DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation

The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory

MQ Engineering GmbH
Hansestraße 27, 18182 Rostock-Bentwisch

is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out tests in the following fields:

**Mechanical-technological tests (bend testing, tensile testing, notch bar impact test, hardness test), metallography, ambulant component metallography and scanning electron microscopy of castings, forgings, rolled and formed products, pipes and welded joints;
optical spark emission spectrometry (OES) of steel and iron materials; manual non-destructive testing methods (visual, magnetic particle, dye penetrant and ultrasonic testing) of metallic materials in the mechanical and metalworking industry as well as in plant engineering and construction, mechanical engineering, engine construction and shipbuilding.**

The accreditation certificate shall only apply in connection with the notice of accreditation of 22.10.2019 with the accreditation number D-PL-19274-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 6 pages.

Registration number of the certificate: **D-PL-19274-01-00**

Berlin, 22.10.2019	Dipl.-Ing. (FH) Ralf Egner Head of Division	Translation issued: 04.11.2019	Head of Division

The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
https://www.dakks.de/en/content/accredited-bodies-dakks

This document is a translation. The definitive version is the original German accreditation certificate.

See notes overleaf.

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DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-19274-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 22.10.2019

Date of issue: 22.10.2019

Holder of certificate:

MQ Engineering GmbH
Hansestraße 27, 18182 Rostock-Bentwisch

Tests in the fields:

Mechanical-technological tests (bend testing, tensile testing, notch bar impact test, hardness test), metallography, ambulant component metallography and scanning electron microscopy of castings, forgings, rolled and formed products, pipes and welded joints;
optical spark emission spectrometry (OES) of steel and iron materials; manual non-destructive testing methods (visual, magnetic particle, dye penetrant and ultrasonic testing) of metallic materials in the mechanical and metalworking industry as well as in plant engineering and construction, mechanical engineering, engine construction and shipbuilding.

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 testing methods within the flexible scope of accreditation.

This document is a translation. The definitive version is the original German annex to the accreditation certificate.

Abbreviations used: see last page

The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH. https://www.dakks.de/en/content/accredited-bodies-dakks

1 Mechanical-technological tests

1.1 Tensile tests *

DIN EN ISO 4136 2013-02	Destructive tests on welds in metallic materials - Transverse tensile test
DIN EN ISO 5178 2019-05	Destructive tests on welds in metallic materials - Longitudinal tensile test on weld metal in fusion welded joints
DIN EN ISO 6892-1 2017-02	Metallic materials - Tensile testing - Part 1: Method of test at room temperature

1.2 Bend test *

DIN EN ISO 5173 2012-02	Destructive tests on welds in metallic materials - Bend tests

1.3 Impact tests *

DIN EN ISO 148-1 2017-05	Metallic materials - Charpy pendulum impact test - Part 1: Test method
DIN EN ISO 9016 2013-02	Destructive tests on welds in metallic materials - Impact tests - Test specimen location, notch orientation and examination

1.4 Technological tests *

DIN EN ISO 8492 2014-03	Metallic materials - Tube - Flattening test
DIN EN ISO 8493 2004-10	Metallic materials - Tube - Drift-expanding test
DIN EN ISO 8496 2014-03	Metallic materials - Tube - Ring tensile test
DIN ISO 4386-2 2015-12	Plain bearings - Metallic multilayer plain bearings - Part 2: Destructive testing of bond for bearing metal layer thicknesses >= 2 mm

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1.5 Hardness tests *

DIN EN ISO 6506-1 2015-02	Metallic materials - Brinell hardness test - Part 1: Test method
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method
DIN EN ISO 6508-1 2016-12	Metallic materials - Rockwell hardness test - Part 1: Test method
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 EN ISO 14271 2018-01	Resistance welding - Vickers hardness testing (low-force and microhardness) of resistance spot, projection, and seam welds

1.6 Mobile Hardness tests *

DIN EN ISO 16859-1 2016-02	Metallic materials - Leeb hardness test - Part 1: Test method
DIN 50159-1 2015-01	Metallic materials - Hardness testing with the UCI method - Part 1: Test method

2 Optical spark emission spectrometry

MQE-10-2019/00 2019-04	Optical spark emission spectrometry

3 Metallographical tests

3.1 Metallography *

DIN EN ISO 643 2013-05	Steels - Micrographic determination of the apparent grain size

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DIN EN ISO 945-1 2018-05	Microstructure of cast irons - Part 1: Graphite classification by visual analysis
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases
DIN EN ISO 3887 2018-05	Steels - Determination of the depth of decarburization
DIN EN ISO 17639 2013-12	Destructive tests on welds in metallic materials - Macroscopic and microscopic examination of welds
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating
DIN 50190-3 1979-03	Hardness depth of heat-treated parts; determination of the effective depth of hardening after nitriding

3.2 Ambulant component metallographie

MQE-26-2019/00 2019-04	Ambulant component metallography

3.3 Scanning electron microscopy

MQE-11-2019/00 2019-04	Procedure of Scanning Electron Microskopy (SEM)
MQE-12-2019/00 2019-04	Procedure of Energy Dispersice X-ray analysis (EDX)

4 Manual non-destructive testing

4.1 Visual testing *

DIN EN ISO 17637 2017-04	Non-destructive testing of welds - Visual testing of fusion-welded joints
DIN EN 13018 2016-06	Non-destructive testing - Visual testing - General principles (here: *chapter 5 and 6*)
DIN EN 1370 2012-03	Founding - Examination of surface condition

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4.2 Magnetic particle testing *

DIN EN ISO 9934-1 2017-03	Non-destructive testing - Magnetic particle testing - Part 1: General principles (here: *chapter 7-14*)
DIN EN ISO 17638 2017-03	Non-destructive testing of welds - Magnetic particle testing
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

4.3 Penetrant testing *

DIN EN ISO 3452-1 2014-09	Non-destructive testing - Penetrant testing - Part 1: General principles (here: *chapter 8*)
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 ISO 4386-3 1992-11	Plain bearings; metallic multilayer plain bearings; non-destructive penetrant testing
DIN EN 10228-2 2016-10	Non-destructive testing of steel forgings - Part 2: Penetrant testing

4.4 Ultrasonic testing *

DIN EN ISO 17640 2019-02	Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels, and assessment (here: *limitation of point 8-11 and annex A*)
DIN ISO 4386-1 2015-12	Plain bearings - Metallic multilayer plain bearings - Part 1: Non-destructive ultrasonic testing of bond of thickness >= 0,5 mm
DIN EN 10160 1999-09	Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)

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DIN EN 10228-3 2016-10	Non-destructive testing of steel forgings - Part 3: Ultrasonic testing of ferritic or martensitic steel forgings
DIN EN 10228-4 2016-10	Non-destructive testing of steel forgings - Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings
DIN EN 10308 2002-03	Non-destructive testing - Ultrasonic testing of steel bars
DIN EN 12680-1 2003-06	Founding - Ultrasonic examination - Part 1: Steel castings for general purposes (here: *chapter 5*)
DIN EN 12680-3 2012-02	Founding - Ultrasonic testing - Part 3: Spheroidal graphite cast iron castings (here: *chapter 5*)
DIN EN 14127 2011-04	Non-destructive testing - Ultrasonic thickness measurement
DIN 54123 1980-10	Non-destructive Test; Ultrasonic Method of Testing Claddings, Produced by Welding, Rolling and Explosion *(withdrawn standard)*
SEP 1915 1989-12	Ultrasonic testing of steel tubes for longitudinal defects *(withdrawn standard)*

Abbreviations used:

DIN	German Institute for Standardization
EN	European Standard
ISO	International Organization for Standardization
MQE	Procedure of MQ Engineering GmbH
SEP	Steel-Iron-test sheets from the German Iron and Steel Institute

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