



STS Directory

Accreditation number: STS 0409

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

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Scope of accreditation see: www.sas.admin.ch
(Accredited bodies)

Scope of accreditation as of 01.10.2023

Testing laboratory for Railway Rolling Stock and Machines

Group of products or materials, field of activity	Principle of measurement ²⁾ (characteristics, measuring ranges, type of test)	Test methods, remarks (national, international standards, in-house test methods)
Running dynamic measurements	Running safety, track fatigue, running behaviour, stability, measurements with measuring wheelsets, internal calibration of measuring wheelsets, measurements of H-force, internal calibration of H-force measuring elements.	Normal and simplified methods with measuring quantities according UIC 518, EN 14363. Proprietary procedure (PP00000253 IN Messradsätze). Application of standards on the relative vehicle type and the relative service conditions UIC 518, EN 14363, EN 15528, EN 15686, EN 15687 TSI WAG, TSI LOC&PAS, TSI HS RST SBB-1 R50127, SBB-1 R50007
Ride quality	Ride quality measurements with accelerometers	EN12299, UIC 513, determination of Wz-figures according Sperling, weighing based on ISO 2631
Rolling angle, vehicle flexibility coefficient	Static or dynamic measurement	EN 14363, UIC 518
Safety against derailment	Static measurement or test on dedicated test track	ORE B 55 Rp. 8 or EN 14363



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Group of products or materials, field of activity	Principle of measurement ²⁾ (characteristics, measuring ranges, type of test)	Test methods, remarks (national, international standards, in-house test methods)
Rolling stock related measurements at the infrastructure	Track geometry, rail roughness, rail profiles, measurements on rack systems, determination of equivalent conicity	Track construction regulations, which describe the related infrastructure, for example in Switzerland for normal gauge railways: AB-EBV and SBB-Reglement 220.4 UIC 518, UIC 519, EN 14363, EN 15302
Static strength	Bogie frames, components, mounted components, wheel set axles, wheel discs, body frames and car bodies	EN 12633, UIC 566, UIC 577, DIN 491/1
Dynamic strength on test rigs	Bogie frames, components, mounted components, wheel set axles, wheel discs	UIC 515, UIC 615, EN 13749, EN 13103, EN 13104, EN 13979
Dynamic strength at field tests, service load collectives, torsional vibrations	Bogie frames, components, mounted components, wheel set axles, wheel discs, body frames and car bodies	Eurocode 3 (ENV 1993), FKM-Rules, proprietary procedure (PP00000260 IN Messung Betriebslastkollektive), procedures as agreed with customer and/or authorities, DIN 45667, DIN 491/1
Noise measurements (railways)	<ul style="list-style-type: none"> - Internal and external noise - Noise while running, braking, acceleration and at standstill - Air-borne and structure-borne noise - Determination of source locations - Speech intelligibility - Door warning signals 	TSI Noise, EN ISO 3095, prEN ISO 3095, EN ISO 3381, TSI PRM, TSI HS RST, UIC 644, UIC 651, UIC 718-4, ERRI C178-RP2 ISO 3740, ISO 3741, ISO 3743, ISO 3744, ISO 3745, ISO 3746, ISO 3747 EN 15892 DIN 45635-23, DIN 45637, DIN 45638
Noise measurements on equipment	Noise emission	MaLV (Maschinenlärmverordnung) SR 814.412.2 and Directive 2000/14/EC noise emission in the environment by equipment for use outdoors with following standards: ISO 3744, ISO 4871, ISO 11094, ISO 22868, ISO 8528, ISO 9614 Notified body EU identification number NB 1990 according to directive 2000/14/EC Articles 12 and 13; Annex VI (5th technical documentation), VII (3rd only noise measurements)
Noise measurements common	Noise and vibration measurements at operator positions	ISO 6396 ISO 11201, Directive 2003/10/EG, 2002/44/EG, ISO 8041, ISO 9611, ISO 5349, ISO 2631, EN14253, EN 17285, EN 14033



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Roughness measurements	Measurement of wheel and rail roughness	Direct measurements according proprietary procedure to fulfill EN ISO 3095 and EN ISO 3381 (PP00000263 IN Schienenrauheit), EN 15610 Indirect method over acceleration measurements according method of TNO Institute of Applied Physics, Delft (NL)
Decay rate	Measurement of decay rate on rails	EN 15461, proprietary procedure (PP00000264 IN Abklingrate)
Electrical lighting	Measurement of luminance, illuminance and glare Measurement of colour spectra, correlated colour, colour coordinates, temperature, colour rendering	TSI PRM, TSI LOC&PAS, EN 13272, EN 13272-1, EN 13272-2 EN 15153-1, EN 15153-3 EN 12464-1, EN 12464-2, ISO 8995 DIN 5032-7
Test and measurement of braking systems	<ul style="list-style-type: none"> - Static and functional tests and measurements including behaviour versus time, Behaviour in failure conditions - Dynamic tests and measurements, braking distance measurements, determination of thermal load - Check of the slide protection system and the anti-slip protection system (traction control system) 	UIC Rolling Stock, Brakes, UIC 540, UIC 541-03, UIC 541-04, UIC 541-05, UIC 541-06, UIC 541-07, UIC 541-08, UIC 541-1, UIC 541-2, UIC 541-3, UIC 541-4, UIC 541-5, UIC 542, UIC 543, UIC 544-1, UIC 544-2, UIC 545, UIC 546, UIC 547 and UIC 549 EN 16185-2, EN 16834, EN 15595 EN 14198, EN 15179, EN 15734 TSI WAG, TSI LOC&PAS, TSI HS RST Regulation "Regelungen für die bremstechnische Beurteilung von Schienenfahrzeugen im Rahmen der Abnahme nach §32 EBO" (only available in German)
Drive system dynamics and friction condition between wheel and rail	Measurement of tractive and brake effort and slip, check of behaviour of anti-slip protection system (traction control system) Measurements of tractive and breaking effort, diagrams for: <ul style="list-style-type: none"> - train sets - standard compositions - multi purpose locos - trolley buses 	Proprietary procedures (PP00000279 IN Antriebsdynamik) Proprietary procedures (PP00000279 IN Z-v-Diagramm) DIN EN 50215
Thermal measurements and aerodynamics	<ul style="list-style-type: none"> - Air and material temperatures - Ventilation, heating, air conditioning - Effects due to aerodynamics 	Proprietary procedures (PP00000281 IN Messung Temperatur) UIC 553-1 EN 14067-4, EN 14067-5, EN 14067-6, TSI LOC&PAS



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Indication measurements	Determination of the power of steam engines with pressure measurements at saturated and super-heated steam as well as stroke measurement	Proprietary procedures (PP00000282 IN Indizieren)
Pantograph	Pantograph contact force according and arcing EN 50317 exclusive point 8.2 and 8.4 (displacement)	EN 50317, EN 50367 SBB R I-50088, DB Netz TNB, ÖBB 50.02.03, SAM E 903
Catenary uplift	Uplifting of the catenary according EN50317 point 8.3	EN 50317
Interference Current	Measuring of conductive interference current in frequency range $f \leq 100$ kHz - Frequency selective evaluation of current - Measuring with Rogowski-coil, current transducers and / or on vehicle installed transducers	CLC/TS 50238-2, SBB R I-50097 TR-EMV Teil 2 und 4, SAM S-003, ÖBB 50.02.01, ÖBB 50.02.04, RIS 2020 Specifications of customers and network operators EN 50215 EN 50121 EN 50238 ITU-T 0.41
Magnetic field	Capture of the trackside magnetic field in the frequency range	CLC 50238-3, EN 50592, ERA/ERTMS/033281, SBB R I-50098, TR-EMV Teil 3, SAM S-006, ÖBB 50.02.01, ÖBB 50.02.04, RIS 2020
High voltage and heavy current test	Short circuit test $\hat{I} < = 60$ kA - railway network 15kV, 16.7Hz - 50 Hz-network $U = < 17.5$ kV Measuring of: - Voltage - Current - Power - Power factor - Energy - Frequency - Total harmonic distortion - Resistance - Inductance - Capacitance	EN 50121-3-1 EN 50153 EN 50155 EN 50163 EN 50215 EN 50238 EN 50388 EN 50500 EN 13260, EN 13146-5
Homologation for purpose-built vehicles	Road-rail vehicles purpose-built machines	EN 15746, EN 14033, EN 15955



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Measuring quantities	<p>Accelerations (and derived values)</p> <p>Speed, rotational speed</p> <p>Displacement, distance</p> <p>Pressure (pneumatic and hydraulic)</p> <p>Strain (derived also tension (mechanical), longitudinal, torsional and bending forces)</p> <p>Temperature</p> <p>Current, voltage (electrical)</p> <p>Flow quantity and low velocity (pneumatically)</p> <p>Sound pressure, sound intensity, sound power measurements (and derived quantities)</p> <p>luminance, illuminance, and glare colour spectra, correlated colour, colour coordinates, temperature, colour rendering</p> <p>Profile (wheel and rail) as well as vehicle gauge</p> <p>Roughness (wheel and rail)</p> <p>Voltage (electrical, DC/AC)</p> <p>Current (electrical, DC/AC)</p> <p>Power (electrical, DC/AC)</p> <p>Power factor</p> <p>Energy</p> <p>Frequency</p>	<p>TÜV SÜD develops generally no proprietary sensors (except where declared), but uses off the shelf sensors within the specified operational conditions and according state of the art. Following, where appropriate, specific standards are mentioned.</p> <p>off the shelf and proprietary sensors (application of strain gauges, internal calibration)</p> <p>IEC 651, IEC 804, ISO 354, ISO 717, ISO 3740, ISO 3741, ISO 3743, ISO 3744, ISO 3745, ISO 3746, ISO 3747, EN ISO 3095, EN ISO 3381, EN 15892, ISO 4871, ISO 11094, ISO 22868, ISO 8528, EN 15461</p> <p>EN 13272, EN 13272-1, EN 13272-2 EN 15153-1, EN 15153-3 EN 12464-1, EN 12464-2, ISO 8995 DIN 5032-7</p> <p>Special application of displacement measurement</p> <p>EN ISO 3095, EN ISO 3381, EN 15610</p> <p>EN 50121-3-1</p> <p>EN 50153</p> <p>EN 50155</p> <p>EN 50163</p> <p>EN 50215</p> <p>EN 50238</p>



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	Total harmonic distortion	CLC/TS 50238-2
	Resistance	CLC/TS 50238-3
	Inductance	
	Capacitance	

Abbreviation	Signification
AB-EBV	Ausführungsbestimmungen zur Schweiz. Eisenbahnverordnung
EBO	Ordinance on the Construction and Operation of Railways
ENV, prEN	EN prenorm
FKM	Forschungskuratorium Maschinenbau
ORE	Office for Research and Experiments of the International Union of Railways
TNO	Organization for Applied Scientific Research
TSI	Technical Specifications for Interoperability
UIC	International Union of Railways (Grundbegriff franz: Union internationale des chemins de fer)

In case of contradictions in the language versions of the directories, the German version shall apply.

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