

The company BRONSWERK HEAT TRANSFER s.r.o. is active particularly in the production of air coolers, heat exchangers (shell&tube ones), industrial heaters, condensers and other types of equipment for the petrochemical and chemical industry and power engineering. Each of the equipment is designed, manufactured and tested in accordance with the specific needs and requirements of the customers.

The units of equipment supplied, or their main parts are in most cases (based on their design parameters) so called reserved products. This circumstance is reflected in the approach to the performance of inspection activities which result from the legal requirements (such as the European Directive for pressure vessels 2014/68/EU (formerly 97/23/EC) - PED), from the requirements of the design standards (ČSN 690010, ČSN EN 13445, AD 2000-Merkblatt, ASME Code Sec. VIII Div. 1 ...) and the related regulations (for example, the applicable standards of the American Petroleum Institute (API 661 / EN ISO 13706 (the requirements for air coolers for the petrochemical industry), API 660 / EN ISO 16812 (the requirements for heat exchangers for the petrochemical industry)).

From the company's point of view, important is the amount of experience acquired in the past which promotes the interest to produce and supply units of equipment which not only satisfy the requirements of the applicable regulations at the time of the manufacture itself but which are reliable for the entire time of the envisaged operation (not only during the warranty period). Meeting the requirements imposed upon the quality, and the associated long-time reliability of the products mark a valuable benefit for the customers, and as a feedback, also the motivation to keep rendering such an enhanced quality at the high level.

New requirements related to the development in the recent years during which the type of customers have changed, still greater proportionate amount of equipment is produced for engineering-contracting associations with a supranational interest, step by step have led our company to merge the original stabilized approach to the inspection with the new requirements arising out of the changing portfolio of customers. Such changes apply both to emphasis on the initial identification of the selected types of check points with different stages of the attendance of the customer (including the performance of special types of tests - for example, helium leak tests with differently chosen levels of sensitivity, positive material identifications of materials used in the production of the equipment, etc.), and more demanding methods of the ongoing preparation of the technical documentation linked with the systems of ongoing approving of the individual parts of the documentation by the customer in dependence on his specific requirements as regards the manner and progress of such approval process. For particular orders and customers (beyond the legal and normative requirements), the accompanying technical documentation of the products is being prepared in a specific form which can be continually monitored by the customer, if so required by him, before the release of the final version and handing it over along with the finished product. Until now, the company always has succeeded in fulfilling new specific customers' requirements, and it is a challenge for it to cope with this trend with the extended input of the abilities, interest and invention. The permanent positive feedback from the customers is a valuable support in these efforts.

All basic elements of the approach of the company to the execution of orders are directly anchored, and during the development of the company, they are supplemented in the system documentation of the company. The latter is the underlying base, and on a long time basis it is, on the contrary, also the outcome of repeated successful recertification audits of the Quality Control Systems in the company (particularly in accordance with the standard ČSN EN ISO 9001).

Incoming inspection – its main goal is not to allow that any material, semi-product or sub-supply are released for production or shipping without performing the quantity inspection and quality inspection. The quantity part of the inspection provides the ascertaining of the compliance of the received material with the requirements of the technical specifications created by engineers of the company for the purpose of the definition of clear and precise requirements for the properties of materials, semi-products, or sub-supplies. Unless the received goods satisfy physically, or in terms of the necessary accompanying documentation, such beforehand defined requirements, they may not be used in the company.

In-process inspection is performed throughout the entire production. The base of the in-process inspection comprises Inspection Plans, created at the beginning of the completion of the order.

The Inspection Plans include the necessary inspections defined by:

- laws (for example, those for pressure vessels for customers or Operators in the EU, by European Directive for pressure vessels 2014/68/EU (formerly 97/23/EC - PED); for complete equipment of the

European Directive relating to equipment intended into the environment with explosion risk 2014/34/EU (formerly 94/9/EC - ATEX); the Directive covering the requirements for machinery 2006/42/EC (formerly 98/37/EC) etc. ...)

- the requirements of design standards
- own experience acquired thanks to the previous practice and knowledge

In addition, in the Inspection Plans, inspections performed by independent third parties (so called notified persons), and last but not least, by the customer who has, if required by him, the possibility to define his participation on the chosen inspection operations and tests, including the extent and status of his attendance (he can define inspections and tests which cannot be performed without his attendance and thus the production cannot carry on), are specified and acknowledged.

End-of-production inspection entails for the shop-floor finished products the guarantee of their compliance with the production documentation.

Final inspection guarantees the readiness of the products for shipping and assurance that during the preparation no damage of the products occurred.

A separate and important chapter of the in-process inspection is the performance of non-destructive examinations of the parts fabricated by welding and weld overlaying. Through both the in-house capacities and through external NDE companies, the company provides the performance of all required non-destructive examinations by persons certified according to EN ISO 9712 (formerly EN 473). In case of the production according to ASME Code (Sec. VIII, Div. 1), the required persons of the company as well as those of the sub-suppliers are certified in accordance with the related regulation SNT-TC-1A, and the accuracy of this certification is verified within periodical recertification audits directly from the company ASME.

For the performance of destructive examinations and other mechanical tests of the materials the company uses external services of accredited material laboratories and testing laboratories, with a long tradition.

In case of products from alloyed steels and high-grade non-ferrous alloys (Monel, Inconel, titanium, brass, and so on), the company uses for the verification of the quality of the supplied mill products an X-ray emission spectrometer using which the accuracy of the chemical composition of the materials independently from the documents handed over to the supplier of such material is verified. Thanks to the mentioned device, the company using its own capacities and in an expedient manner performs on finished products the positive material identification (PMI) for the verification of the quality of the materials used (such procedure entails the principal prevention of material confusion in case of products intended for an environment with an increased corrosion stress for which the mentioned materials are intended).

Most products of the company fall among pressure vessels. Integral and no less important part of each product is its accompanying technical documentation which is prepared by the Quality Control Department. The form and arrangement of the documentation - beyond the requirements of the applicable regulations - are defined by the customer. It goes without saying that the preparation and handing over of the documentation are provided in the electronic form.

A lot of products of the company, particularly complete air coolers, are operated in an environment with an explosion risk. In such case the company designs, certifies and supplies units of equipment in the secured design according to the requirements of the European Directive 2014/34/EU (formerly 94/9/EC - ATEX) and related executive standards.

The company is the holder of authorisations and certificates evidencing the implemented and maintained Quality Control System (for example, ČSN EN ISO 9001 (Quality Management System in the company), ČSN EN ISO 3834 (quality in the welding process). On a long time basis, the necessary certification for the fabrication of steel structures is maintained (actually, particularly ČSN EN 1090-2). Besides that, the information that the company has been, since the year 2004, certified, and at periodical intervals is successfully recertified for the production of pressure vessels in accordance with ASME Code, Sec. VIII, Div. 1 is worth mentioning. Thanks to such certification, the company is allowed to prepare the design, perform the production, ongoing testing and the final inspection with the attendance of the

Authorized Inspector appointed directly by the ASME organisation. Vessels manufactured this way can be also registered at so called National Board Register on the basis the adequate authorisation.

Interesting (and from the point of view of the development of the recent years, also essential) is the complete system company's certification for the possibility of supplies to the territory of the Russian Federation, Belarus, Kazakhstan and Ukraine. Such certification covers the standard portfolio of company's supplies, and if needed (atypical orders), the company is able to extend the range of the certification.

The independence of the Quality Control Department from the other sections of the company is not within the company just a theoretical notion, but the provision of the potential to intervene into the production process and perform the testing in such a manner that the quality of products does not deteriorate during the manufacture of them to the expense of quantity or deadline pressures when performing the orders (the company is able to solve such situations by ways other than those which would constitute an adverse impact upon the final quality). Essential is the confidence of the company insisting in the fact that the long-term quality and the related failure-free functions of the equipment are both the true value for the company itself (satisfied customers keep returning back to the company), and the value which is constantly required by almost each and every customer more than just the lowest price of a new product or an extremely fast pace of its production.

We in the company believe that the quality and reliability of equipment constitute a long time investment - an investment into our customers who operate our products or who install them with the expectation that they will perform their function without problems for the entire period of the designed service life, or often, even beyond it. This is a challenge for the company's team motivating to day-by-day activities, subject of a non-declining interest in keeping and enhancing the company's standard when executing all stages of the design, manufacture and inspections performed.