SLOVENSKI STANDARD
SIST EN 50318:2019/oprAA:2021

01-marec-2021

Železniške naprave - Sistemi tokovnega odjema - Veljavnost simuliranja medsebojnih dinamičnih vplivov med tokovnim odjemnikom in kontaktnim vodnikom

Railway applications - Current collection systems - Validation of simulation of the dynamic interaction between pantograph and overhead contact line

Bahnanwendungen - Stromabnahmesysteme - Validierung von Simulationssystemen für das dynamische Zusammenwirken zwischen Dachstromabnehmer und Oberleitung

Applications ferroviaires - Systèmes de captage de courant - Validation des simulations de l'interaction dynamique entre le pantographe et la caténaire

Ta slovenski standard je istoveten z: **EN 50318:2018/prAA:2020**

ICS:

29.280	Električna vlečna oprema	Electric traction equipment

SIST EN 50318:2019/oprAA:2021 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
EN 50318:2018

prAA

December 2020

ICS

English Version

Railway applications - Current collection systems - Validation of simulation of the dynamic interaction between pantograph and overhead contact line

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This draft amendment prAA, if approved, will modify the European Standard EN 50318:2018; it is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2021-03-12.

It has been drawn up by CLC/SC 9XC.

If this draft becomes an amendment, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

This draft amendment was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 50318:2018/prAA:2020) has been prepared by SC 9XC, Electric supply and earthing systems for public transport equipment and ancillary apparatus (fixed installations), of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

This document is currently submitted to the Enquiry.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

1 Modification to the whole standard

Replace “LOC&PAS TSI” *by* “TSI LOC & PAS”

Replace “ENE TSI” *by* “TSI ENE”

Replace “contact line” *by* “overhead contact line”.

Replace “messenger (wire)” *by* “catenary (wire)”

2 Modification to 3.6, standard deviation

*After the term “*standard deviation*” add the specific use between angle brackets* “<of contact force>”

3 Modification to 3.15, transfer function < of a pantograph >

*Replace the first paragraph by “*ratio of an applied input on pantograph head to the response of the pantograph, depending on frequency”

4 Modification to 3.21, wave propagation speed of the contact wire

*Replace the title of 3.21 by “*wave propagation velocity <of the contact wire>”

5 Modification to 3.25, dynamic interaction

*Replace the first paragraph by “*behaviour between pantograph(s) and overhead contact line when in contact, described by contact forces and vertical displacements of contact point(s)”

6 Modification to Clause 4, Symbols and abbreviations

Add under the fourth line of the subclause “Abbreviations”:

“FFT fast Fourier transformation”

Add under the 9th line of the subclause “Abbreviations”:

“ROCL rigid overhead contact line”

7 Modification to 6.1, General requirements

*Replace the last paragraph by “*Aerodynamic effects on the pantograph shall as a minimum be considered by adjusting the mean contact force as a function of speed.”

8 Modification to 6.2.1, General

Replace the word “operation height” in the second paragraph by “contact wire height”

Replace the word “operation height” under the subclause NOTE by “contact wire height”

9 Modification to 6.2.2, Mass – spring – damper – models (lumped parameter models)

Replace the second bullet point by

“— stiffness characteristics of joints connecting the discrete masses, including any nonlinearity (if applicable)”;

Replace the third bullet point by:

“— damping characteristics of joints connecting the discrete masses, including any nonlinearity (if applicable)”;

Replace the last bullet point by the following sentence by (write as sentence and not as a bullet point): "The aerodynamic forces will be applied through a coefficient to every mass in order to apply an additional aerodynamic effort to the static effort."

10 Modification to 6.2.3, Multi-body models

*Replace the first paragraph by "*For multi-body models, additional to that described in 6.2.2, the following input is required":

11 Modification to 6.3, Validation of pantograph models

*Replace the 13th paragraph by "*For the calculation of Q, the frequencies with a measured apparent mass below 2 kg shall be excluded."

12 Modification to 7.1, General requirements

*Replace the third paragraph by "*ROCL have very small vertical displacements in operation. The validation of these models and interaction simulations is only possible for the contact force in direct comparison with the measured results."

13 Modification to 7.2, Data requirements

*Replace the text of the first bullet point by "*length of each span, or distance between supports";

14 Modification to 9.3, Contact wire displacement

*Replace the paragraph after the bullet point by "*The time history of the vertical position of the contact wire at any specified point shall be available for output."

15 Modification to 10.3.2, Deviations of pantograph characteristics

Replace the title of 10.3.2 by "10.3.2 Permissible changes of pantograph characteristics"

16 Modification to 10.3.3, Deviations of overhead contact line parameters

Replace the title of 10.3.3 by "10.3.3 Permissible changes of overhead contact line parameters"

17 Modification to 10.3.4, Deviations of simulation parameters

Replace the title of 10.3.4 by "10.3.4 Permissible changes of simulation parameters"

18 Modification to 11.4, Reference model results

*Replace the third paragraph by "*Simulation results shall be filtered in the frequency domain with the defined cut off frequencies."

19 Modification to A.2.2, Special data for the contact line reference model - AC – Simple

*Replace the first paragraph by "*The overhead contact line is defined by a simple catenary equipment with a single contact wire according to Figure A.1."

20 Modification to A.2.3, Special data for the reference model of contact line AC – Stitched

*Replace the first paragraph by "*The overhead contact line is defined by a simple catenary equipment with a single contact wire and stitched catenary suspensions according to Figure A.2."

21 Modification to A.2.4, Special data for the reference model of contact line DC – simple

*Replace the first sentence in the first paragraph by "*The overhead contact line is defined by a simple catenary equipment with twin contact wires (two contact wires suspended from a single catenary wire)."

22 Modification to B.1, Measurement results of simple AC high speed contact line

*Replace the title by "*B.1 Measurement results of simple AC high speed overhead contact line"

23 Modification to B.1.1.2, Parameters of simulation

*Replace the first sentence of the last paragraph by "*The overhead contact line is defined by a simple catenary equipment with a single contact wire and a single catenary wire."

24 Modification to B.1.1.3, Model parameter and mechanical data of OCL

*In Table B.1, replace "*EI" *as symbol for Young's Modulus by "*E*"*

25 Modification to B.1.1.4, Geometrical data of overhead contact line

*Replace the first sentence of the first paragraph by "*The overhead contact line is defined by a simple catenary equipment with a single contact wire and a single catenary wire on straight track."

26 Modification to B.1.1.6, Support definition

Replace Table B.8 by the following

Table B.8 — Support definition of tension length 1

Support number	1	2	3	4	5	6	7	8	9	10
Cumulative position [m]	0,00	42,25	86,95	132,25	177,75	222,75	267,75	312,75	357,75	402,75
CW height [m]	6,35	5,63	5,08	5,08	5,08	5,08	5,08	5,08	5,08	5,08
MW height [m]	6,85	6,88	7,08	6,48	6,48	6,48	6,48	6,48	6,48	6,48
CW stagger [m]	0	0,65	0,3	−0,25	0,1	−0,2	0,1	−0,2	0,1	−0,2
MW stagger [m]	0	0,65	0,3	−0,25	0,1	−0,2	0,1	−0,2	0,1	−0,2

Support number	11	12	13	14	15	16	17	18	19	20
Cumulative position [m]	452,25	501,75	551,25	600,75	650,25	699,75	749,25	798,75	848,25	897,75
CW height [m]	5,08	5,08	5,08	5,08	5,08	5,08	5,08	5,08	5,08	5,08
MW height [m]	6,48	6,48	6,48	6,48	6,48	6,48	6,48	6,48	6,48	6,48
CW stagger [m]	0,1	−0,2	0,1	−0,2	0,1	−0,2	0,1	−0,2	0,1	−0,2
MW stagger [m]	0,1	−0,2	0,1	−0,2	0,1	−0,2	0,1	−0,2	0,1	−0,2

Support number	21	22	23	24	25
Cumulative position [m]	947,25	997,25	1047,05	1096,25	1145,25
CW height [m]	5,08	5,08	5,08	5,63	6,35
MW height [m]	6,48	6,48	7,08	6,88	6,85
CW stagger [m]	0,2	−0,15	0,1	0,35	0
MW stagger [m]	0,2	−0,15	0,1	0,35	0