the technical solution proposed by Alstom for the application of the EPS wheel profile enables operation of trains on 1 435 mm track gauge networks with rail inclination of '1 in 20' at speeds higher than 230 km/h and up to 250 km/h in accordance with Directive (EU) 2016/797.

In conclusion, the Commission is of the opinion that the implementation of the abovementioned innovative solution constitutes an acceptable means of compliance with the essential requirements of Directive (EU) 2016/797 and may therefore be used for the assessment of the subsystem pending the respective revision of Regulation (EU) No 1302/2014.

Done at Brussels, 16 May 2025.

*For the Commission*  
Apostolos TZITZIKOSTAS  
*Member of the Commission*

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