



**BALTIC
METAL
CONSTRUCTION**

DESIGN AND MANUFACTURE OF INDUSTRY-PURPOSE HIGH-TECH PRODUCTS



A MEMBER OF TMT HOLDING



ABOUT OUR COMPANY

Baltic Metal Construction OÜ is a company established on the basis of the old Tallinn Machinebuilding Factory (TMT). Thanks to its many years of experience and modernization of production capacities and technologies, the activity of the company is oriented towards new, modern and professional operations.

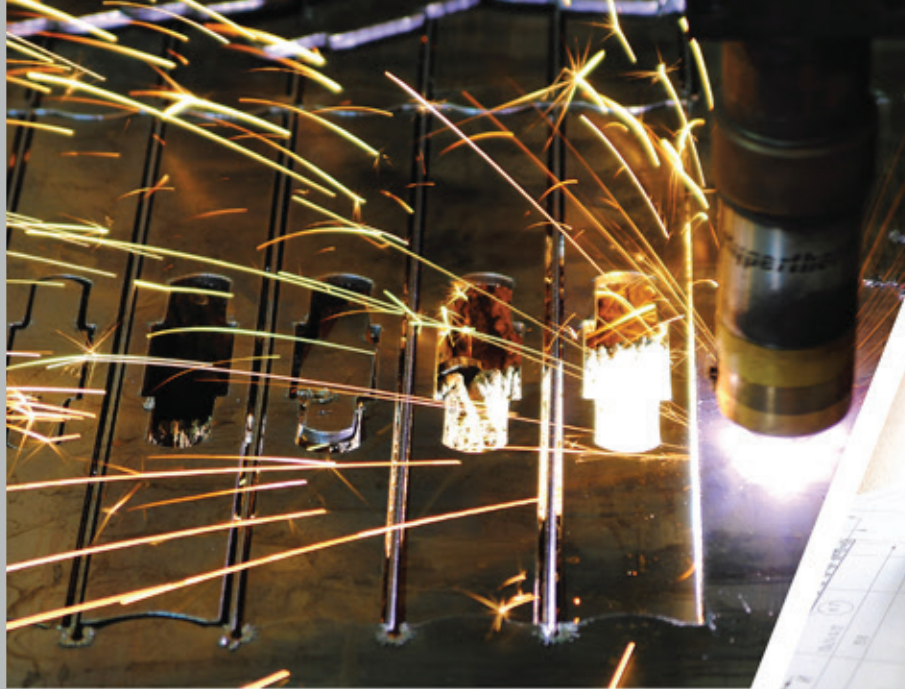
Our mission is to remain the leading company in the design and manufacture of industrial equipment, as well as to meet the customers' needs and desires, offering the best price-quality ratio.

Our company specializes in the manufacture of high-tech and highly competitive products as well as implementation of integrated solutions of varying degrees, which include:

- Manufacture of a complete range of industry-purpose products:

- for oil and gas processing plants;
- for the petrochemical industry;
- for the mining industry;
- for the pulp and paper industry;
- for the energy industry;
- for the fertilizer industry.

- Heat exchange equipment and their assemble parts;
- Manufacture of reservoirs and containers for different uses;
- Manufacture of manifolds and tube assemblies for pumping stations with an operating pressure of up to 320 atm;
- Different conveyor systems, mechanism assemblies and aggregates both in individual products and by series;
- Installation and repair work in the customers' construction sites;
- Installation supervision and technical audit of the objects in the field



SERVICES

At our disposal is modern equipment, experienced engineers and well-trained workers, as well as a network of sub-contracting organizations for performing the following tasks:

- Design;
- Manufacture:
 - preparatory division;
 - assembly and welding division;
 - mechanical division;
 - assembly and packaging division;
 - painting division;
 - foundry;.
- Heat treatment;
- Corrosion protection of structures using materials that ensure their stability for 15 to 20 years or longer and in the climate zones U 1 and UHL 1;
- Hot dip galvanizing of structures;
- Laboratory services with the test division (DT and NDT);
- supply of the assembly parts (industrial fans, electric motors, finned tubes, pneumatic and electric drives, temperature and vibration sensors, frequency converters, etc.);
- installation works (electrical and outfitting);
- transport services throughout the world (transport of standard size as well as oversized loads).

We perform works by the technical task of the customer, as well as by the customer's drawings. Our responsibility is to solve problems from drawing up construction documentation all the way to delivery of the finished products to the customer.



DESIGN

The design and engineering department of **BMC OÜ** is a team of highly skilled designers and engineers who have years of experience in project development.

We prepare drawings on the programs **Autodesk Inventor** and **AutoCAD** on the basis of two-and three-dimensional models of the designed details.

Our possibilities:

- Preparation of technical tasks;
- Engineering and design;
- Strength calculations;
- Drawing up work documentation;
- Development of user documentation (specifications, guidelines, manuals, etc.).

Design Standards:

- GOST R ISO 13706 Air-cooled heat exchangers. General technical conditions.
- GOST R 51364 Air condensers. General technical conditions.
- GOST R 52630 Steel vessels and apparatus. General technical conditions.
- GOST R 52857 Vessels and apparatus. Strength calculation norms and methods.
- ASME Boiler and pressure vessel code.
- PD 5500 Specification for unfired, fusion welded pressure vessels.
- EN 13445 European Standard for Unfired Pressure Vessels.
- EN 14015 Specification for the design and manufacture of site built, vertical, cylindrical, flat-bottomed, above ground, welded, steel tanks for the storage of liquids at ambient temperature and above.

Unit Geometry		Inlet		Outlet	
unit					
bay					
	(m ²)	15132,7			
	(m ²)	737,153			
	(m)	2,883			
	(--)	3		3	
	(mm)	100,000		100,000	
	(m/s)	0,15		0,14	
	(kg/m·s ²)	20,15		18,65	
	(kPa)	0,011		6,527e	

Fan Geometry		Actual		Standard	
No/bay	(--)				
Fan ring type					
Diameter	(m)	2,500			
Ratio, Fan/bundle face area	(--)	0,43			
Driver power		33,27			
Tip clearance	(mm)	12,500			
Efficiency	(%)	65			
Face	(m/s)	4,24		4,10	
Maximum	(m/s)	9,71		9,38	
Flow	(100 m ³ /min)	176,183		170,211	
Velocity pressure	(Pa)	57,80			

THERMAL AND HYDRAULIC CALCULATIONS

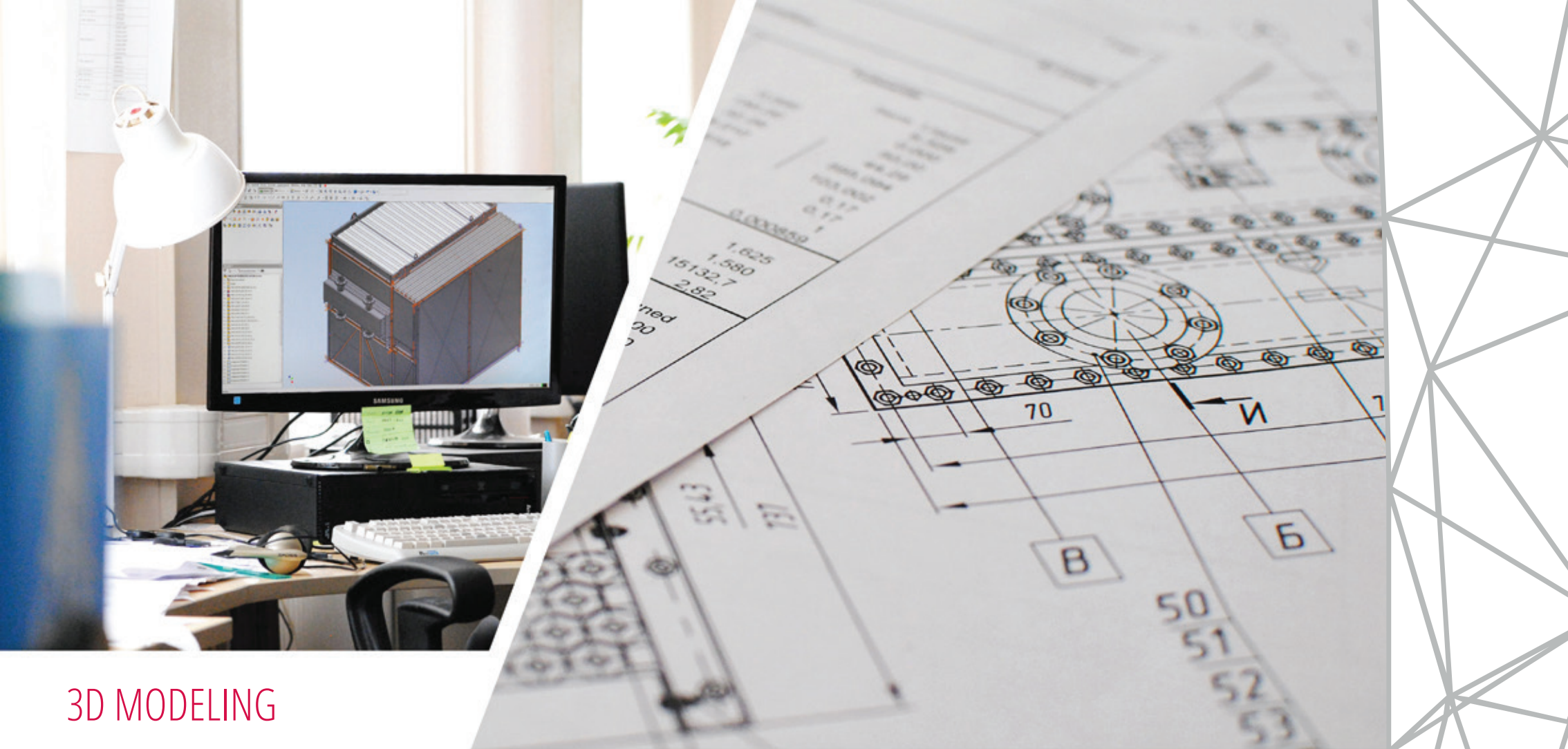
For making thermal and hydraulic calculations, we use the program **HTRI Xchanger Suite**.

This program is intended for calculation purposes for the following machine types:

- tube heat exchangers;
- plate heat exchangers;
- tube-in-tube heat exchangers;
- spiral heat exchangers;
- finned tube heat exchangers;
- flame-fired heaters and stoves.

The program enables to make:

- thermal calculations;
- hydraulic calculations;
- aerodynamic calculations;
- process simulations;
- an overview of the environmental behavior under various conditions.



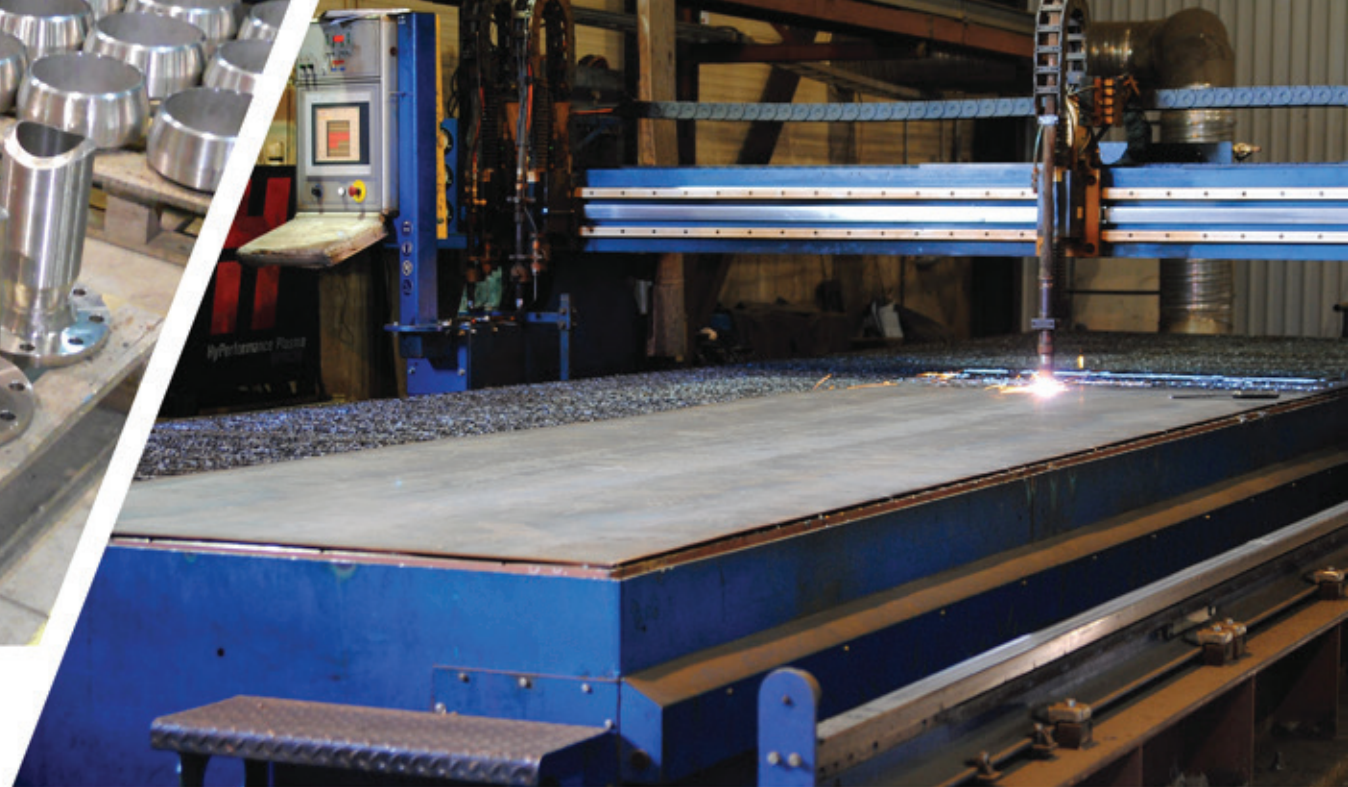
3D MODELING

- 3D modeling of products manufactured in the Autodesk Inventor environment.
- Strength Analysis of products in ANSYS environment.

We approach each customer individually and therefore always consider the customer's demands and wishes.

We coordinate with the customer for each project:

- Overall drawing;
- List of components, assemblies and the assembled parts of materials specification;
- Thermal and hydraulic calculations;
- Quality, testing and a thorough inspection plan.



MANUFACTURE

The **BMC OÜ** production complex includes the main production building and a number of auxiliary production facilities.

The main production building is divided into three naves with a total area of over 10,000 m². Each nave is equipped with two or three remote-controlled cranes.

- THE PREPARATION DIVISION

- The preparation division is equipped with the following basic equipment:
Gas cutting machine which has two gas cutting burners and one plasma cutting burner, the dimensions of the desktop is 2.5 m x 10.5 m. The maximum thickness of the steel sheet for gas cutting is 200 mm, on plasma cutting 15 mm.
- Band saw benches with various modifications.
The maximum cross-section of the rolled profile on cutting at the angle of 90° by 550 mm x 380 mm, on cutting at the angle of 45° by 300 mm x 300 mm.
- Hydraulic sheet bending press which enables to bend components with a length of 4000 mm and a wall thickness up to 10 mm.
- Thanks to reliable sub-contracting organizations, we also have access to these facilities:
 - Water-abrasive cutting of sheet metal;
 - Rolling and bending of sheet metal with the width of 3000 mm and a wall thickness up to 60 mm.
 - Manufacture of spherical bottoms.



- ASSEMBLY AND WELDING DIVISION

The assembly and welding division are equipped with a variety of tools, technological jigs and modern welding equipment from such world renowned manufacturers like **ESAB, KEMPI and LINCOLN.**

We are able to perform the following welding processes:

- **MMA** – manual arc welding coated with electrodes;
- **TIG** – gas welding with non-melting electrode shielding gas environment;
- **MAG** – arc welding with melting metal electrodes (wire) in an active shielded environment with automatic feeding of welding wire;
- **MIG** - arc welding with melting metal electrodes (wire) in an inert shielding environment with automatic feeding of welding wire;

- **FCAW** – filler wire welding with automatic feeding of welding wire;
- **SMAW** – automatic arc welding with a metal electrode (wire) under the flux layer.

Materials used in production:

Carbon steel; boiler steel; high-alloy steel; high-temperature resistant steel; copper; brass; high-alloy steel (DUPLEX); ALLOY.



BMC has been certified according to the standards EN ISO 3834 and EN 1090. All BMC welders are certified according to the standard EN287-1. For welding processes are developed technological welding procedures and instructions (WPS and WPQ).

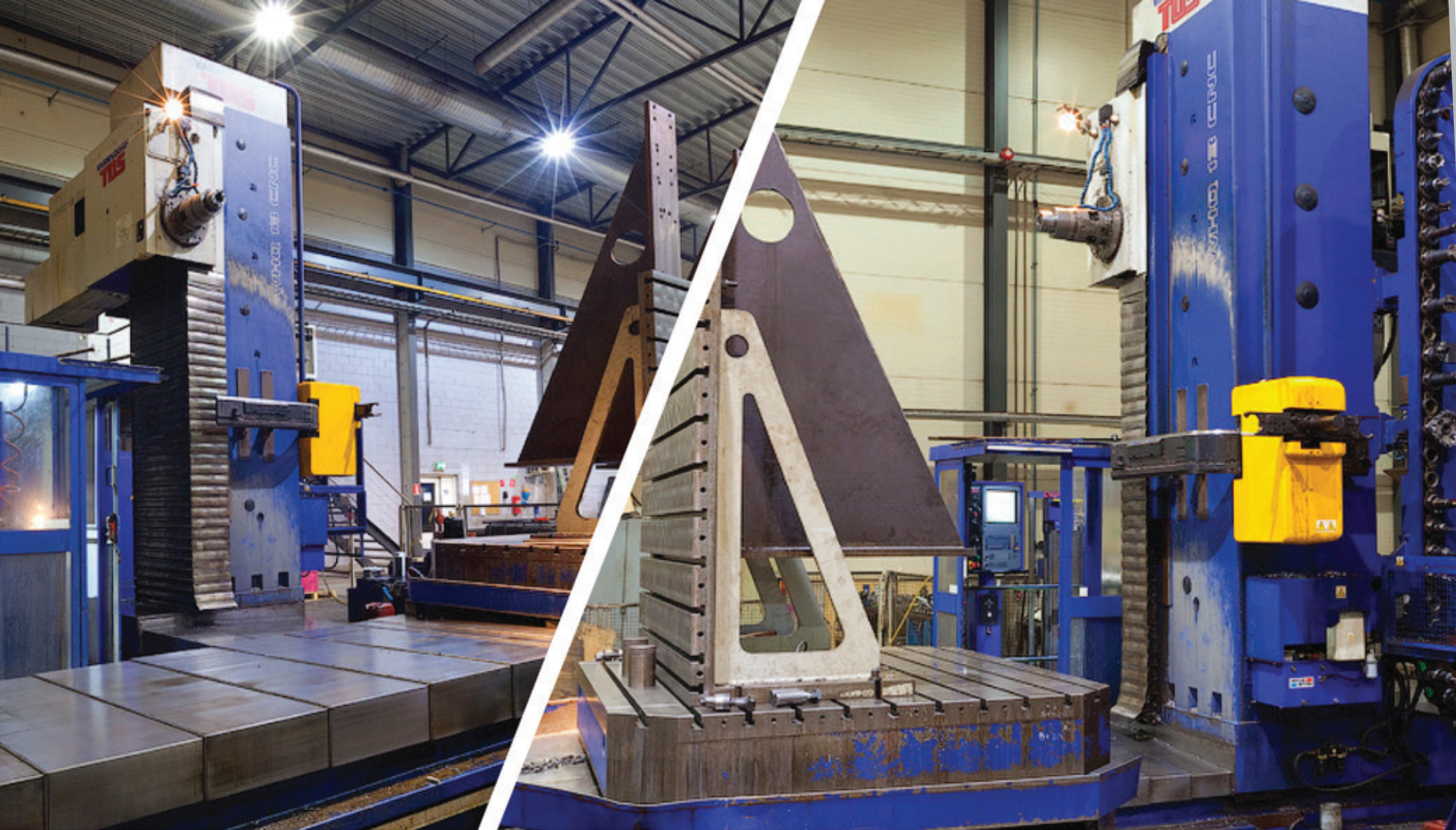
During the assembly, welding work and upon their completion, coordination with the customer includes the submission of the following documents:

- quality control plan;
- welding procedure specification;
- WPS / WPQR (**EN 15609 / EN 287-1, EN1418**);
- non-destructive inspection protocols + certifications of inspectors; (**EN 473**)
- testing protocols

All welding works are made in accordance with **EN ISO 3834** requirements.

The measuring inspection methods and all the necessary tools are selected according to the circumstances listed in the standards **ISO 7976-1 / ISO 7976-2**.

All non-destructive inspection methods are selected in accordance with the standard **EN 12062** and are used by qualified personnel in accordance with the standard **EN473**.



- MECHANICAL DIVISION

The BMC mechanical division is equipped with an entire fleet of machining centers (machine tools) consisting of:

- Horizontal boring centres;
- Vertical boring centres;
- Lathes;
- Radial drilling machine.

VARNSDORF TOS WHQ 13 CNC is a universal machining centre which is intended for precision milling, coordinate drilling, boring and threading for cabinet, panel and a sophisticated form of products / blanks weighing up to 5,000 kg.

Features:

- spindle 800 mm; table 1800 x 2200 mm; over 60 tools;
- X=4000 mm , Y=2500 mm , Z=1250 mm;
- HEIDENHAIN control system.



Vertical boring centre

Features:

- X=1270 mm , Y=660 mm , Z=520 mm;
- table 600 x 1030 mm;
- 20 tools with a rotary drum;
- HAAS CNC CONTROL system.

Lathes

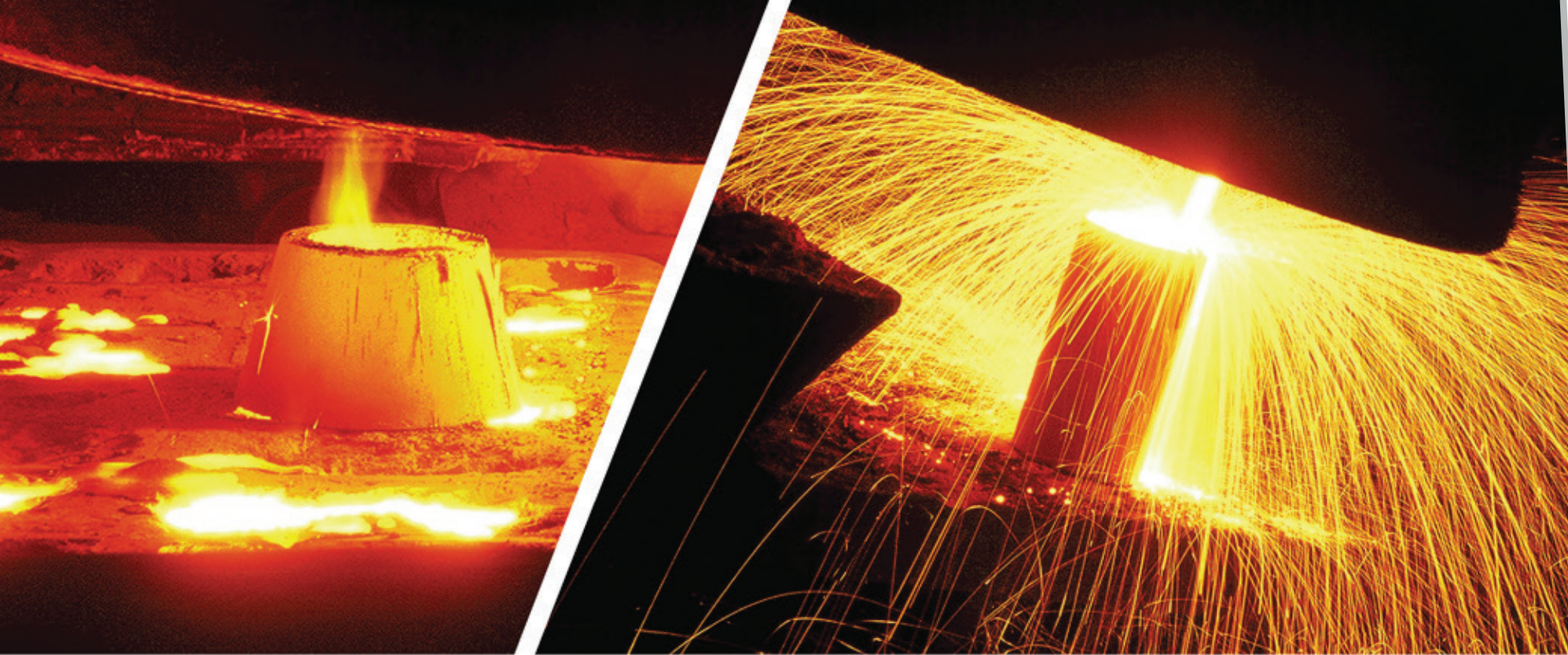
Features:

The maximum processed diameter Ø250 mm.

Radial drilling machines

Features:

- maximum boring diameter on structural steels and cast iron Ø60 mm;
- thread M46
- boring depth 315 mm;
- table 2500 x 1000 x 210 mm;
- rotating table of 600 x 500 x 500 mm;
- horizontal drilling head feed 1250 mm.

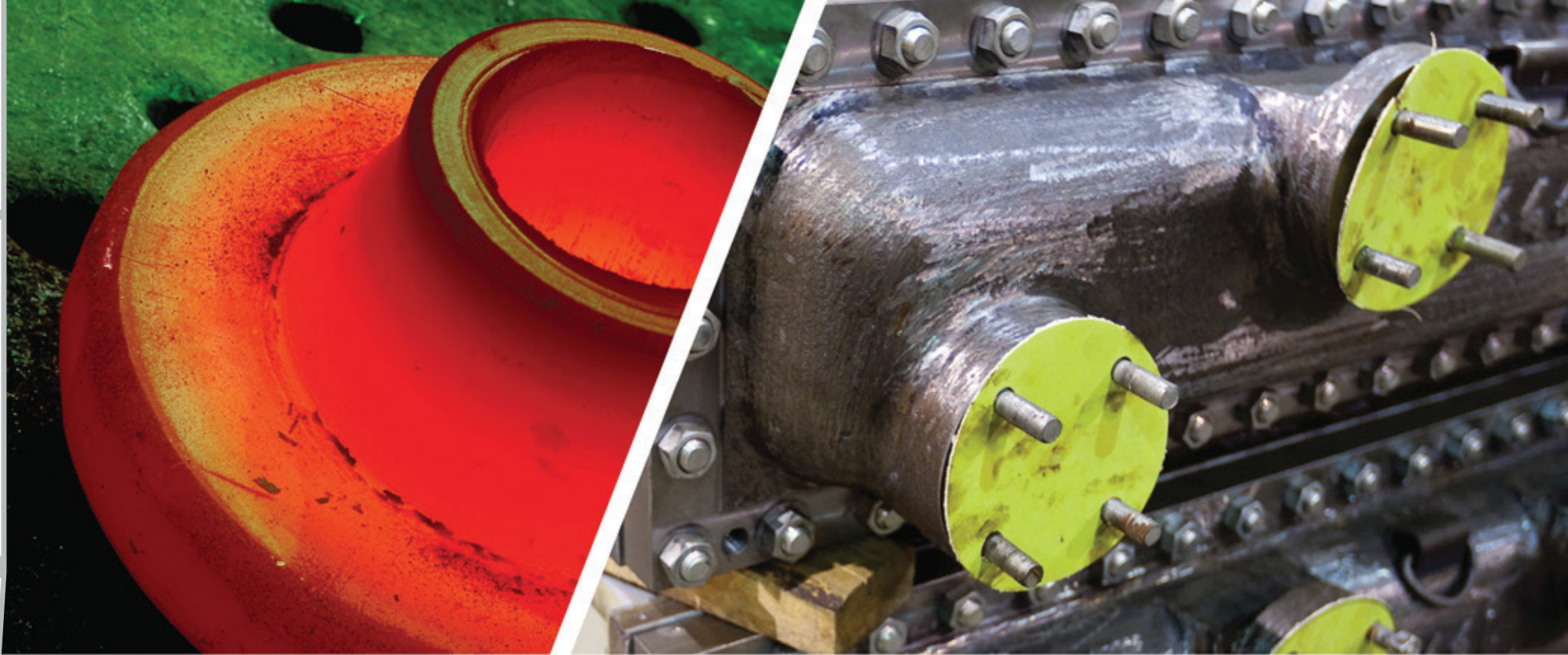


- FOUNDRY

The foundry consists of the foundry and model division. Production quality is checked by the inspector-controller and the laboratory houses a Spektromax analyzer.

Technical equipment:

- Two electric-arc furnaces ДСП-3М2 with the casting capacity of up to 5 tons of molten metal in either.
- Two induction furnaces INDUCTOTHERM with the casting capacity of up to 2 tons of molten metal in either.
- Equipment for manufacture molding mixes on the basis of water glass and with the AlfaZet process.
- Molding machines.
- The thermal processing division, a thermal furnace capacity up to 20 tons.
- The control of technological processes of all stages of manufacturing of castings:
 - control of molding mixes;
 - expert control of chemical composition of the molten metal in the melting processes;
 - control of molten metal temperature;
 - control of thermal processing mode;
 - control of chemical composition and mechanical properties of castings;
 - possibility of mechanical treatment;
 - control of finished products.



Steel castings are made according to the standard **GOST 977-88**.

Deliveries of finished products (castings) are accompanied by a certificate (passport), indicating their chemical composition and mechanical properties.

Main cast steel grades:

- CARBON STEEL
- SPECIAL STEELS
- STEELS WITH HIGH MANGANESE CONTENT

STEEL GRADES (15Л, 20Л, 25Л, 30Л, 35Л, 40Л, 45Л) ANALOGUES ACCORDING TO DIN 1681 - GE200, GE240, GE260, GE300, GS-38, GS-45, GS-52, GS-60.

STEEL GRADES (20 ЮЧЛ, 20ХГМЛ, 12Х18Н9ТЛ), ANALOGUE OF STEEL 12Х18Н9ТЛ ACCORDING TO THE EUROPEAN NORMS EN 119-74 - STEEL X6CRNI1810KD.

STEEL GRADE (110Г13Л ACCORDING TO GOST 977-88) THE GERMAN ANALOGUE ON THE BASIS OF SEW 395 - GX120MN12.

Thermal processing

Thermal processing of metals and alloys is the thermal processing of metal products aimed at making their structure and properties in the desired direction.

We offer the following technological operations:

- normalization
- annealing
- quenching
- tempering

Heat treatment equipment: **Annealing furnace up to 1000 C° (2500 x 6000 x 2000 mm, L x P x K).**



- PAINTING DIVISION

The total area of the division is more than 1000 square meters. Cleaning from the rough, rust and old paint takes place in a shot blasting chamber with dimensions of 6 x 6 x 15 m, using scrap steel G40, which gives the best result in terms of the surface cleanliness and roughness. Surface roughness is tested according to the standard **ISO 8503-2**, the cleanliness level 2.5-3 according to the international standard **ISO 8501-1:2007**.

Continuous checking of climatic conditions and wet and dry paint film thickness ensures high quality. Major paint schemes: alkyd and epoxy paints with polyurethane- or polysiloxane coating. Corrosion protection duration is up to 15 years or longer, according to standard **ISO 12944-5**. Cleaning and painting is done only in warm conditions.

The temperature of the shop floor never drops below +15 °C, which ensures the correct and predictable polymerization of protective coatings. Dry film thickness is tested according to the standard **ISO 2808** requirements. Depending on the project, surfaces will be covered with various anti-corrosion agents. Their main suppliers are International, Jotun, Hempel, Teknos, Tikkurila, Carboline et al.



- LABOR

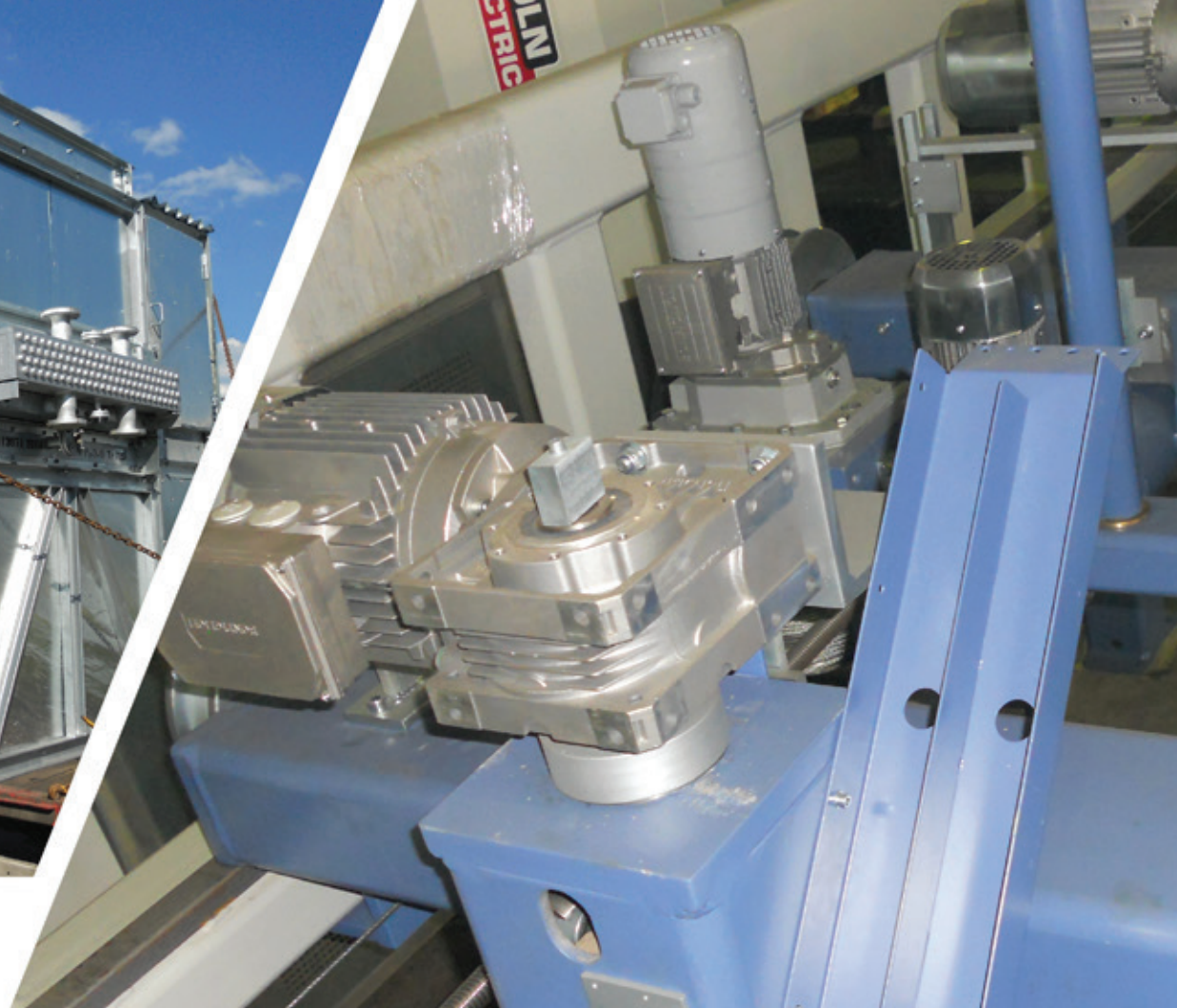
For controlling and confirming the quality of materials and finished products, at the disposal of **BMC** is a fully equipped laboratory and a testing division. All materials are checked and tested before they go into production. Finished products go through final inspection before delivery to the client.

The main types of control:

- Investigation of the chemical composition of metals
- Mechanical tests:
 - Tensile testing;
 - Bending testing;
 - Impact testing;
 - Hardness testing.
- Non-destructive testing:
 - Radiographic testing;
 - Ultrasonic testing;
 - Magnetic testing;
 - Penetration testing.
- Metallography.

ASSEMBLY AND PACKAGING DIVISION

All the finished goods are packaged in accordance with the prescribed procedure and labeled according to the packing note and the customer requirement.



TRANSPORT FACILITIES

Our company has the facility to organize the transportation of finished products to the unloading site indicated by the customer.

For delivery of the orders to customers, we mainly use road transport, but also taking into account the fact that the BMC production facilities are located only **6 kilometers** from the largest and deepest cargo port of Estonia, we will have the opportunity to organize the transport of products by sea.

We ship both standard size and oversize cargo.

INSTALLATION WORK

If necessary, and if desired by the customer, BMC is also able to perform the electrical installation and configuration works.



COMPLETED ASSEMBLIES

In addition to the production of equipment, **BMC OÜ** is also able to manufacture and supply the bundle assemblies and the spare parts for air condensers and industrial equipment. All the bundle assemblies are manufactured and supplied in accordance with the technical requirements, which enables to ensure their interchangeability.

- Industrial axial fans with a diameter up to 5,000 mm, aluminum or composite paddles.
- Explosion-proof electric motors for fans with the power up to 75 kW.
- Finned tubes for heat exchanger sections:
 - cold rolled mono metal tubes;
 - spiral-wound ribbon finned bimetal tubes (type L, LL, KL, G);
 - bimetal tubes with extruded finning;
 - high-frequency welding finned tubes.
- Pneumatic and electric drives.
- Electric heaters.
- Control measuring instruments.
 - Temperature sensors.
 - Vibration switches.
- Frequency inverters.



ASSEMBLY OF EQUIPMENT AND COMPONENTS ON THE CLIENT'S INDUSTRIAL SITES

Baltic Metal Construction OÜ (BMC) provides assembly and chief assembly services both on a full-service basis, for equipment supplied by us, and for the client's separate projects. This service is agreed and cleared separately for every project.

For these purposes specifically, an assembly unit was set up at the company.

BMC features highly qualified engineering staff, assemblers and welders who are immensely experienced in work on construction sites and at various terminals, factories and power plants.

BMC has all the necessary equipment for carrying out construction or installation works (mobile construction village, welding equipment, assembly jigs and scaffolding, with any necessary lifting equipment, personal protection equipment etc also available for use).



Service types:

- Installation of technological plant for industrial companies;
- Installation of gas equipment and gas pipes;
- Supply and installation of liquid containers;
- Assembly of equipment and pipelines for fire-fighting systems at petrochemical terminals;
- Assembly of metal structures (trusses, catwalks, post-and-beam constructions, and platforms);
- Repairs (installation / disassembly of pipelines, repairs of tanks, and maintenance of pumping stations and boiler houses)

Our staff have experience in working on construction sites in both **Estonia** (VKG, HORIZON PULP & PAPER LTD, TankChem AS, VOPAK and Alexela) and European countries, such as Belgium, Netherlands and Norway (Europoort Rotterdam, Shell, EoN Alexela and Lukoil).

In addition to the European quality certificate **ISO 9001** as well as many other certificates and procedures, the company has been certified in the areas of safety technology and environmental protection in accordance with the European standard **VCA SCC**.

BALTIC METAL CONSTRUCTION OÜ

REG. NR: 12293510

VANA-NARVA MNT 10C, 74114 MAARDU

TEL: (+372) 641 5405 / FAX: (+372) 641 0012

E-MAIL: BMC@TMT.EE

