



VOLGOGRADNEFTEMASH
Joint Stock Company

Manufacture and packaged supply
of equipment for petrochemical industry

BRIEF OVERVIEW

September, 1941 – Foundation of Stalingrad Factory of heavy cracking equipment.

1946 – Output of the first batch of major produce: 518 tons of oil refining equipment.

1949-1951 – Manufacture and subsequent installation of the first domestically built cracking plants for Kuybyshev and Ufa Oil Refineries.

1951 – Production of the first centrifugal pump types НГК, НГД and НГ.

1960-1964 – Manufacture and supply of large-size fractionating columns to the sites of oil refineries in Stalingrad, Ryazan, Kstovo. Fabrication of equipment having 48-52 mm wall thickness first started at the Factory.

1971-1980 – 37 items of Reforming Reactors weighing 2.8 thousand tons in total were supplied to 11 oil refineries in Salavat, Chimkent, Yaroslavl, Achinsk, etc.

1981-1985 – 12 Coke Chambers were shipped to oil refineries in Baku, Omsk and Perm.

The Company started commercial production of Ball Valves DN 1000 mm for gas pipeline Urengoi-Pomari-Uzhgorod.

1991 – The Factory becomes a subsidiary of the state-owned gas concern Gazprom.

1995 – The Company's own berth on the Volga river was put into service.

2007 – 4 Cr-Mo Reactors with the wall thickness of 168 mm and weight of 200 tons each for Mozyr Refinery (Belorus) were made and shipped for the first time.

2008 – The Company was incorporated in a group of companies owned by StroyGazMontazh (SGM).

2009 – Shipment of a unique Vacuum Column with the maximum shell diameter of 8.5 m and 362 tons weight to the construction site of a complex of oil refining and petrochemical plants in Nizhnekamsk (Tatarstan).

2010 – Manufacture of reactors with the 180 mm thick shell for a deep conversion plant in Kirishi (Leningrad Region) was finished off.

2011 – Output of one million tons of equipment: Hydrofining Reactors for Lukoil-VolgogradNeftePererabotka intended for a new installation to produce diesel fuel complying with the European emission standard (Euro 5).

2013 – Coke Chambers of 7.6 m in diameter were made and shipped by water to Lukoil-Permnefteorgsintez. Each clad metal vessel weighed 190 tons.



General Director
of Volgogradneftemash JSC

Alexander Lazarev

Volgogradneftemash JSC is the largest Russian producer of the process equipment for oil and gas industry, the Factory with abundant experience of more than 70 years and its established traditions. At the same time, Volgogradneftemash has modern manufacturing facilities where the latest production engineering is applied and the highly skilled professionals are employed.

Over the last few years the technological capacity of the Factory has grown considerably. Volgogradneftemash energetically develops its activity in all directions. Re-equipment of work shops for oil equipment manufacture which has helped to increase the size and thickness of vessels under construction, modernization of the valve and pump production which has provided output growth of high-quality ball valves and pumps – these are the major efforts being made by the Company.

Volgogradneftemash JSC values its reputation of a reliable supplier of the quality equipment. Engineering and manufacturing capabilities of the Factory make it possible to produce oil and gas equipment complying with the highest quality standards and the staff always do their best to meet the deadlines.



ABOUT US

Volgogradneftemash JSC is one of the biggest Russian manufacturers of pressure vessels, such as reactors, columns, shell and tube heat exchangers, separators, tanks for chemical, natural gas and petroleum industries. The Company is incorporated in a group of companies owned by StroyGazMontazh.

The manufacture at Volgogradneftemash specifically features the capability to supply large-size and heavy equipment ready for service. This eliminates the need for further assembly of the equipment on site allowing to significantly speed up its commissioning.

The Factory also supplies centrifugal pumps and other equipments for main gas pipelines, such as pig launchers and receivers, ball valves, check valves.

Almost all gas processing and transporting companies, oil and gas processing plants in Russia and the former USSR are provided with the equipment made by Volgogradneftemash JSC.

Technical and production capabilities of the Factory, the highly skilled workers and engineers, as well as application of the state-of-the-art technologies allow to create large-size heavy-wall vessels which are most claimed in the market of the equipment for oil and gas processing and petrochemical industries today.

The Factory is ideally located on the River Volga and has its own river berth giving access to seaports of the Black Sea, the White Sea and the Baltic Sea, which facilitates the shipment of large-size equipment to customers to any remote area.

Among our customers there are not only the Russian companies like Gazprom, Lukoil, Rosneft, Tatneft, Slavneft, Surgutneftegaz, but also the companies of neighbouring countries, such as Belneftekhim (Belarus), Uzbekneftegaz (Uzbekistan), Ukrtatnafta (Ukraine), KazMunaiGaz (Kazakhstan).

70 years of the Company's production activity have resulted in the wide experience in making oil-and-gas equipment which complies with the highest quality standards and has proved reliability in operation.

Volgogradneftemash JSC is located in the city of Volgograd at a distance of 8 km from its center, 0.7 km from the River Volga, and 2 km from the railway station of Yelshanka. The Company has its own river berth; also available are road and rail links to national transport systems.

The total area occupied by the Factory makes up 52 ha.

The total number of the production personnel is 4900.

The subsidiary company of Volgogradneftemash, Kotelnikovo Valve Plant, is situated in the north-western part of the town of Kotelnikovo in Volgograd Region. There is an in-Plant railway track. Production facilities occupy about 6000 sq. m and include all necessary production shops for machining, heat treatment, electroplating, assembly, etc.



PRODUCT DESCRIPTION

The Factory's main types of products cover pressure vessels, such as reactors, coke chambers, absorbers, adsorbers, desorbers, columns, separators, tanks, receivers, dust collectors, etc., including those of block-type construction.

Reaction vessels

Vessels for reforming, hydrofining, catalytic cracking and hydrocracking.

Diameter:	800 mm to 6000 mm
Height:	up to 40 000 mm
Wall thickness:	up to 300 mm
Medium temperature:	up to +540°C
Pressure:	up to 20 MPa
Material:	carbon steel, stainless steel, high-temperature steel, solid and weld deposit overlaid and clad steel

Columns

Fractionating columns, absorbers, adsorbers, desorbers, stabilizers, evaporators and other mass-transfer equipment.

Trays: valve-type, BALLAST® valve, with S-shaped elements, bubble cap, sieve trays, etc.

Diameter:	up to 9000 mm
Height:	up to 80 000 mm
Wall thickness:	up to 160 mm
Medium temperature:	-70°C up to +450°C
Pressure:	up to 20 MPa
Material:	carbon steel, stainless steel, high-temperature steel; solid and clad plates

Coke Chambers

Equipment for making oil coke from the heavy oil residue after primary treatment and reprocessing (tars, black oil, cracked residue, etc.) within delayed coking installations.

Diameter:	up to 9000 mm
Height:	up to 42000 mm
Temperature:	up to 510°C
Material:	stainless steel, high-temperature steel; solid and clad plates



Hydrofining Reactor
diameter 4.0 m,
wall thickness 180 mm, weight 311 t



Coke Chamber
diameter 7.6 m,
weight 210 t



Vacuum Column
diameter of 8.5 m,
weighing 336 t



Heat Exchangers

Shell and Tube Heat Exchangers equipped with stationary tubesheets, double tubesheets, floating heads, expansion joints in the shell, U-shaped tubes or helix type heat exchangers used for heating and cooling process fluids.

Diameter:	300 mm up to 3200 mm
Length:	up to 14 000 mm (straight length)
Wall thickness:	12 mm up to 160 mm
Medium temperature:	-196°C up to +540°C
Pressure:	up to 45 MPa
Material:	carbon steel, stainless steel, high-temperature steel; solid and clad plates

Separators

Separators for gas applications, oil-and-gas separators, dust catchers with cyclones and whirlers, filter separators, filters, etc., as well as separation units intended for cleaning natural and associated petroleum gas of liquid and contamination.

Diameter:	600 mm and over
Medium temperature:	-30°C up to +100°C
Material:	carbon steel, stainless steel, high-temperature steel; solid and clad plates

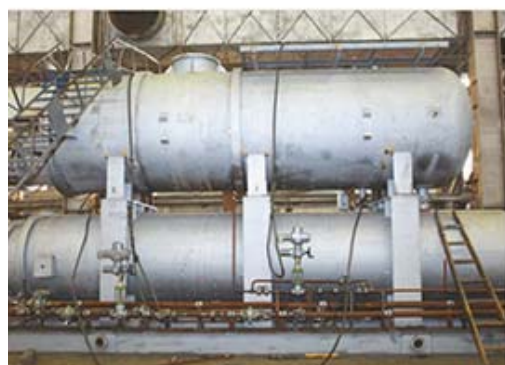
Vessels

Vessels for accumulation and storage of liquid and gaseous products, specific gravity separation of undissolving liquids and gaseous components and for mixing products (with internal mixers).

Diameter:	от 600 mm up to 9000 mm
Length:	up to 80 000 mm
Capacity:	up to 2500 m ³
Material:	carbon steel, stainless steel; solid and clad plates

Modular Equipment Packages

Units, modules, installations consisting of vessels (tanks, separators, heat exchangers, etc.), accessories (pumps, electric motors, etc.), service pipelines together with shutoff valves, safety valves and regulators, instrumentation, and steel constructions.



Trial assembly of DEG
Regeneration module



Hydrofining product gas mixture
Water Cooler



Separator module
for NDEG and condensate



Skid-mounted Pig Launchers and Receivers

DN 300, 500, 700, 1000, 1200, 1400 mm, PN 8-12.5 MPa

For installation in the main gas pipelines to periodically launch pipeline cleaning pigs and in-line inspection tools.

These are manufactured with a clamp-type or bayonet-type closure.

Ball Valves

DN 150, 200, 300, 700, 1000, 1200, 1400 mm, PN 8.0, 10.0, 12.5, 16.0 MPa

For applications as shutoff devices in pipelines, transporting non-aggressive natural gas at a temperature from minus 10 up to plus 80°C. For installation in the main gas pipelines, gas collection and treatment terminals at compressor and gas-distributing stations.

Ball valves are supplied with various actuator types: pneumohydraulic, electric, electrohydraulic and gear operator.

DN 50, 50/80, 80 mm, PN 8.0, 10.0, 16.0 MPa

For installation as shutoff devices in natural gas pipelines.

Lift-check Valves

DN 700, 1000 mm, PN 8.0 MPa

For applications in pipelines of compressor stations to protect the equipment against the backflow of gas in the event of emergency shutdown of gas-pumping units, as well as to prevent gas leakage when the pipeline is depressurized.

Axisymmetric Swing Check Valves

DN 700, 1000 mm, PN 8.0, 10.0, 12.5, 16.0 MPa

For applications to automatically block reverse flow of working fluid. These are manufactured with an axial arrangement and forward movement of the closing member. They contain a damping device providing smooth motion and shock-free opening and closing of the member. The valves are highly reliable owing to the shock-free performance.

Pressure Regulators

DN 100 mm, PN 16.0 MPa

For remote and local regulation of gas flow parameters in pipelines of service lines of gas field wells and underground storage facilities, in gas treatment plants.

Centrifugal Petroleum Pumps HK, HKB, TKA, TKAM, HT

For applications in service installations for pumping petroleum, petroleum products, oils, liquefied hydrocarbon gases, organic solvents and other fluids similar in viscosity and corrosive attack on pump components to those specified.



Pig Launcher with a bayonet-type closure DN 1400 mm



Axisymmetric Check Valve DN 1400 mm



Pump Unit TKA 600/80



DESIGN AND TECHNOLOGY

Availability of in-house design and process engineering departments staffed with highly skilled personnel allows the Company to carry out engineering development and preproduction on day-to-day basis for the needs of fulfilling all kinds of purchase orders.

Development of the equipment designs is conducted in cooperation with the biggest Russian design engineering firms. Experience of team-work with the leading global engineering companies has been gained by our engineers.

On the basis of contract designs, the design department prepares working drawings for components, units and the item as a whole, and also carries out necessary calculations of components' strength and the item's stability under wind and seismic loads.

The Company has enormous experience in developing and implementing special procedures of material procurement, fitting and welding, machining, heat treatment, inspection of welded seams, etc.

There is a welding laboratory at the Factory where experts are constantly looking for new solutions in welding, working through cutting edge welding techniques and application of advanced welding equipment.

Quality control of the materials intended for the manufacture of equipment is exercised at the Company's Central Laboratory. The Laboratory provides the following:

- determination and evaluation of strength of materials and welds in various temperature conditions according to the standard mechanical testing and ASME requirements;
- metallographic macro- and microexamination of metals and welds at all stages of manufacturing process;
- chemical composition analysis using spectral analysis and chemical tests; the qualitative spectral analysis directly on a product.

A number of up-to-date software products are used during production preparation: "Compass" (CAD, 3D-designing), "Loodsman" (Product Data Management [PDM]), "Vertical" (Technical Data Management [TDM]).



Chromium coating
of a ball valve sphere DN 1400 mm



Overlaying welding
of the inside surface of a shell



Casting production
in a lost foam cast line



PRODUCTION CAPACITY

Production facilities of the Company enable conducting all operations in production of quality reliable equipment.

Volgogradneftemash JSC has specialized blank production shops furnished with heating, pressing and forging equipment as well as machinery for cutting and bending of rolled plates of diverse thicknesses.

Machining shops are equipped with high-performance high-precision equipment to do all types of machining on parts and components of various sizes.

Vessels are fabricated and assembled by using modern welding machines and state-of-the-art procedures for fitting and welding. Volumetric and local heat treatment is used for stress relieving after welding in components and vessels.

Weld quality is inspected by various methods including non-destructive examination: X-ray and gamma-ray radiography (using films and phosphor imaging plates), ultrasonic testing, liquid penetrant examination, magnetic particle examination, fluorometric and spectral analysis. Testing is carried out by NDT Level II and Level III at Volgogradneftemash JSC.

The quality of produced pumps is verified by the results of acceptance tests performed on up-to-date test, measurement and diagnostic equipment and complies with the requirements of the international standard ISO 13709.

FIELD SERVICES

Volgogradneftemash JSC renders the following field services:

- final fabrication and field assembly of equipment delivered to the site on combined blocks (parts) basis;
- field installation and adjustment supervision;
- maintenance service, repair, redesign or modernization of equipment throughout service life.



Polishing of a ball valve sphere



Machining of the pump parts on the machining center



Installation of Heat Exchangers at Compressor Station Yarynskaya under VNM engineers's supervision



SHIPMENT OF FINISHED GOODS

The Factory is ideally located on the River Volga and has its own river berth giving access to all seaports to facilitate the shipment of the equipment to customers to any remote area.

The water area of the Company's river port is 25 m x 125 m and is equipped with two traveling-bridge cranes having the carrying capacity of 320 t each.

Road and rail links are also available to national transport systems at the railway station of Yelshanka.

The mode of transport for the shipment of finished items is dependant on the equipment dimensions:

By road:

Overall dimensions: 2500 mm × 15000 mm

Weight: up to 30 t

By rail:

Overall dimensions: 4500 mm × 75000 mm

Weight: up to 400 t

By water:

Overall dimensions: 10000 mm × 80000 mm

Weight: up to 650 t



Transportation of equipment by truck



Vessel on a railway flat car



Shipment of the vessels by water at the Company's berth



QUALITY

The quality management system exercised at Volgogradneftemash is customer-oriented and in compliance with health, safety and environment requirements.

All equipment produced by Volgogradneftemash JSC meets the requirements of technical rules of the Russian Federation which is certified by certificates of conformity.

The Company is currently the holder of certificates of conformity to international standards:

- Certificates of conformity to quality management system ISO 9001:2008 (both to IQNet and Russian Register Certification Association requirements);
- Certificate of conformity to environmental management system ISO 14001:2004;
- Certificate of conformity to ISO 13709:2009(E) (equivalent of API610) requirements for petroleum centrifugal pumps of Type K and pump units.

Since February 1993, as a result of a decision made by the American Society of Mechanical Engineers (ASME), the Company has been holding ASME U and U2 certificates for construction of pressure vessels according to ASME Code requirements.

In 2013, Volgogradneftemash JSC obtained a license to manufacture equipment for nuclear installations.

One of the Company's foreground tasks is to maintain the quality of the produced equipment. The quality control system provides an opportunity for the customer to inspect items at any stage of production by making certificates, test reports, radiographs, heat treatment diagrams and other documents available to the customer.





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