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GENERAL INFORMATION



SPETECH has been established in 1988. From the beginning, **SPETECH** has been providing both, technology and materials for operational support systems and maintenance. We specialise in process seals technology as well as other areas, to include lab testing and research, provision of technical advice in cooperation with national network of technical bodies, staff training, specialised services related to flange treatment, provision of software for measuring flange connections, production, delivery of seals as well as optimising the sealing systems for our customers.

SPETECH is the first Eastern European company to become a member of the **European Sealing Association (ESA)** 1998, participating in the Flange Gasket Division and Packing Division activities. The ESA is a forum for the development and promotion of qualitative, safe and eco-friendly solutions in the area of seals. The Polish Industrial Valves Association plays a similar role in the Polish market and **SPETECH** are hoping to carry out similar activities through this association.

Due to **SPETECH**'s specialisation in pressure equipment and being directly connected with the PED directive, we are working closely with a Polish supervisory authority, namely Polish Office of Technical Inspection (UDT), in the fields of pressure equipment manufacturing and testing. For the same reason, we are also working with other supervisory authorities from a wide range of countries, with jurisdiction both at European and national levels.

As a result, we have been **ISO 9001:2008** certified through the renowned and accredited TÜV Rheinland organisation since late 1990s. ISO 9001 is a certification required for pressure equipment deliveries.

One of the examples of working in a local market, is our cooperation with a Belarusian organization, Gostpromnadzor.

SPETECH products have numerous certificates and accreditations for their manufactured products, including from institutions such as: TÜV Rheinland, Polish Office of Technical Inspection (UDT), Münster University of Applied Sciences, Amtec, National Institute of Hygiene (PZH), and Oil and Gas Institute (INIG). We are a member of: European Sealing Association (ESA) and Polish Industrial Valves Association (SPAP).



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Laboratory of Sealing Materials (LSM) is being run in line with the EN ISO/IEC 17025 rules. The LSM runs gaskets tests in accordance with the EN 13555, ASTM F-586, F-36, F38, VDI 2440, EN 61340-2-3 standards; and armature packages testing in line with the EN ISO 15848-1. In addition to that, the LSM runs the tightness and mechanical properties tests according in compliance with internal procedures. The LSM is an approved sub-contractor for TÜV Rheinland and Polish Office of Technical Inspection (UDT).

SPETECH provides technical advice in the field of the diagnostics of gaping causes, based on the measurement of connections shape and dimensions, material analysis, chemical resistance, operation history as well as aging and corrosion processes analysis.

The **Flange Assembly and Bolting Training**, in addition to an ongoing education in the area of modern sealing techniques, is being designed and delivered in compliance with EN-1591-4 and on two levels, i.e. for flange fitters and for the responsible engineers. The flange services are related to roughness determination, as well as shape declination measurement, predominantly, the flatness and co-cnicity; and less often the cylindricity of sealed areas. In cases of shape aberrance, the mending and tooling processes (legalisation, turning, etc.) are put in place. The calculation program **EUROPARTNER®** being currently supplied, includes an algorithm compliant with the EN 1591-1:2013,- 2009, - 2001, ASME Code s. VIII, AD 2000 Merkblatt, WUDT.

The soft database contains the seals, bolts, gaskets and flangestype and dimensions data as well as the material data related to all elements of the joints.

Based on our analytical software and on the FEM method, we are determining the flange connections design features for particularly responsible connectors.

The production is based on CNC and devices which guarantee highly repetitive and economical production. We have been ISO 9001 certified in this field for nearly 20 years. Our workshop areas currently span 5000 sq.m.

We are compliant with EN ISO 3834-2 in the field of welded elements production.

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This rapid development of the pressure equipment technology, particularly that related to process seals, is aiming at safety and reliability enhancement as well as at reducing the environmental impact. All of those aspects require the provision of production repeatability on one hand (hence our cooperation with an EN ISO 9001 certified organisation); and on the other hand, they also require verification of suitability for use, while taking into consideration increasingly higher quality requirements and standards. As a result, we collaborate with various organisations both, national and international, with an authority to certify particular quality parameters. The Leak Tightness Quality Certificate, also known as „TA-LUFT“, for compliance with the VDI 2200/2440 requirements is a confirmation of compliance with the highest sealing standards, particularly for seals designed for refinery and chemical industries when used with hazardous materials.

SPETECH'S continuous development in the field of manufacturing of metal and soft-metal seals, particularly those made of special materials or in new types, has resulted in the development of advanced welding techniques. We are currently EN ISO 3834 ÷ 2 certified. We have certified qualifications for carbon steel, austenitic stainless steel as well as nickel and titanium alloys welding. We constantly broaden the scope of welding techniques and widen the range of the materials to be processed. The certification related to this area of our work is also obtained through TÜV Rheinland. The development of the generative forces correlates with product development: **SPETECH** run a research lab, with a focus on sealing materials. Being compliant with the requirements of the EN ISO/IEC 17025:2005 certification as well as with the LAB-WT-01 guidelines, we are a subcontractor for Polish Office of Technical Inspection (UDT) and for the TÜV Rheinland.

Currently, our lab is undertaking research and testing activities in compliance with EN 13555, ASTM F586, F38, F36, VDI 2440 (TA Luft). We are also preparing for undertaking research and tests in compliance with EN ISO 15848-1 for gland seals.



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On request, the SPETECH metal seals can be accompanied by the EN 473/EN ISO 9712 compliant non-destructive or destructive testing:



UT – ULTRASONIC TESTING

This method enables us to exclude discontinuities in forging, metal sheets and weld connections. It is also used for thickness measurement.

We perform these tests in compliance with the following standards:

EN ISO 16810:2014 • EN ISO 17640:2011 • EN 10307:2004
EN 10308:2004 • EN 10228-3:2000 • EN 10228-4:2000
EN 14127:2011

Assessment of compliance with the following standards:

EN ISO 11666:2011 • EN 10160:2001 • EN 10228-3;4:2000



RT – RADIOGRAPHIC TESTING

This method is perceived as a basic and most reliable non-destructive testing method. The method enables detecting inner-, surface and subsurface discontinuities. We perform these tests in compliance with the following standards:

EN ISO 5579:2014-02 • EN ISO 17636-1:2013-06
EN ISO 10675-1:2013-12

Assessment of compliance with the following standards:

EN ISO 10675-1:2013-12



MPT/MT – MAGNETIC PARTICLE TESTING

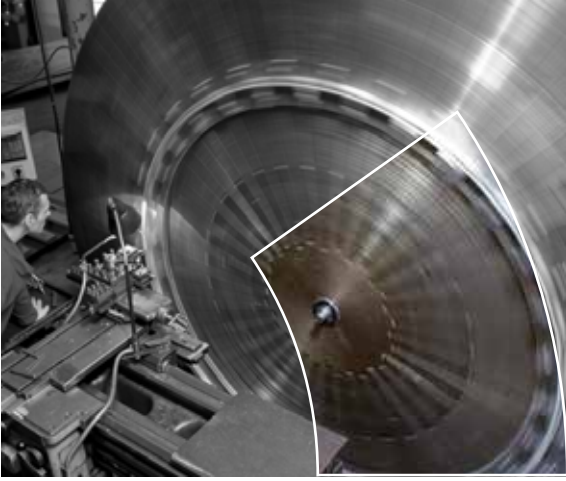
A method of detecting surface welding nonconformities in ferromagnetic welded connectors. This method is very accurate and efficient, it does, however, require careful preparation of the tested connector. We perform these tests in compliance with the following standards:

EN ISO 17638:2010 • EN ISO 9934-1:2005

Assessment of compliance with the following standards:

EN ISO 23278:2010 • EN 10228-1:2002

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PT – PENETRATION TESTING

This method is used for detection of welding discontinuities (material discontinuities) appearing on the surface of a welded connector. This test is done following a visual testing of a welded connector and used mainly for both ferromagnetic and non-ferromagnetic materials.

We perform these tests in compliance with the following standards:

EN ISO 3542-1:2013-08 • EN ISO 3452-2:2014-08

EN ISO 10893-4:2011

Assessment of compliance with the following standards:

EN 10228-2:2000 • EN 23277:2010



VT – VISUAL TESTING

These tests allow detecting dimension nonconformities. The most common defects detected through this method include: Leaks, cracks, corrosion.

We perform these tests in compliance with the following standards:

EN 13018:2004 • EN ISO 17637:2011

Assessment of compliance with the following standards:

EN ISO 5817:2014-05



ROUGHNESS MEASUREMENT

Roughness measurement is being done in line with EN ISO 16610-21:2013-02 and EN ISO 4287:1999. It is being done using contact devices and in the workshop by using the comparison method with gauge blocks.

The contact method determines parameters Ra, Rz, Rt, Rm, Rp, Sm, S, tp for 14 of the roughness class. Production of results is made by using Gauss' filtration method, with simultaneous possibility of report preparation.





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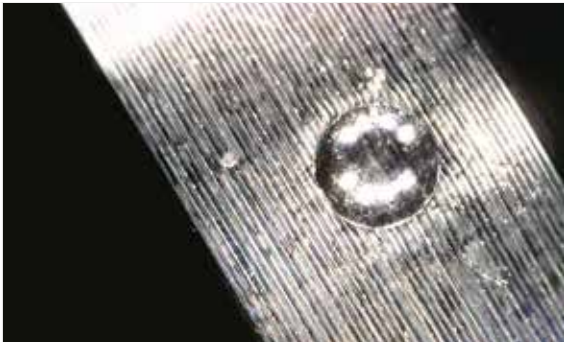
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MEASUREMENT OF CHEMICAL COMPOSITION OF METALS

Chemical composition of metals can be measured by either using an X ray spectroscopy method or by mass spectrometry. The measurement reports include the chemical composition of major alloying elements and, if applicable, assign the corresponding steel grade. The report can be prepared in a form of printout from the measuring device. Designation C according to EN-ISO 9556:2003, designation S according to EN ISO 24 935:1994.

This unambiguous identification of every single detail and each piece of steel at each stage of production, allows us to trace back the material origin throughout the entire production process.



HARDNESS TESTING

The hardness testing of the gaskets made of metal materials, is done using Brinell's (HB) method (HB) according to EN ISO 6506, Vickers' (HV) according to EN ISO 6507 or Rockwell's (HRB, HRC) according to EN ISO 6508. If the hardness value conversion is necessary according to the above methods, the value conversion is performed in line with EN ISO 18265. Other methods or specific testing requirements to be discussed.

In case of soft materials, Shore's method is normally used in line with EN ISO 868.



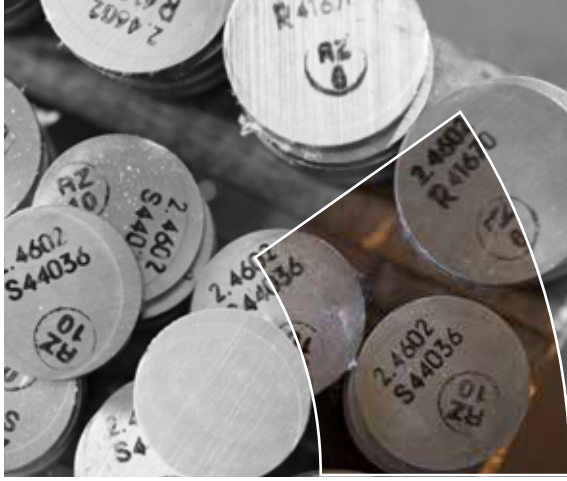
IMPACT TEST

Impact test is recommended particularly for fragile metals and alloys. ISO 148-1 (EN 10045-1) or ASTM E23 standards are being used in this case. Charpy pendulum impact (V-notch and U-notch) testing method is used for determining the energy absorbed in an impact test of metallic gaskets materials. Impact test is recommended particularly for fragile materials in specific temperatures. Unless otherwise specified, test shall be carried out at $23 \pm 5^\circ\text{C}$, where the test can be carried out in a wide temperature range including sub-zero.

The test report shall include the following information:

- Standard reference
- Type of material and cast number
- Notch type
- Size of the tested piece, if other than full size
- Conditioning temperature
- The absorbed energy in J
- Any abnormalities that could affect testing process

In most cases the original inspection certificate 3.1 for raw materials includes some results of the impact test. Any special requirements on request.



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FORGING

Forging is a base material obtained in the process of plastic formation of metals. Through continuity of the fibres, the material processed in the process of forging develops very good physical and mechanical properties through, which ensures resistance to the highest loads.

EN 10222-1 • EN 10222-2 • EN 10222-3 • EN 10222-4 • EN 10222-5
 ASTM A182/A182M • ASTM B462 / ASME SB462 • ASTM A522/A522M



METAL SHEETS

The most popular base material for metal seals, obtained in the process of hot or cold rolling.

EN 10088-2 • EN 10088-4 • EN 10028-1 • EN 10028-2 • EN 10028-3
 EN 10028-4 • EN 10028-5 • EN 10028-6 • EN 10028-7 • AD2000W0
 AD2000W2 • AD2000W10 • ASTM A240/A240M • ASME SA240/SA240M
 ASTM A480/A480M • ASME SA 480/SA480M • ASTM B series / ASME
 SB series NACE MR 0175 / ISO 15156 • NACE MR 0103 / ISO 17945
 • VdTuv



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QUALITY CERTIFICATES ACC. TO EN 10204



Compliance documents in accordance with the EN 10204 Compliance documents, confirming compatibility of products with order requirements, which can be requested for every order.

Types of compliance documents according to EN 10204:

TEST REPORT 2.1

A document confirming products' compliance with the requirements specified in the order, not including test results.



TEST REPORT 2.2

The same document as in point 2.1 above, but also including test results obtained during product internal control. Typically, the seal dimensions are indicated in this report, unless agreed otherwise.



INSPECTION CERTIFICATE 3.1

A document similar to the test report 2.2 described above, but authorised by the manufacturer's licenced quality controller, who is an independent representative of department different to the production department. The independence of **SPETECH's** Quality Control Department from its production department is guaranteed by ISO 9001 system. The standard test results given in this certificate include:

- Seal dimensions;
- Properties of non-metallic materials specific to particular seal type/material;
- Chemical composition and resistance properties of metallic materials;
- Purity of lead materials.



INSPECTION CERTIFICATE 3.2

Inspection certificate authorised by the ordering party's quality controller
Inspection certificate "Type 3.2" is defined within EN10204:2004 as a "Document prepared by both the manufacturer's authorized inspection representative, independent of the manufacturing department and either the purchaser's authorized representative or the inspector designated by the official regulations and in which they declare that the products supplied are in compliance with the requirements of the order and in which test results are supplied". Industry recognises an independent third party inspection as fulfilling the role of "purchaser's authorized representative or the inspector designated by the official regulations".



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ADDITIONAL CERTIFICATES



CERTIFICATION FOR INSTALLERS ACC. EN 1591-4

SPETECH trains and certifies the installers and technical supervisory services in line with EN 1591-4. Based on the cooperation agreement, we also issue certificates for both training levels, including those on behalf and under the supervision of TÜV Rheinland.

These training courses can be both stationary, at the company headquarters, as well as field-based, using mobile training stations.



INDEPENDENT THIRD PARTY CERTIFICATION

SPETECH is closely cooperating with world-leading certification companies such as TÜV, SGS, Lloyd's Register, Intertek and many others. In order to ensure that all our products meet the highest global standards, we provide certificates confirming the compliance of our products with international regulations and standards.



PACKAGING CERTIFICATION

In cooperation with PAS-Group, SOR-DREW we offer fumigating wood packaging with the certificate which, for all wood packaging materials that are being used for shipments, is clearly marked with the „IPPC” logo, country code and certification number. All wood packaging materials are treated in accordance with the international ISPM 15 Standard.



