

Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-PL-12001-02-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 13.05.2022

Date of issue: 21.06.2023

Holder of accreditation certificate:

**Industrieanlagen-Betriebsgesellschaft mit beschränkter Haftung
Betriebsfestigkeitslabor (IBL)
Einsteinstraße 20, 85521 Ottobrunn**

at the locations:

**Einsteinstraße 20, 85521 Ottobrunn
Zum Windkanal 17, 01109 Dresden**

The testing laboratory meets the minimal requirements of DIN EN ISO/IEC 17025:2018 and, if applicable, additional legal and normative requirements, including those in relevant sectoral schemes, in order to carry out the conformity assessment activities listed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and confirm generally with the principles of DIN EN ISO 9001.

Hardness tests on metallic materials and plastics; metallographic examinations of metallic materials; Evaluation of the adhesion behavior of coatings; surface tests on components; mechanical-technological tests on metallic materials and plastics, fatigue tests on material samples and components; vibration testing and earthquake simulation; climatic tests on components; mechanical strength and function tests on components of railway vehicles and construction machinery; Manual and mechanical non-destructive tests (penetrant, magnetic particle and visual inspection) on components, fiber-reinforced materials, plastics and composites

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

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Within the given testing field marked with *, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the free choice of standard or equivalent testing methods. The listed testing methods are exemplary.

Within the scope of accreditation marked with ***, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standards or equivalent testing methods listed here with different issue dates.

The testing laboratory maintains a current list of all test-ng methods within the flexible scope of accreditation.

The following test procedures are only carried out at *Einsteinstraße 20, 85521 Ottobrunn*:

1 Determining the hardness of metallic materials and plastics using hardness testing methods *

DIN EN ISO 6506-1 2015-02	Metallic materials - Brinell hardness test - Part 1: Test method
ASTM E 10 2018	Standard Test Method for Brinell Hardness of Metallic Materials
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method
ASTM E 384 2017	Standard Test Method for Microindentation Hardness of Materials
DIN EN ISO 6508-1 2016-12	Metallic materials - Rockwell hardness test - Part 1: Test method (here: <i>scala C</i>)
ASTM E 18 2019	Standard Test Methods for Rockwell Hardness of Metallic Materials
DIN ISO 7619-1 2012-02	Rubber, vulcanized or thermoplastic - Determination of indentation hardness - Part 1: Durometer method (Shore hardness)
DIN EN ISO 868 2003-10	Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases

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DIN EN ISO 3887 2018-05	Steels - Determination of the depth of decarburization. (here: <i>Chapter 5.3 - Method for measuring microhardness</i>)
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating
DIN EN ISO 9015-1 2011-05	Destructive tests on welds in metallic materials - Hardness testing – Part 1: Hardness test on arc welded joints
DIN EN ISO 9015-2 2016-10	Destructive tests on welds in metallic materials - Hardness testing – Part 2: Microhardness testing of welded joints
DIN 50190-3 1979-03	Hardness depth of heat-treated parts - Determination of the effective depth of hardening after nitriding
DIN 50190-4 1999-09	Hardness depth of heat-treated parts - Part 4: Determination of the fusion hardening depth and the fusion depth
DIN ISO 48 2016-09	Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)

2 Metallographic test methods

2.1 Determination of non-metallic inclusions (steel cleanliness) in steels using light microscopy *

DIN EN 10247 2017-09	Micrographic examination of the non-metallic inclusion content of steels using standard pictures
ASTM E 45 2013	Standard Test Methods for Determining the Inclusion Content of Steel

2.2 Determination of the apparent ferrite or austenite grain size of steels (determination of the average grain size) using microphotographic methods *

DIN EN ISO 643 2013-05	Steels - Micrographic determination of the apparent grain size
ASTM E 112 2013	Standard Test Methods for Determining Average Grain Size

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2.3 Other metallographic test methods ***

DIN EN ISO 3887 2018-05	Steels - Determination of the depth of decarburization. (here: <i>Chapter 5.2 - Metallographic methods</i>)
DIN EN ISO 945-1 2010-09	Microstructure of cast irons - Part 1: Graphite classification by visual analysis
DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
SEP 1520 1998-09	Microscopic examination of carbide structure in steels by means of diagram series
SEP 1615 1975-01	Microscopic and Macroscopic Test for the image ordered Carbide Distribution of High Speed Steels

3 Adhesion behavior of coatings

3.1 Evaluation of the degree of blistering ***

DIN EN ISO 4628-2 2016-07	Paints and varnishes - Evaluation of degradation of coatings -Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering
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3.2 Evaluation of the degree of rusting of coatings on steel by comparison with pictures *

DIN EN ISO 4628-3 2016-07	Paints and varnishes - Evaluation of degradation of coatings -Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting
ASTM D 610 2008	Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces

3.3 Further tests on the adhesion behavior of coatings ***

DIN EN ISO 2409 2013-06	Paints and varnishes –Cross-cut test
ASTM D 3359 2017	Standard Test Methods for Rating Adhesion by Tape Test

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4 Surface inspection of components using impression methods (replica technology) *

DIN 54150 1977-08	Non destructive testing; impression methods for surface examination (Replica-technique) (<i>withdrawn standard</i>)
ISO 3057 1998-03	Non-destructive testing. Metallographic replica techniques of surface examination.

5 Mechanical-technological tests

5.1 Determination of the quasi-static properties of metallic materials, plastics and plastic composites at different temperatures using Tensile, compression and shear tests *

DIN EN ISO 6892-1 2017-02	Metallic materials - tensile testing - Part 1: method of test at room temperature (here: <i>method B</i>)
DIN EN ISO 6892-2 2011-05	Metallic materials - tensile testing - Part 2: method of test at elevated temperature
DIN EN ISO 6892-3 2015-07	Metallic materials - tensile testing - Part 3: method of test at low temperature
ASTM D 3518 2013	Standard Test Method for In-Plane Shear Response of Polymer Matrix Composite Materials by Tensile Test of a +/- 45o Laminate
ASTM D 3039 2014	Standard test method for tensile properties of polymer matrix composite materials

5.2 Determination of material parameters under oscillating stress on metallic materials and components using fatigue tests *

DIN 50100 2016-12	Load controlled fatigue testing - Execution and evaluation of cyclic tests at constant load amplitudes on metallic specimens and components
ASTM E 466 2021	Standard Practice for Conducting Force Controlled Constant Amplitude Axial Fatigue Tests of Metallic Materials

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6 Determination of the vibration and earthquake resistance of plants and systems in the fields of energy, automotive, aviation, rail and medical technology using vibration tests *

IEEE 693 2018	Recommended Practice for Seismic Design of Substations
ANSI/IEEE 344 2004	Recommended Practice for Seismic Qualification for Class 1E Equipment for Nuclear Power Generating Stations
ANSI/IEEE 382 2006	Standard for Qualification of Safety-Related Actuators for Nuclear Power Generating Stations <i>(withdrawn document)</i>
KTA 2201.4 2012-11	Design of Nuclear Power Plants against Seismic Events; Part 4: Components
KTA 3504 2015-11	Electrical Drive Mechanisms of the Safety System in Nuclear Power Plants (here: sections 10-17)
DIN EN 60068-2-6 2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
DIN EN 60068-2-57 2015-10	Environmental testing - Part 2-57: Tests –Test Ff: Vibration - Time-history and sine-beat method
DIN EN 60068-2-64 2009-04	Environmental testing - Part 2-64: Tests -Test Fh: Vibration, broadband random and guidance <i>(withdrawn document)</i>
DIN EN 300019-2-3 2016-07	Environmental Engineering (EE) - Environmental conditions and environmental tests for telecommunications equipment - Part 2-3: Specification of environmental tests; Stationary use at weatherprotected locations
DIN EN 300019-2-4 2016-07	Environmental engineering (ee) - environmental conditions and environmental tests for telecommunications equipment - Part 2-4_ specification of environmental tests; stationary use at non-weather protected locations
DIN EN 60255-21-3 1995-11	Electrical relays - Part 21: vibration, shock, bump and seismic tests on measuring relays and protection equipment; section 3: seismic tests

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IEC 60980 1989-06	Recommended practices for seismic qualification of electrical equipment of the safety system for nuclear generating stations <i>(withdrawn document)</i>
DIN EN 61373 2011-04	Railway applications - Rolling stock equipment - Shock and vibration tests.
DIN EN 61587-2 2012-06	Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 - Part 2: Seismic tests for cabinets and racks.
DIN EN 62271-207 2013-02	High-voltage switchgear and controlgear - Part 207: Seismic qualification for gas-insulated switchgear assemblies for rated voltages above 52 kV
DIN EN 1998-1 2010-12	Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings.
GR-63-CORE NEBS 2012-04	Network Equipment-Building System Requirements: Physical Protection
IEC TS 62271-210 2013	High-voltage switchgear and controlgear - Part 210: Seismic qualification for metal enclosed and solid-insulation enclosed switchgear and controlgear assemblies for rated voltages above 1 kV and up to and including 52 kV
ICC-ES AC156 2015-05	Acceptance criteria for seismic certification by shake-table testing of nonstructural components
RCC-E 2016	Design and construction rules for electrical equipment of PWR nuclear islands <i>(Restriction: seismic vibration testing only)</i>
IEC/TR 62271-300 2006	High-voltage switchgear and controlgear - Part 300: Seismic qualification of alternating current circuit-breakers <i>(Restriction: only seismic vibration tests)</i>
IEC/IEEE 60780-323 2016-04	IEC/IEEE International Standard - Nuclear facilities - Electrical equipment important to safety - Qualification
STANAG 4370 2014-09	ENVIRONMENTAL TESTING AECTP-400: Mechanical environmental tests - Method 401: Vibration <i>(Restriction: only seismic vibration tests)</i> <i>(withdrawn document)</i>

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7 Climatic tests ***

DIN EN 60068-2-1 2008-01	Environmental testing - Part 2-1: Tests - Test A: Cold
DIN EN 60068-2-2 2008-05	Environmental testing - Part 2-2: Tests - Test B: Dry heat
DIN EN 60068-2-14 2010-04	Environmental testing - Part 2-14: Tests - Test N: Change of temperature (here: Na and Nb testing)
DIN EN 60068-2-30 2006-06	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
DIN EN 60068-2-38 2010-06	Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test
DIN EN 60068-2-78 2014-02	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state
ISO 16750-4 2010-04	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 4: Climatic loads
RTCA DO-160 G 2010	Radio Technical Commission for Aeronautics Environmental Conditions and Test Procedure for Airborne Equipment (here: <i>Section 4.5.1 to 4.5.5 - Temperature and Attitude</i> <i>Section 5 - Temperature Variation</i> <i>Section 6 - Humidity</i>)

The following test procedures are only carried out at *Zum Windkanal 17, 01109 Dresden*:

8 Non-destructive testing ***

8.1 Penetrant testing

DIN EN ISO 3452-1 2014-09	Non-destructive testing - Penetrant testing - Part 1: General principles (here: only point 8)
DIN EN ISO 3452-5 2009-04	Non-destructive testing - Penetrant testing - Part 5: Penetrant testing at temperatures higher than 50 °C
DIN EN ISO 3452-6 2009-04	Non-destructive testing - Penetrant testing - Part 6: Penetrant testing at temperatures lower than 10 °C
DIN EN 1371-1 2012-02	Founding - Liquid penetrant testing - Part 1: Sand, gravity die and low pressure die castings
DIN EN 1371-2 2015-04	Founding - Liquid penetrant testing - Part 2: Investment castings
DIN EN 10228-2 2016-10	Non-destructive testing of steel forgings - Part 2: Penetrant testing

8.2 Magnetic particle inspection

DIN EN ISO 9934-1 2017-03	Non-destructive testing - Magnetic particle testing - Part 1: General principles (here: only points 7 to 14)
DIN EN 1369 2013-01	Founding - Magnetic particle testing
DIN EN 10228-1 2016-10	Non-destructive testing of steel forgings - Part 1: Magnetic particle inspection
DIN EN ISO 17638 2017-03	Non-destructive testing of welds - Magnetic particle testing

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8.3 Visual inspection

DIN EN 13018 2016-06	Non-destructive testing - Visual testing - General principles (here: only points 5 and 6)
DIN EN ISO 17637 2017-04	Non-destructive testing of welds - Visual testing of fusion-welded joints

9 Mechanical strength and function tests on components of railway vehicles ***

DIN EN 16019 2014-06	Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method
DIN EN 12663-1 2015-03	Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)
DIN EN 13749 2021-05	Railway applications - Wheelsets and bogies - Method of specifying the structural requirements of bogie frames
UIC 510-3 1994-07	Wagons - Strength testing of 2 and 3-axle bogies on test rig
UIC 515-4 1993-01	Passenger rolling stock - Trailer bogies - Running gear - Bogie frame structure strength tests
UIC 566 1990-01	Loadings of coach bodies and their components
UIC 615-4 2003-02	Motive power units - Bogies and running gear - Bogie frame structure strength tests
APTA-PR-CS-S-034-99 2006-06	Standard for the Design and Construction of Passenger Railroad Rolling Stock
DIN EN 12082 2021-09	Railway applications - Axleboxes - Performance testing

10 Mechanical strength and functional tests on components of railway vehicles and construction machinery (qualification tests)

TAS5-PV-01 Implementation of qualification tests on components in the railway and
22.06.2021 construction machinery sector

Abbreviations used:

AECTP	Allied Environmental Conditions and Test Publication
APTA	American Public Transportation Association
ANSI	American National Standards Institution
ASTM	American Society for Testing and Materials
DIN	Deutsches Institut für Normung e.V. – German institute for standardization
EN	European Standard
GR	Generic Requirements
NEBS	Network Equipment Building Systems
ICC-ES AC	International Code Council Evaluation Service Acceptance Criteria
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
KTA	Nuclear Technical Committee
RCC-E	Règles de conception et de construction des matériels des chaudières électronucléaires
RTCA	Radio Technical Commission for Aeronautics
SEP	Steel-iron test sheets from the German Ironworks Association
STANAG	Standardization Agreement (Standardization agreement of the NATO contracting states on the use of standardized procedures or similar equipment. The STANAG guidelines are supported by the NATO Standardization
TAS5-PV-xx	In-house procedures of the conformity assessment body
UIC	Union internationale des chemins de fer