

**The Appendix is an integral part of
Certificate of Accreditation No. 428/2023 of 10/08/2023**

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Výzkumný Ústav Železniční, a.s.

CAB number 1462, VUZ Testing Laboratory

Novodvorská 1698/138b, Braník, 142 00 Praha 4

Testing laboratory locations:

- | | |
|---|---|
| 1. Testing Laboratory (Not carrying out the tests) | Novodvorská 1698, 142 01 Praha 4 - Braník |
| 2. Test Centre VUZ Velim | Za Dráhou 373281 02 Cerhenice |

The laboratory applies a flexible approach to the scope of accreditation.

Updated list of activities performed within the required flexible scope of accreditation is available at the laboratory (from the Laboratory Manager and on the laboratory website <https://www.cdvuz.cz/page/zkousky-draznich-vozidel>).

The laboratory is qualified to provide expert opinions and to interpret test results.

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1*	11/01: EMC Tests – reverse current - emission to the signalling equipment - emission to the communications equipment	ZL-11-01 (ČSN EN 50121-3-1 ed. 4 chap. 6.2.2; ČSN CLC/TS 50238-2; ČSN 34 2613 ed. 3; ERA/ERTMS/033281 V4.0)	Rolling stock
2*	11/02: EMC – Wheel detectors	ZL-11-02 (ČSN CLC/TS 50238-3; ČSN EN 50592; ERA/ERTMS/033281 V4.0)	Rolling stock
3*	11/03: EMC Tests - Automatic Train Protection LS	ZL-11-03 (ČSN EN 50121-3-1 ed. 4 chap. 6.1; ČSN EN 50238-1)	Rolling stock
4*	12/01: Test of interconnection of return current circuit	ZL-12-01 (TSI LOC&PAS, 4.2.3.3.1.1. chap 5; 4.2.8.4; ČSN EN 50215 ed. 2 chap. 8.8; ČSN EN 50153 ed. 3 chap. 6.4; ČSN 342613 ed. 3 chap. 7.5; IEC 61133 ed. 3 chap. 8.8; UIC 533 ed. 3 chap. 3)	Rolling stock
5*	12/02: Test for the determination of traction and energy characteristics and dynamic brake characteristics - traction characteristics - dynamic brake characteristics - energy characteristics - type time table test - power consumption test - temperature rise tests - antiskid protection test - test of speed control systems	ZL-12-02 (TSI LOC&PAS, chap. 4.2.8.1 and 4.2.8.2; IEC 61133 ed.3 chap. 9.2 – 9.5, 9.7; ČSN EN 50215 ed. 2 chap. 9.2 – 5, 9.7; ČSN EN 50388 ed. 2 chap. 7)	Rolling stock

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
6*	12/03: Measurement of acceleration, rolling resistance and determination of coefficient of inertia of rotating masses	ZL-12-03 (TSI LOC&PAS, chap. 4.2.8.1 and 4.2.8.2; ČSN EN 50215 ed. 2, chap. 9.2 – 4, 9.6; IEC 61133 ed. 3 chap. 9.2 – 4, 9.6)	Rolling stock
7*	12/04: Tests of electric power supply systems - auxiliary power supply test - central power supply test - battery charging system test	ZL-12-04 (ČSN EN 50215 ed. 2 chap. 8.13 - 14; UIC 550 ed. 11 chap. 2 - 10; UIC 550-2 ed. 1 chap. 1.1 - 1.7; UIC 552 ed. 10 chap. 2 - 7; UIC 550-3 ed. 1 chap. 2 - 4; IEC 61133 ed. 3 chap. 8.13-14)	Rolling stock and railway power-supply stations and their parts
8*	12/05: Tests of electrical equipment of railway vehicles by sudden changes of supply voltage - Test by sudden changes of supply voltage - Supply voltage interruption test - Supply voltage variation test - Overhead contact line short circuit test - Test by short circuit and overload on a vehicle	ZL-12-05 (ČSN EN 50215 ed. 2 chap. 9.16; ČSN EN 50163 ed. 2 chap. 4; ČSN EN 50123-2 ed. 2 chap. 8.3.8; ČSN EN IEC 60077-3 ed. 2 chap. 5.3.4 – 5; ČSN EN IEC 60077-4 ed. 2 chap. 5.3.6; UIC 550 ed. 11 chap. 4; IEC 61133 ed. 3 chap. 9.16)	Rolling stock and railway power-supply stations and their parts
9*	12/06: Measurement of power and energy parameters	ZL-12-06 (TSI ENE, chap. 4.2.8; TSI LOC&PAS, chap. 4.2.8.2; ČSN EN 50388 ed. 2 chap. 6, 7; ČSN EN 50215 ed. 2 chap. 9.2 – 9.3; IEC 61133 ed. 3 chap. 9.2 – 9.3)	Rolling stock and railway power-supply stations and their parts
10*	12/07: Test of current collectors - visual inspection - determination of weight - test of dimensions - test of automatic dropping device - test of current collector control system - measurement of static contact force - determination of hold-down force in lowered position - measurement of maximum current when standing - measurement of control system cylinder tightness	ZL-12-07 (TSI ENE, chap. 4.2.10 - 4.2.16, 4.2.5; TSI CR LOC&PAS, chap. 4.2.8.2.9, 4.2.8.2.10, 5.3.10; ČSN EN 50206-1 ed. 2 chap. 6.2, 6.3, 6.7, 6.9 - 6.12; ČSN EN 50206-2 ed. 2 chap. 6.2, 6.3, 6.7, 6.9; ČSN EN 50367 ed. 2 chap. 5.3, 6.3, 7, 8; UIC 608; ČSN EN 50215 ed. 2; IEC 61 133 ed. 3 chap. 8.2.2.4, 9.13; ČSN EN 50317 ed. 2, chap. 6, 7)	Rolling stock

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
	<ul style="list-style-type: none"> - measurement of collector aerodynamic behaviour - measurement of collector dynamic behaviour 		
11*	<ul style="list-style-type: none"> 21/01: Brake tests <ul style="list-style-type: none"> - inspection of brake equipment - stationary tests - tests of parking brake (stationary and running) - determination of braking power of automatic brake - determination of braking power of hand brake - determination of braking power of direct brake - test of brake blending - verification of thermomechanical compatibility 	<ul style="list-style-type: none"> ZL-21-01 (TSI WAG chap. 4.2.4; TSI LOC&PAS 4.2.4; UIC 540 ed 7; UIC 543 ed. 15; UIC 541-01 ed. 1; UIC 541-03 ed 2; UIC 541-04 ed 4; UIC 541-08 ed 4; UIC 541-1 ed 9; UIC 541-5 ed 4; UIC 541-6 ed 1; UIC 544-1 ed 6; UIC 544-2 ed 2; UIC 544-3 ed 1; UIC 545 ed 10; UIC 546 ed 6; UIC 547 ed 4; IRS 50541-06 ed. 1; IRS 50544-3 ed. 1; ČSN EN 16185-2+A1; EN 14198+A2; ČSN EN 15220; ČSN EN 16207+A1; ČSN EN 17065; ČSN EN 16834; GMRT 2045) 	Rolling stock, components of railway vehicle brakes
12*	21/02: Tests of wheel slide protection devices	<ul style="list-style-type: none"> ZL-21-02 (TSI WAG, chap. 4.2.4.3.4; TSI LOC&PAS, chap. 4.2.4.6.2; EN 15595; UIC 541-05 ed.2 and ed.3) 	Rolling stock
13*	22/01: Determination of static wheel load	<ul style="list-style-type: none"> ZL-22-01 (ČSN EN 15654-2) 	Rolling stock
14*	22/02: Determination of dynamic running properties	<ul style="list-style-type: none"> ZL-22-02 (UIC 513 ed.1; ERRI B153/RP21) 	Rolling stock
15*	22/03: Determination of degree of security against derailment under quasistatic conditions	<ul style="list-style-type: none"> ZL-22-03 (ERRI B55/RP8; ČSN EN 14363+A2 chap. 6.1.5.2) 	Rolling stock
16*	22/04: Determination of running safety and running behaviour and of track fatigue	<ul style="list-style-type: none"> ZL-22-04 (ČSN EN 14363+A2 chap. 7 except 7.5.3; UIC 518 ed.4) 	Rolling stock

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
17	22/05: Determination of mechanical parameters of rolling stock - determination of spring suspension natural vibrations - determination of the centre of gravity of the car body - determination of tilt pole height - determination of flexibility coefficient	ZL-22-05 (UIC 505-5 ed. 3; ČSN EN 14 363+A2 Annex D)	Rolling stock
18*	23/01: Measurement of acoustic parameters - measurement of internal noise emission - infrasound levels - measurement of external noise emission - measurement acc. to TSI NOI - measurement acc. to TSI LOC&PAS measurement acc. to TSI PRM	ZL-23-01 (TSI NOI; TSI LOC&PAS, cl. 4.2.7.2 and 4.2.9.3.4 p. 5; TSI PRM, cl. 4.2.1.11, 4.2.2.3.2, 4.2.2.7.4, Appendix G; ČSN EN 15153-2; ČSN EN ISO 3095; ČSN EN ISO 3381; UIC 643 ed. 4; UIC 644 ed. 2)	Rolling stock
19*	23/02: Measurement of rail parameters - rail surface roughness track decay rate	ZL-23-02 (ČSN EN 15610, cl. 5; ČSN EN 15461+A1)	Railway infrastructure
20*	23/03: Measurement of vibration	ZL-23-03 (ČSN ISO 2631-1; ČSN ISO 2631-2; ČSN EN ISO 5349-1)	Rolling stock
21*	23/04: Measurement of artificial lighting - internal external	ZL-23-04 (UIC 555 ed.1; ČSN 28 1300 cl. 5.4.8; ČSN 28 1310 cl. 9.5.6; ČSN EN 13272-1; ČSN EN 13272-2; ČSN EN 15153-1)	Rolling stock
22*	23/05: Test of door systems	ZL-23-05 (ČSN EN 14752+A1; ČSN 30 0250; ČSN 28 1300; TSI LOC&PAS; TSI PRM)	Rolling stock

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
23*	23/06: Thermal engineering tests - cooling - heating - air flow - air volume thermal transmission coefficient	ZL-23-06 (ČSN EN 14750-1; ČSN EN 14750-2; ČSN EN 14813-1+A1; ČSN EN 14813-2+A1; ČSN EN 13129; ČSN 30 0250)	Rolling stock
24	31/01: Strength test of bogie frames and their parts - strength test of bogie frame strength test of bearing box	ZL-31-01 (UIC 615-4 ed. 2; UIC 515-4 ed. 1; ČSN EN 13749)	Bogie frames and their parts
25	31/02: Strength tests of railway vehicle seats	ZL-31-02 (UIC 566 ed. 3 chap. 2.1.1.2, chap. 4.2.1.3, Annex 7)	Seats of transport vehicles
26	31/03: Tests of brake cross-bars and brake shoes	ZL-31-03 (UIC 833 ed. 5 chap. 2)	Rolling stock
27	31/04: Measurement of bogie rotational resistance	ZL-31-04 (ČSN EN 14363+A2 chap. 6.1.5.3.3; UIC 510-1 ed. 9)	Rolling stock
28	31/05: Measurement of railcar body torsional rigidity	ZL-31-05 (ERRI B12/RP17; ERRI B12/DT135)	Rolling stock
29*	31/06: Test by passage through limit shapes of rails - minimum curve radius negotiation test - ferry negotiation test - traverser negotiation test - hump passage test	ZL-31-06 (UIC 507 ed. 1; UIC 510-1 ed. 9; UIC 522 ed. 4; ERRI B12/DT135, annex B)	Rolling stock
30*	31/07: Lifting test	ZL-31-07 (ČSN EN 50215 ed. 2, chap. 8.4; ERRI B12/RP17)	Rolling stock
31	31/08: Testing of springs - tests of spiral springs - tests of leaf springs	ZL-31-08 (UIC 517 ed. 7; UIC 822 ed. 5; ČSN EN 14200; ČSN EN 13298)	Railway vehicle springs
32	31/09: Draw and buffer gear test	ZL-31-09 (ČSN EN 15566; ČSN EN 15551)	Rolling stock
33	31/10: Axleboxes performance testing	ZL-31-10 (ČSN EN 12082+A1)	Railway vehicle axleboxes
34	31/11: Wheel fatigue test	ZL-31-11 (ČSN EN 13262 chap. 4.2.4, annex B, D chap. 4.4)	Railway wheels

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
35	31/12: Axle fatigue test	ZL-31-12 (ČSN EN 13103-1, Annex D; ČSN EN 13260, Annex B; ČSN EN 13261, chap. 4.2.3.1.3, 4.2.3.3-4)	Rolling stock
36	31/13: Thermo-mechanical testing of a wheel	ZL-31-13 (ČSN EN 13979-1, chap. 7, Annex B)	Rolling stock
37	32/01: Static, dynamic and fatigue tests of concrete sleepers	ZL-32-01 (ČSN EN 13230-1, chap. 7; ČSN EN 13230-2, chap. 4; ČSN EN 13230-3, chap. 4; ČSN EN 13230-4+A1, chap 5; ČSN EN 13230-5, chap. 5)	Concrete sleepers
38	32/02: Rail fastening system tests	ZL-32-02 (ČSN EN 13146-1, chap. 5 - 7; ČSN EN 13146-2, chap. 5 - 7; ČSN EN 13146-3, chap. 5 - 7; ČSN EN 13146-4, chap. 5 - 8; ČSN EN 13146-5, chap. 5 - 10; ČSN EN 13146-6, chap. 5 - 7; ČSN EN 13146-7, chap. 5 - 7; ČSN EN 13146-9, except chap. 6.3 and 7.3; ČSN EN 13481-2, chap. 5)	Fastening systems of rails
39	32/03: Test of weld joints of rails	ZL-32-03 (ČSN EN 14587-1, annex A - F; ČSN EN 14587-2, annex A - F; ČSN EN 14587-3, annex B - F)	Weld joints of rails
40	33/01: Non-destructive testing – Penetrant test (PT)	ZL-33-01 (ČSN EN ISO 3452-1)	Rolling stock and infrastructure
41	33/02: Non-destructive testing - Magnetic particle test (MT)	ZL-15-19 (ČSN EN ISO 9934-1; ČSN EN ISO 17638)	Rolling stock and infrastructure

¹ asterisk at the ordinal number identifies the tests, which the Laboratory is qualified to carry out outside the permanent laboratory premises

² if the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes)

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Annex:

Flexible scope of accreditation

Ordinal numbers of tests
1, 7, 10, 11, 12, 14, 16, 18, 24, 25, 30, 31

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

Explanations:

Method identification:

ZL-x-y	- Identification of VUZ Testing Laboratory method
Bxx/RPyy	- designation of ERRI ⁽¹⁾ reports (European Railway Research Institute - European Railway Research Institute with registered office in Utrecht, Netherlands)
Bxx/DTyy	- designation of ERRI ⁽¹⁾ reports European Railway Research Institute - European Railway Research Institute with registered office in Utrecht, Netherlands)
TNŽ	- Technical standard of Railways
UICxxx (UICxxx-x)	- designation of UIC ⁽²⁾ Regulation xxx (xxx-x) - Regulation Number
ERA/ERTMS/xxxxxx	- document of European Railway Agency/ European Rail Traffic Management System
DID0000336569	- Set noise from safety equipment (TSI CR NOI, UIC 644, UIC 643)
TSI WAG	- Commission Regulation (EU) No. 321/2013 concerning the technical specification of interoperability relating to the subsystem "rolling stock – freight wagons" of the rails system in the European Union and repealing Decision 2006/861/EC and Commission Regulation (EU) No. 1236/2013
TSI LOC&PAS	- Commission Regulation (EU) No. 1302/2014 concerning the technical specification for interoperability relating to the "rolling stock – locomotives and passenger rolling stock" subsystem of the rail system in the European Union
TSI ENE	- Commission Regulation 1301/2014/EU concerning the technical specification for interoperability relating to the energy sub-system of the European rail system
TSI NOI	- Commission Regulation (EU) No. 1304/2014 on the technical specification for interoperability relating to the subsystem "rolling stock – noise", amending the Decision 2008/232/EC and repealing Decision 2011/229/EU
TSI PRM	- Commission Regulation (EU) No. 1300/2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility
CLC/TS	- CENELEC / Technical Specification
GMRT	Railway Group Standard
IRS	- International Railway Solution