



# KURGANKHIMMASH

## PRODUCT CATALOG



# Contents:

About the Company. ....	1
Production and technology potential.....	2
Scientific and technical potential of the company.....	3
Product quality assurance.....	3
Complex solutions for preparation and processing of natural and associated petroleum gas and gas condensate.....	4
Modular compressor stations.....	5
Deep dewatering and desalting crude oil, produced water treatment equipment (OGWSP, Electrical dehydrators with gas sections).....	6-7
Modular packaged equipment.....	8
Large-sized and heavy-wall equipment.....	9
Heat exchange equipment.....	10
Separation and column equipment.....	11-12
Equipment for main pipelines.....	13
Automatic compression station gas filler (ACSGF).....	14
Regeneration gas heating furnace.....	14
Line heater with intermediate heat exchanger.....	14
Equipment for compressed air cooling, drying and treatment.....	15
Ozonation equipment.....	15
Autoclaves.....	16
Installation supervision and startup.....	16
Completed Projects.....	17-21
Kurgankhim mash LLC main clients.....	21



## About the Company



**Kurgankhimmash LLC is one of the leading Russian companies engaged in design and production of process equipment for oil and gas production, oil and gas processing, chemical, energy, metallurgy, machine building and other industries.**

**Since the time of its creation in 1956 the company has traveled the path from manufacturing of centrifuges to production of complex modular packaged, large-sized and heavy wall equipment weighting up to 180 t and modular compressor plants.**

**With unique production experience in manufacture of specialized equipment of any level of complexity, modern process equipment and high-quality staff, Kurgankhimmash LLC is actively implementing modern technologies in production and expands the product line, is a participant of "Import Substitution" program.**

### **Kurgankhimmash LLC products**

Today Kurgankhimmash LLC manufactures over 2000 different product. The company product line spans almost the entire diversity of standard and specialized equipment.

First of all – it is equipment for development of oil and gas fields, repair and maintenance of main pipelines, oilloading parks, modular packaged equipment, including for associated petroleum gas utilization.

The company manufactures compressor, vessel, heat exchange, column equipment, electrical dehydrators, three-phase separators and many other types of equipment.

The company is also engaged in development of technologies for different processes, performs design, installation, supervision and startup works.

Kurgankhimmash LLC invests significant funds in production facilities development and reconstruction, procurement of new equipment, introduction of new products. High scientific and engineering-technical potential accumulated by the company over its 60-year history allows for design and manufacturing of equipment at the highest level.

The company has a design-production engineering department aimed at development of equipment according to special client's specifications, including packaged modular equipment with automation components or complete SCADA complex.



**Development of oil and gas industry and its adjacent sectors is a cornerstone for independence and economic security of Russia.**





## Production and technology potential



**Kurgankhimash LLC has the required production potential to manufacture large size and heavy equipment able to operate under high pressure.**

### The company has:

- press and forming equipment for production of elliptic bottoms up to 3000 mm in diameter, furnace shells up to 5000 mm in diameter and 120 mm thick;
- equipment for welding, control and mechanical treatment of vessels up to 5000 mm in diameter, up to 120 mm thick, made of carbon, corrosion resistant, heat resistant steels, titanium, aluminum and bimetals;
- equipment for manufacturing of vertical tanks of plate-by-plate or coil-by-coil assembly;
- expanding machines with regulated torque for flanging of up to 78 mm diameter tubes in heat exchangers;
- equipment for thermal treatment of components and their parts (furnaces, belt heat treatment, etc.);
- hydraulic test rigs for hydraulic tests with up to 30 MPa pressure.

The company is capable of manufacturing machines or their parts weighting up to 180 tons, up to 250 m<sup>3</sup> in volume, for operation under up to 21 MPa pressure.

Kurgankhimash LLC invests significant funds in development and reconstruction of the production facilities, procurement of new equipment able to support production meeting the clients' strictest requirements for quality, economic feasibility and environmental safety.

### MCS Production

Kurgankhimash is one of the leading Russian businesses specializing in designing and manufacturing of compressor equipment for oil and gas, petrochemical, energy sector and other industries.

Facilities engaged in manufacturing of the modular compressor stations occupy a total production area of 6,000 m<sup>2</sup>. The compressor station assembly workshop is equipped with stands (benches) for X-ray analysis, hydro-testing as well as 360 W and 6 kW frequency inverters intended for testing compressor stations equipped with electric motors.

A natural gas supply system for testing the compressor stations with gas reciprocating engines is also provided.

### Production of Vertical storage tanks (VST)

Kurgankhimash LLC has created a modern highly technological specialized production facility allowing for manufacturing of plate and coil reservoir metalware meeting the strictest requirements of Russian and international standards.

The company also manufactures the following components for tank constructions.

The production facilities include gas-cutting machine Omnimat (manufactured by Messer, Germany), plate edge milling machine (manufactured by Linsinger, Austria), fourhigh rolls, bandsaw machines (manufactured in Italy), shotblasting and painting line (manufactured by Vellobrator Schlik, Germany).



## Scientific and technical potential of the company



**Kurgankhimmash LLC guarantees high technical and technological level of products and services. The company employs a team of designers with vast experience in development of complex process equipment meeting the modern industrial and environmental safety norms and taking into account individual requirements of clients and facility specifics. Plant engineering services prepare designs for projects, plants, products using specialized computer programs and modern technologies allowing for fast and quality generation of documentation for the newly designed facilities.**

**The company closely cooperates with the leading design institutes and organizations, including:**

VNIINEFTEMASH, Moscow

Giprotruboprovod, Moscow

CKBN OJSC Gazprom, Podolsk

Gyprotyumenneftegaz, Tyumen

Omskneftekhimproekt, Omsk

NIIhimnash, Moscow

TomskNIPneft, Tomsk

Lengiproneftehim, Saint Petersburg

GIAP, Moscow

NizhnevartovskNIPNneft, Nizhnevartovsk

KogalymNIPneft, Kogalym

Noyabrskneftegazproekt, Noyabrsk

TyumenNIIgiprogaz, Tyumen

LenNIIhimnash, Saint Petersburg

VNIIST, Moscow

VNIPneft, Moscow

PIRS, Omsk

VNIPgasdobycha, Saratov

TERM, Tyumen

BashNIPneft, Ufa

UfaNIPneft, Ufa

## Product quality assurance



Kurgankhimmash LLC pays priority attention to the product quality. The company has a certified test center that includes a mechanical test laboratory, test laboratory, chemical laboratory.

Modern quality control methods are used to control welded joints, including:

- radiography;
- ultrasonic inspection;
- magnetic particle test;
- dye penetration and luminescent examination;
- hydraulic and pneumatic tests;
- flexure test, strength tests, macrographic examination;
- spectral analysis of metal.

### Quality management system

Over the years of its growth the company has traveled the path from arrangement of traditional technical control methods to development and implementation of a quality management system (QMS) that meets the international standards (first certification in 1999).

Today SMK Kurgankhimmash LLC meets the requirements of GOST ISO 9001:2008 and STO Gazprom 9001-2012. SRO Certificate No. MPC- 191-569 issued for installation, startup works and planning of construction, reconstruction and capital repairs. The company's products are fully certified and included in Transneft's Register of Goods and Equipment.







## Complex solutions for preparation and processing of natural and associated petroleum gas and gas condensate



**Kurgankhimmash LLC specializes in complex projects and orders, from complete "turn key" packages to any combinations: terms of reference - design and equipment selection for technology implementation, manufacturing and delivery of equipment, construction, installation, installation supervision, startup, training, maintenance.**

Kurgankhimmash LLC with support from leading scientific research and design institutes of Russia offers its Clients the complete scope of works for preparation of natural and associated gas for transportation, gas and gas condensate processing with production of high-liquidity target products.

### **For implementation of complex projects we use the results of latest scientific research in the following areas:**

- development of traditional preparation processes for processing of natural and associated gas, gas condensate with optimization of capital investments and operating costs;
- optimization and scaling of catalytic gas processing technologies with production of synthetic products under site conditions;
- improvement of LIGT (hydrocarbon condensate gasification) technology to improve the economic feasibility of production in general;
- development and improvement of mass and heat exchange equipment constructions;
- economic modeling of technological processes.

### **Kurgankhimmash LLC offers its Clients complex engineering of projects, including:**

- preparation of predesign documents and required justifications of investments in capital construction volumes;
- preparation of source data for design;
- complex engineering survey;
- issue of design and detailed documentation in all parts;
- development of nonstandard equipment;
- issue of engineering documentation for manufacturing of equipment, including process blocks of maximum factory readiness;
- obtaining necessary approvals;
- project support, including: development of as-built documents, development of operating documentation, support in development of general layout of industrial sites, project documentation support in state expertise and supervision bodies (state expertise of design documentation, industrial safety assessment, sanitary-protective zone project evaluation);
- manufacturing of the main process equipment and engineering infrastructure equipment;
- design supervision;
- installation supervision and startup.

### **Gas and gas condensate treatment and processing plants and complexes are developed and manufactured by our company using packaged-modular method.**

Kurgankhimmash LLC equipment blocks are of the maximum factory readiness (share of on-site "cabling installation" does not exceed 5% of the total installation work scope), equipped with all the required systems, have a balanced weight for transportation convenience, are equipped with protective transportation devices.

All manufactured equipment has GOST R Certificate of Conformity, including explosion-safe equipment, as well as Permission to use equipment in dangerous production facilities from the Federal Service of Environmental, Technological and Nuclear Supervision (Rostekhnadzor).

### **Advantages of packaged-modular technology:**

- delivery of equipment of maximum factory readiness;
- use of packaged modular blocks designed and built in consideration of GOST 9238-83;
- blocks have sizes allowing for their transportation by rail as regular cargo;
- weight of designed and installed packaged modules, taking into account the abovementioned terms and requirements, allows for use of standard cargo handling mechanisms operating in rail stations in RF;
- reduction of construction time and cost;
- possibility of installation at low temperatures;
- placement of main process equipment in closed block modules (if needed);
- availability of standardized spare parts;
- main equipment is manufactured in the Russian Federation;
- complete cycle of installation and startup works;
- service and maintenance during the period of operation;
- low abandonment fund.

Gas and gas condensate treatment and processing plants and complexes from Kurgankhimmash LLC are designed and manufactured taking into consideration optimal solutions in capital investments and operating costs in each individual case.

Also, we use reliable, proven technologies with maximum efficient equipment, furnished with the newest design of internal devices, automation equipment and technological process safety control systems.



## Modular compressor stations



**Kurgankhimmash LLC manufactures modular compressor equipment for compression of different gases based on reciprocating and screw compressor units. The equipment is used in oil and gas production, oil and gas treatment, power and other industries.**

**Kurgankhimmash is a certified distributor and packager of Ariel Corporation - the biggest manufacturer of reciprocating gas compressors in the world.**

**We will help you select the most suitable equipment and manufacture a compressor plant for your conditions. As a packager we guarantee that all equipment is assembled in compliance with the high quality requirements of Ariel Corporation.**

Modular compressor stations (MCS) are intended for compression of various gases: associated petroleum gas, natural gas, flare gas, hydrogen, propane, butane, methane, propylene, dry stripped gas, atmospheric air, nitrogen, argon, etc.

Modular compressor stations (MCS) are autonomous fully automated stations, operating under temperature from  $-60^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ . These plants are manufactured in the form of modular boxes with frame-panel thermal insulation. Plants suit for transportation by different types of transport to any distances.

If needed, compressor stations can be supplied with deployable rapid assembly shelters. Plants are equipped with noise and thermal insulation, all life support systems according to the current norms.

Gas reciprocating engine (GRE) or electrical motor can be used the driving unit.

For gas preparation MCS are equipped with the following additional equipment: gas receivers, separators, ventilation chambers, filtration equipment, condensate tanks, dryers with dew point to  $-70^{\circ}\text{C}$ , equipment for gas cooling or heating (air-cooling units, chillers, tube-sheath and plate heat exchangers), etc.

Gas MCS include gas contamination sensors and forced ventilation system. Equipment not supplied with explosion-protected design (control cabinets, etc.) is installed in specially provided explosion-protected compartment.

Design, dimensions and equipment of the plant provide for convenient installation and repair during any time of the year.

The product line of supplied MCSs includes over 100 different models. These plants are designed according to the client's individual needs and are constantly improved and modernized.







## Deep dewatering and desalting crude oil, produced water treatment equipment



The most notable results in import substitution with domestic products our company has achieved in the segment of manufacturing facilities for allround oil treatment:

- Installation with direct heating of oil (Heater-Treater);
- Electric dewatering units, including electrostatic desalters.

## Oil & gas & water separator packages (OGWSP)

### Direct heated oil & gas & water separator package - OGWSP (Heater-Treater)

Direct heated oil & gas & water separator package - OGWSP (Heater-Treater) is designed for degassing and heating of the production wells, preliminary deep oil dewatering produced water treatment, including for subsequent injection into the screw up water injection system.

One block device of OGWSP replaces the conventional installation consisting of several typical mono-functional devices. OGWSP provides:

- an intermediary stage of degassing of wells production,
- oil preliminary dehydration and separated water purification,
- deep oil dehydration to commercial standard.

OGWSP may be operated in the cold microclimatic region conditions with an absolute temperature up to minus 60°C. The unit is installed in the open site.

OGWSP unit is a horizontal unit with a volume varied from 63 to 200 m<sup>3</sup> with elliptical heads, one or two smoke tubes, piping, valves and instrumentation, which main part is located in the package.

OGWSP unit is completed with field auxiliary room including operator WS.

### OGWSP of first type is intended for preliminary dumping of produced water

First type OGWSP (PC) has a heating section with a heater with burners installed in the flame tubes and a section of coalescence with a thin layer highly efficient coalescer.

### Second type OGWSP

Second type NGVRP (PS) is designed for heating, deep oil dehydration and desalting. The unit has a heating section and a section of oil electric dehydration.

### Third type OGWSP (PC/3M)

Third type OGWSP unit combines the features and functionality of the units of the first and second types, and also allows implementing of oil deep two and three tierbased desalting technology.

### OGWSP units application advantages

- At a high water content of production of the wells NGVRP package type PC replaces the system of conventional units OGSW (Oil Gas Separator with Water Discharge) + PFH (Package Fire Heater)+OS (Oil Sump)+FWS (Formation Water Sump).
- Availability of self-contained software and hardware adapted to integration into a multilevel automated technological process control system.
- Application of the heater with diffusion burners providing a more uniform heating of a flame tube (unlike injector burners applicable in conventional oil heaters and foreign analogues).
- It is supplied ready to use which minimizes site installation.

OGWSP packages are commissioned in PWGU of BS- 2 Vachimskoye Field, Field Office Bystrinskneft JSC Surgutneftgaz, Sugmutsкое Field, Field Office Muravlenkovneft, JSC Gazpromneft in CPF UstTegusskoe Field, TNC-Uvat LLC, Vankorskoye Field of PJSC «NK «Rosneft», etc.





## Deep dewatering and desalting crude oil, produced water treatment equipment



### Electrical dehydrators with gas sections

Designed for degassing, deep dehydration and desalination of oil in oil processing facilities. Kurgankhimmash LLC manufactures modern modular dehydrators with progressive engineering design with additional internal sections for oil degassing.

Capacity – 70 m<sup>3</sup>, 100 m<sup>3</sup>, 160 m<sup>3</sup> and 200 m<sup>3</sup>.

Design overpressure – 10 kgf/cm<sup>2</sup> and 16 kgf/cm<sup>2</sup>.

Electrical dehydrator is a cylindrical device with elliptical bottoms, internal devices, taps for working media intake and output and intermediate layer for safety valves block, sampling, drainage, hydraulic bursting and sludge removal, steaming and purging, for installation of control and measuring instruments, high voltage line tube insulator, anodes of active corrosion protection, with ventilation hatches and manholes.

Modular design includes placement of the machine with all cabling and piping, auxiliary equipment, maintenance platform, etc. on a single bearing frame, or equipment of the machine with a heated block enclosure with valve stations, control and adjustment facilities, security systems.

For quick extraction of at least half of all emulsified water from oil into the drainage layer (in the bottom section of electrical dehydration), electrical dehydrators EDH 70...200 - 10/16 – GS successfully use various internal devices, the working principle of which is based on progressive technological

process – hydrodynamic coagulation of water globules in oil.

When upgrading to serial electrical dehydrators (EH or EDH types) the following should be provided as well as for the second type OGWSF units:

- increased three-row horizontal electrode system;
- increased capacity up to 250 kVA and 100% reactivity of transformers;
- vertical electrode systems, including resistive elements.

These devices are designed for deep oil treatment with a significant share of the water and the content of free gas, which is incapable of activating this process in serial electrical dehydrators.

There is additional anode-galvanic protection for protection of the machine from corrosion.

Electrical dehydrator construction, including with hydrodynamic coagulator in the inlet section, was developed with consideration for the results of wide-scale laboratory and field experiments, experimental design and patent search works, prepared in famous scientific research and design organizations: TatNIPIneft, VNIISPTneft and STC Neftegazexpert.







## Modular packaged equipment



### Degaser unit D

Designed for degasation of stratum water with traces of hydrocarbon condensate and methanol.

### TEG regeneration unit

Designed for regeneration of TEG in 96.6% by mass concentration into TEG with 99.9% by mass concentration.

### Drainage tank unit

Designed for collection of liquids and solids.

### Filter-separator unit

Designed for purification of natural gas from liquids and solids.

### Fuel and starting gas reduction unit

Designed for reduction of fuel and starting gas.

### Lean TEG tank unit

Designed for accumulation of lean TEG and its delivery to absorbers with pumps.

### Heat exchanger and ejectors unit

Designed for gas preparation for low-temperature separation.

### Filter tank unit (separator)

Designed for separation of liquid mixture into light and heavy phases.

### Liquids and dissolved solids collection tank unit

Designed for collection of liquids and solids.

### Separator units

Designed for removal of hydrocarbon condensate and methanol water from natural gas.

### Column units

### Pump blocks

### Heater blocks







## Large sized and heavy wall equipment weighting up to 180 t.



### Technological capabilities of large-sized and heavy wall equipment production.

By participating in large projects of Russian oil and gas companies, Kurgankhimmash LLC became the first among profiled plants in Russia that has implemented the technology of large-sized and heavy-wall equipment manufacturing without the use of cranes.

Today, this technology implemented by Kurgankhimmash LLC is modernized, seeing introduction of new production facilities for the production of this type of equipment with the use of new equipment and such as: automated thermal ovens, portal frames with automatic welding machines produced by ESAB company, rollers on rail trucks etc.

This allows Kurgankhimmash LLC to manufacture process equipment up to

5,000 mm in diameter weight up to 180 tons and having overall length—up to 65,000 mm, wall thickness – up to 120 mm. Installed on site of heavy equipment new welding portal allows performing welding of products circumferential seams with a diameter up to 5,000 mm.

The technological process allows moving the machine from one operation to another along the metal guides using roller supports.

Heavy equipment production line includes assembly and welding section, thermal treatment section, shot blasting section, hydraulic testing and painting section. The line includes jacks to load ready product on automotive or rail vehicles.





## Heat exchange equipment



**Kurgankhimmash LLC manufactures heat exchange machines designed for heating, cooling, condensation and evaporation of media. Equipment can be installed in oil and gas treatment, petrochemical, chemical, gas, thermal energy, heat supply industry enterprises. Heat exchange equipment is manufactured with smooth and finned tubes, with vortex generators. Machines, their components and parts are made of carbon, low-alloy, austenitic, heat-resistant chromium-molybdenum, two-ply steel, and of titanium and brass.**

### Shell and tube heat exchangers

Horizontal and vertical TN, TK type heat exchangers with fixed tube sheet and compensator on the enclosure

Horizontal and vertical HN, HK type chillers with fixed tube sheet and compensator on the enclosure

Horizontal and vertical KN, KK type condensers with fixed tube sheet and compensator on the enclosure

Horizontal and vertical IN, IK type evaporators with fixed tube sheet and compensator on the enclosure

Horizontal TP type heat exchangers, HP type chillers, KP type condensers with floating head

Horizontal heat exchangers with U-type pipe bundle TU type

Evaporators with steam chamber with floating head IP type and with U-type tube bundle IU type

Heat exchange machines for high temperature and pressure with a floating head and compensator on it of TPK type

Vacuum condensers KVKV, KVKH, KVKN, KVVN

Thermosyphon evaporators IUT, IPT, IKT

Cooling evaporators and condensers IH, KH

### Double pipe heat exchangers

Single flow, undismountable (TTON)

Single flow, dismountable (TTOR)

Multiflow (TTM)

Compact dismountable (TTRM)

### Special equipment for thermal energy facilities

Steam-water water heaters, STD type

Water-water heaters for heating networks, WVP type

Network water heaters, PSV type

Low pressure surface heaters PN type

Fuel oil heaters PM type

Water-water coolers, OV vertical type

Water-water heat exchangers with 5-10, 20-40, 80-240 and 400 t/hour capacity

Steam-water heaters with floating head, PP type

Steam-water heaters with 25, 50, 100, 200 and 400 t/hour capacity

Water-water drainage condensate heaters, horizontal, OG type

Vapor cooler, OVA type

Heating coils for tube furnaces







## Separation and column equipment



**Kurgankhimmash LLC produces separation and column equipment designed for use in process plants in gas, oil, petrochemical and oil and gas treatment industry facilities.**

### **Oil-gas separators NGS**

Designed for oil degassing and purification of associated gas in oil collection and processing plants.

Capacity – 6.3; 12.5; 25; 50; 100; 150 m<sup>3</sup>

Nominal pressure – 0.6; 1.0; 1.6; 2.5; 4.0; 6.3 MPa

### **Oil-gas separators with water discharge, NGSV type**

Designed for separation of well products into oil, gas and water during oil and gas processing at oil fields.

Capacity – 25; 50; 100; 200 m<sup>3</sup>

Nominal pressure – 0.6; 1.0; 1.6; 2.5; 4.0 MPa

### **Three-phase separator TFS**

Designed for degassing and discharge of free water before heating furnaces.

Capacity – 100 m<sup>3</sup>

Nominal pressure – 0.7 MPa

### **Oil separators for gas/oil ratio up to 1500 m<sup>3</sup>/m<sup>3</sup>**

- Inlet separator 911-I.00-000 – for preliminary separation of gas from oil, capacity 100 m<sup>3</sup>;

- Spray separator 911/1-I.00-000 – for separation of liquid drops from gas, capacity 50 m<sup>3</sup>;

Installed in process line on booster pump stations.

### **Mesh gas separators**

Designed for final purification of natural and associated oil gas from liquid (condensate, hydrate inhibitor, water) in gas processing plants, in underground storages, on gas and oil refineries.

Capacity – 0.8; 1.6; 4.0; 8.0; 16.9 m<sup>3</sup>

### **Vertical centrifugal separators**

Designed for oil gas treatment from liquid drops in oil collection systems and processing plants at oil fields.

Capacity – 0.5 m<sup>3</sup> or 2.5 m<sup>3</sup>

### **Flare separators**

Designed for extraction of liquid drops from gas diverted to flare.

Capacity – 4; 25; 60; 140 m<sup>3</sup>

Efficiency of liquid extraction from gas – up to 99%

### **Oil-gas-water separator NGVR-P-1,6-125-2-I**

Designed for separation of gas and water from oil in oil processing plants.

### **Vertical, horizontal electrical dehydrators**

Developed together with OJSC VNIINEFTEMASH. Designed for deep dehydration and desalination of oil. Can be designed and set for unit capacity of 3 to 300 m<sup>3</sup>/hour of oil.

Main advantages:

- reduction of power consumption by a factor of 4-5;
- miniature explosion-proof power supplies with equipment block;
- oil-free high voltage current leads;
- excludes possibility of accumulation of solid deposits inside parts.

### **Oil and water settling tank**

Designed for removal of admixtures from water and oil.

Capacity – 20 to 200 m<sup>3</sup>

Working pressure – 0.6; 1.0; 1.6; 2.5 MPa.

### **Natural gas dehydration absorbers**

Capacity – 54.5 m<sup>3</sup>

Nominal pressure – 7.5 MPa.



## Separation and column equipment



Columns manufactured by Kurgankhimmash LLC (with different types in internal devices up to 5000 mm diameter and up to 65 000 long) can be used as the main process equipment for absorption, desorption, rectification processes, as well as for cooling, humidification and treatment of gases. Inside column units there are different types of plates - sieve, bubble-cap, packed grid, net, valve, and others.

Equipment diameter – up to 5000 mm, working pressure – up to 21 MPa, operating temperature – from -60 to +300 °C, volume – up to 250 m<sup>3</sup>, weight – up to 180 tons.

### Fractionation columns

- atmospheric columns;
- vacuum columns;
- fractioning columns for catalytic cracking and hydro cracking units.

### Steam-stripping columns

- columns for diesel fractions stripping;
- columns for gasoil fractions stripping.

### Absorption columns

- absorbers for amine gas stripping of CO<sub>2</sub> and H<sub>2</sub>S;
- absorbers for glycol gas drying.

### Gas fractioning columns

- de-ethanizers, de-propanizers, de-butanizers

### Condensate stabilization column







## Equipment for main pipelines



**Kurgankhimmash LLC manufactures special equipment for development, repair and servicing of main pipelines, oil-loading parks.**

### **Vertical steel cylindrical tanks for storage of oil, petroleum products, other nonaggressive products**

- capacity from 100 to 100 000 m<sup>3</sup>;
- constructed using plate-by-plate and soil assembly methods according to special designs with different types of roof;
- stationary (with and without internal floating roofs), floating;
- materials of metal tank structures depend on the individual operating conditions: product stored, climatic conditions, seismic activity in the construction district, etc.

### **Pig traps of main pipelines**

Designed for feeding in and receiving of pipeline cleaning and diagnostics facilities.

There are climatic designs U and HL for:

- oil pipelines – DN150 – 1200 mm, pressure up to 15.0 MPa; left- and right-hand units;
- gas pipelines – DN300 – 1400 mm, pressure up to 16 MPa; left- and

right-hand units.

In modular construction the pig trap is equipped with a tray, driving device, gantry crane, maintenance platform and other equipment.

### **Mesh liquid filters, SDZh type**

Designed for protection of pumping and other types of equipment from mechanical impurities during liquid transportation in pipelines in process plant of oil refining, petrochemical, oil and gas industries.

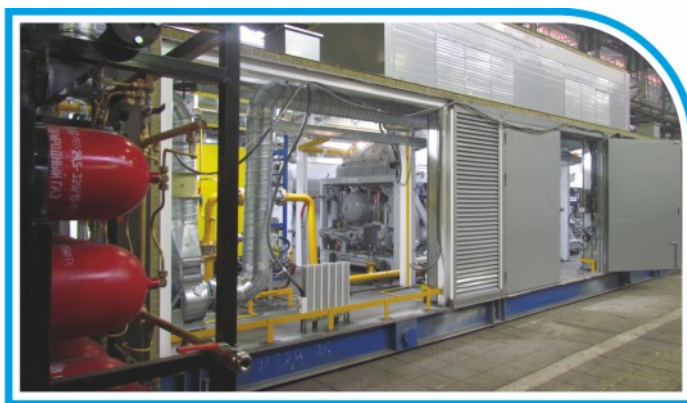
### **GF, SF, MB vertical/horizontal strainers**

Designed for purification of pumped oil from mechanical impurities, foreign objects, clay, paraffin-tar deposits and scale produced during repair and operation of the linear oil pipeline section of GF, SF, MB type.

### **Dust collectors with cyclonic and centrifugal elements**

Designed for purification of gas from dust in gas and oil industry enterprises.





## Automobile CNG Filling Stations



Automobile CNG filling stations (CNG stations) today are the only realistic alternative to liquid fuel filling stations. There are already several thousand of them installed all over the world (including about two hundred CNG stations in Russia).

CNG station KHM are modular compressor plants (MCP) in block construction containing absolutely all components required for operation of automobile CNG filling stations (inlet valves block, gas

treatment block, adsorption gas dryer, filling priority block for quick filling system implementation, filling column).

Kurgakhimash with huge experience in design and manufacturing of nonstandard mobile compressors plants can configure a CNG station model allowing for realization of any of your demands for compressed natural gas.

## Regeneration gas heating furnace

**NEW**



Regeneration gas heating furnace is used as a heater for adsorbent regeneration gas (removal of methanol and water occluded in zeolite pores) and is a part of the technical propane-butane treatment plant.

The furnace is a vertical construction consisting of a body (radiant and convective chambers), flue damper, gas collector and smoke stack.

Main purpose of furnace unit – direct-fired heating (of product, heat carrier, etc.).

The furnace construction includes connectors for control and measuring instruments.

Furnaces are built according to designs developed by the company's technical specialists.

## Line heater with intermediate heat exchanger

**NEW**



Line heater PPTB (5 MW) is the most powerful and compact unit of this type manufactured today in the territory of the Russian Federation. Herewith it is distinguished by simplicity of design and high reliability, the use of completely domestic components and materials and convenience of its maintenance and service.

This equipment is intended for heating oil and oil emulsion of their transportation and routine preprocessing. Design solutions ensure

uninterrupted operation in the Far North. Application of 5 MW PPTB unit is economically profitable not only because of the high specific capacity (reduction in the number of used vehicles), but also because of the unique thermodynamic compactness -building area per one unit in comparison with existing analogs is reduced from 272 m<sup>2</sup> to 84 m<sup>2</sup>, which significantly affects the value of the CMP.

Herewith the total weight of line PPTB heater 5MW assembled not more than the weight of lower power (4 MW) analogs.







**Turnkey ozonizing units**

## Ozonation equipment



**Kurgankhimash LLC manufactures high quality ozonation equipment (including packaged), that has successfully recommended itself in different industry facilities, in the utilities sector and in laboratories.**

- Laboratory ozonators, L type
- Industrial ozonators, P type
- Ozonation units, R6 type
- Ozone-filtering plants, OF type
- Catalyst bubble units with solid layer, KBS type
- Catalyst air-lift ejection units, KEE type
- Thermal catalytic ozone decomposition units, TK type
- Catalyst units OSV
- Ozone destructor DO
- Disperser D-300

## Equipment for cooling, drying and treatment of inert gases and compressed air.



**Wide use of inert gases and compressed air in industry as energy carriers to supply process control and management systems, for other process purposes, enforces strict standards for its quality.**

**Kurgankhimash LLC manufactures specialized equipment for optimal and correct preparation of inert gases and compressed air, ensuring long service life of pneumatic systems.**

- Air coolers, TERAk and TERA types
- Air coolers, OVM type
- Moisture separating air filters, FVOV type
- Moisture separating cartridge air filters, FVOV-P type
- Heatless air dryers, OVB type
- Heated air dryers, OVN type
- Cooling air dryers, OVH type
- Modular air compressor plants complete with compressed air drying and treatment equipment
- Cartridge air filters FVP type and their blocks
- Air collectors (air and inert gases receivers)





## Turnkey autoclave units

## Autoclaves



**Kurgakhimash LLC is one of the leading Russian enterprises engaged in design and manufacturing of autoclaves designed for technological processes that run with variable temperature and pressure.**

**Equipment can be used in compostive, construction, aviation, chemical, rubber, black and non-ferrous metallurgy enterprises, and in other industries.**

The company went through modernization of production facilities and heavy equipment to start production of autoclave plants for production of items made of composite materials and replacement of similar foreign equipment in the Russian market.

### **Type of autoclaves manufactured:**

- for construction industry;
- for composite materials;
- vulcanizing;
- for wood modification;
- for food industry.

Autoclaves can be designed with a construction that differs from the model row according to the technological process on client's production facilities.

Equipment length – up to 50 000 mm  
Equipment diameter – up to 4 000 mm  
Pressure – up to 4 MPa (40 kg/cm<sup>2</sup>)  
Operating temperature – up to +400 °C

### **Autoclave can include the following equipment:**

- control box;
- control panel;
- pump station;
- hydraulic or pneumatic drives;
- APCS and control and measurement instruments from Russian and foreign manufacturers;
- vacuum plant;
- cooling system.

## Installation supervision and startup



Together with equipment supplies Kurgakhimash LLC offers professional installation supervision and startup services.

Kurgakhimash LLC specialists travel to the client's site to carry out general technical and process supervision of installation and startup works, works quality control.

This allows for cardinal reduction of risk of errors during installation and startup of the equipment, identification of possible defects before commissioning of the equipment, quality and on-time performance of works of any level of difficulty.







## Completed Projects

### PJSC Gazprom

#### Prirazlomnoye oil field (Barents Sea shelf)

Equipment manufactured and delivered:

- separator blocks;
- tank blocks and other equipment.

#### Bovanenkovskoye oil-gas field

- degasser blocks;
- fittings blocks;
- tank blocks;
- gathering stations.

#### Zapolyarnoye oil-gas condensate field

- separator blocks;
- divider blocks;
- degasser-divider blocks;
- heat exchange equipment.

#### Kovytkinskoye oil-gas condensate field

Реконструкция опытной установки подготовки газа УПГ- 102

- емкость дренажная аварийного слива масла ЕДЗ;
- емкость дренажная поз. ЕЗ.

#### Gas fields

- diesel fuel tank  $V = 25 \text{ m}^3$
- emergency discharge fuel tank  $V = 25 \text{ m}^3$ ;
- tanks for methanol  $V = 75 \text{ m}^3$ ;
- storage tanks for LPG  $V = 50 \text{ m}^3$ ;
- flare drums pos. FD1, 2, 3;
- reboilers blocks of deethanization columns.



### Gazpromneft Shelf, LLC

#### Prirazlomnaya Platform

The following equipment has been produced and supplied:

- offshore tank containers for storage and transportation of 36% hydrochloric acid.

### Tomskgazprom, LLC

#### Kazanskoye Oil and Gas Condensate Field

The following equipment has been produced and supplied:

- deethanization column block K1;
- stabilization column block K2;
- buffer vessel with section unit BC1;
- reflux vessel E1;
- feed pump unit attached to the oven P1 BN1;
- feed pump unit attached to the oven P2 BN2;
- first stage separator block S1;
- low-temperature separator unit S2.

### LLC Gazprom centrremont

#### Reconstruction of gas-field structures of PeschanoUmet'skoye underground gas storage station

Equipment manufactured and delivered:

- gas separator blocks;
- degasser blocks;
- tank blocks.

#### Technical refurbishment of Moskovskoye underground gas storage administration;





## Completed Projects



### Reconstruction and expansion of Kasimovskoye underground gas storage

Equipment manufactured and delivered:

- A-1 absorber fittings block;
- MFA-1 multifunction fittings unit block;
- stratum water degassing block;
- DEG degassing block;
- gauging gas separator block;
- pump blocks;
- large-bulk.

### PJSC «TRANSNEFT»

- oil depots Grushovaya, Zarechye (vertical storage tank- 50 000 m<sup>3</sup>, pig traps);
- oil pumping stations Palkino, Krymskaya, Taishet, Skovorodino, Kozmino (vertical storage tank 5000 to 50000 m<sup>3</sup>, pig traps);
- specialized loading sea port Primorsk (vertical storage tank 5000 to 50000 m<sup>3</sup>, pig traps);
- Pipeline Operation Control Station Samara, Subhankulovo, Starolikeyevo, Nurlino, Omsk (vertical storage tank 5000 to 50000 m<sup>3</sup>, pig traps).

### Pipeline system Zapolyarya – BPM Pur-Pe;

### Main oil pipeline Krasnoyarsk – Irkutsk;

### Booster oil pumping station NPS-2;

### Main oil pipeline Kuyumba – Taishet

Equipment manufactured and delivered:

- metalware for vertical storage tank;
- pig traps;
- filters.

### NPS-1 Oil pipeline-branch «NS VSTO- Komsomolskiy OIL REFINERY»

Vertical steel tank with pontoon in volume of 20000 m

### GOPS Taishet

- Vertical steel tank with floating roof volume of 50000 m

### PJSC «NK «ROSNEFT»

### Vankorskoye field (Krasnoyarsk region)

Equipment manufactured and delivered:

- three-phase filter block with direct heating, NGVRP;
- three-phase separator blocks with water discharge;
- gas separator blocks;
- flare separator blocks;
- bottoms liquid pumping block;
- vertical steel tank RVS-1000;
- commercial oil pumping block;
- electrical dehydrator EDV-20 block;
- flare plant UFMGS-100/100.

### RN-PURNEFTEGAS LLC

### BCS of Komsomol Deposits

The following equipment has been produced and supplied:

- blocks of input flow separators;
- blocks of condensate tank vessel;
- gas flow metering units;
- buffer capacity units;
- block of the drainage capacity of the PGSP and pump station.







## Completed Projects

### JSC «ROSPAN INTERNATIONAL»

#### East Urengoy Licensed Area

Technical propane-butane treatment from methanol gas and condensate processing plant

The following equipment has been produced and supplied:

- extractant regeneration column;
- extraction columns;
- degasser WMS blocks;
- gas blowdown separators blocks;
- blocks of gas regeneration separators;
- blocks of reflux tanks;
- clean water vessel unit;
- drainage vessel unit of PBT;
- drainage vessel unit of WMS;
- «gas-nitrogen» heat exchanger blocks;
- «gas-gas» heat exchanger blocks;
- absorbers with maintenance areas;
- regeneration gas heating furnaces blocks;
- evaporator units;
- modular compressor stations.

### LLC LUKOIL WEST SIBERIA

Equipment manufactured and delivered:

- separator blocks;
- absorber blocks;
- divider-degasser blocks;
- flare separator blocks.

Additionally we provided technical support for installation, supervision and startup works.

### LLC LUKOIL-UHTANEFTEPERERABOTKA

Equipment manufactured and delivered:

- electrical dehydrator EDG-160-18-LK blocks

### LLC LUKOIL-KOMI

#### Bayandyskoye field

Equipment manufactured and delivered:

- electrical dehydrator ED-70 blocks

#### Usinskoye field

Equipment manufactured and delivered:

- oil-gas-water separator blocks with direct heating – NGVRP (with automated control system)

### LLC STAVROLEN-LUKOIL

Equipment manufactured and delivered:

- UKGZ and UKGP chambers with Schultz gate valves;
- PGE tanks for condensate collection;
- underground drainage tank EP.

### OJSC SURGUTNEFTEGAZ

#### Fedorovskoye field (KhMAD)

Equipment manufactured and delivered:

- absorber block;
- degasser block;
- TEG regeneration block;
- tank block and other equipment.

#### Talakanskoye oil field (Yakutia)

Equipment manufactured and delivered:

- separator blocks;
- tank blocks;
- heat exchangers and other equipment

### PJSC NOVATEK

#### Purovskiy CPP

Main process equipment manufactured and delivered:

- reflux tank blocks;
- DEK buffer tanks;
- condensate-water" divider blocks;
- tank-filter block;
- columns block;
- reactors;
- ready products warehouse consisting of 50 tanks 200 m<sup>3</sup> each.

#### Yurharovskoye gas condensate field

Equipment manufactured and delivered:

- gathering station block;
- slug catchers;
- mesh liquid filters;
- ejector blocks;
- separator blocks;
- gas-gas heat exchanger;
- gas-liquid heat exchanger and other equipment.

### LLC NOVATEK-TARKOSALENEFTEGAZ

Equipment manufactured and delivered:

- MCP based on reciprocating compressor unit Ariel JGC/6;
- gas reciprocating engine Caterpillar G3616, 3.5 MW.



## Completed Projects



### CJSC NORTGAZ

#### Northern Urengoykoye gas condensate field

Equipment manufactured and delivered:

- air collector;
- air filter and moisture separator;
- oil-gas separator;
- flare separator;
- methanol injection station GPR 1;
- separator block GPR and other equipment.

### CJSC TERNEFTEGAZ

#### Termokarstovoye field

Equipment manufactured and delivered:

- MCP based on reciprocating compressor unit Ariel KBZ/4;
- Reciprocating engine Caterpillar G3612, 2.8 MW.

### LLC YARGEO

#### Yarudeyskoye field

Equipment manufactured and delivered:

- MPS based on screw compressor unit Vilter;
- heat exchange;
- separators;
- filters.

#### TURKMENBASHINSKIY REFINERY (Electrical desalting plant AT-6, Electrical desalting plant AT-7) (Republic of Turkmenistan)

Equipment manufactured and delivered:

- heat exchange;
- separation;
- tanks and vessels;
- electrical dehydrators;
- separation filters.

### MIRtex Ltd.

Ozonation unit on the basis of ozone generator P-270 has been produced and supplied:

- air cooler TERA-30;
- filter-drier FVOV-80;
- dehumidifier OVN-10-0, 15-65;
- cartridge air filter FVP-10-0, 15;
- ozone generator P-270;
- contact wastewater treatment machine OSV-100;
- thermal and catalytic ozone decomposition unit TC-630.

### OJSC Concern PVO Almaz-Antey

The following equipment has been produced and supplied:

- line of aluminum and magnesium die casting and impregnation line manufactured by JSC «Ferry Watt»;
- autoclave unit for prior degassing of castings in a vacuum and subsequent impregnation under pressure.

### JSC Academician M.F. Reshetnev Information Satellite Systems

The following equipment has been produced and supplied:

- autoclave for polymerization of composite parts.

### UDP MUBAREKSKIY GPZ (Republic Uzbekistan)

Equipment manufactured and delivered:

- primary separators;
- raw gas separators;
- absorber with weathering tank.







## Completed Projects



### JSC NGSK KAZSTROYSERVICE (Republic Kazakhstan)

#### Akshabulak field

Equipment manufactured and delivered:

- condensate de-ethanization column block;
- condensate stabilization column block;
- liquefied gas cooling heat exchanger;
- air drying plant;
- compressor plant for low pressure associated gas compression;
- propane cooling plant;
- compressor plant for high pressure associated gas compression;
- gas-condensate-water separator block;
- dried gas-condensate-NEG divider block.

### LLC BYKOVGAZ

#### South-Kislpskoye field

Equipment manufactured and delivered:

- drainage tanks;
- adsorbers;
- gas-gas, condensate-condensate heat exchangers, evaporator, etc.;
- air collectors;
- de-ethanization column K-201;
- stabilization column K-202;
- primary separator block with slug catcher V-101;
- degasser block V-105, etc.

### PJSC «RUSSNEFT»

#### PJSC «Orsknefteorgsintez» Oil Refinery

- circulating absorber VSG K-01;
- air collectors;
- flare acid gas tank E-100.

#### JSC «MINUDOBRENIYA»

The following equipment has been produced and supplied:

- air cooler TERA-100;
- heating dehumidifier OVN-100-0,8-S-40;
- filter-drier FVOV-150;
- air cooler TERA-100;
- refrigerated units for circulating solution of ammonium nitrate.

#### JSC SOLIKAMSKBUMPROM

The following equipment has been produced and supplied:

- cartridge filters block BFP-100-0,8;
- air cooler TERA-100;
- heating dehumidifier OVN-100-0,8-S-40;

#### PJSC «SEVERSTAL»

The following equipment has been produced and supplied:

- heating dehumidifier OVN-100-0,8-S-40;

#### SEIDI OIL REFINERY

The following equipment has been produced and supplied:

- catalytic reforming unit LC 35-11/1000 and dearomatization block for straight-run gasoline;
- dual heat exchanger T-103 to heat the gas feed mixture.





PJSC NOVATEK  
PJSC Gazprom  
PJSC AK Transneft  
PJSC NK Rosneft  
PJSC Lukoil  
OJSC Surgutneftegaz  
PJSC Gazprom Neft  
PJSC Bashneft  
PJSC Tatneft

PJSC NK Russneft  
PJSC Kazanorgsintez  
OJSC NGK Slavneft  
JSC ChMZ  
Emerol Ltd.  
Schlumberger Dowell  
Parsons Global Services Inc  
NHK Uzbekneftegaz  
JSC NK KazMunayGaz

JSC GC Turkmenneft  
OJSC Krasnoyarsk Aluminum Plant  
OJSC Bratsk Aluminum Plant  
PJSC Severstal  
JC RUSAL  
PJSC Koks  
PJSC GMK Norilskiy Nikel



## Biggest Product Supplies

### Gas pipelines:

Ananyev – Ismail  
Zapolyarnoye – Noviy Urengoy  
Pochinki – Izobilnoye  
Russia – Turkey  
North-European gas pipeline  
Middle Asia – Center  
SRTO – Torzhok

### Oil pipelines:

Baltic pipeline system  
MN Druzhba  
Kentiyaq-Atyrau  
East Siberia – Pacific ocean (VSTO)  
Atasu-Alashankou  
Kenkiyak-Kumkol

### Oil pumping stations and LODS:

Kaleykino  
Kozmino  
Krymskaya  
Palkino  
Skovorodino  
Taishet  
Tingovatovo  
LODS Nurlino  
LODS Omsk  
LODS Samara  
LODS Starolikeyevo  
LODS Subhankulovo  
NB Grushovaya  
NB Zarechye  
PNB Tihoretskaya  
RP Lopatino  
Special Filling Sea Port Primorsk

### Fields: Plants:

Achimovskoye  
Vankorskoye  
Vostochno-Tarkosalinskoye  
Vyngayahinskoye  
Zapadno-Malobalykskoye  
Zapolyarnoye  
Komsomolskoye  
Korchaginskoye (platform)  
Krapivinskoye  
Luginetskoye  
Meretoyahinskoye  
Nahodkinskoye  
Perelyubskoye  
Prirazlomnoye (platform)  
Sugmutskoye  
Talakanskoye  
Ust-Tegusskoye  
Urengoyevskoye  
Fedorovskoye  
Yuzhno-Russkoye  
Yurharovskoye  
Yarudeyskoye  
Vostochno-urengoyevskoye  
Akshabulak (Kazakhstan)  
Kenlyk (Kazakhstan)  
Saikag (Kazakhstan)  
Nuraly (Kazakhstan)  
Turgai (Kazakhstan)

### Plants:

Antipinskiy Refinery  
Achinskiy Refinery  
Kazanorgsintez  
Kuybyshevskiy Refinery  
LUKOIL-Volgogradneftepererabotka  
LUKOIL-Uhtaneftepererabotka  
Nizhnekamenskiy Refinery  
Novokuybyshevskiy Refinery  
Omskiy Refinery  
Orsknefteorgsintez  
Purovskiy CPP  
Saratovskiy Refinery  
Slavneft-Yaroslavlnefteorgsintez  
Ufaorgsintez  
Uralelektromed  
Talakanskoye Turkmenbashinskiy Refinery (Turkmenistan)  
Tuapsinskiy Refinery  
Neftekumskiy Refinery  
Kaleykino Fedorovskoye

### Ozonation plants for preparation of potable water, wastewater treatment and chemical technologies:

Aznakayevo (Tatarstan)  
Birsk (Bashkortostan)  
Verhnaya Pyshma (Sverdlov region)  
Zavolzhye (Nizhniy Novgorod region)  
Kinel (Samara region)  
Kopeysk (Chelyabinsk region)  
Mokrousovo (Kurgan region)  
Nefteyugansk (KhMAD)  
Nizhniy Tagil (Sverdlovsk region)  
Novosibirsk  
Cherniy Otrog (Orenburg region)  
Ozonation plant Baikal



## **Contact Information:**

### **LLC «Kurgankhimmash»**

16 Khimmashevskaya str., Kurgan, 640007, Russia  
Phone: + 7 (3522) 25-58-33 (general director office)  
e-mail: office@khm.zaural.ru

### **Russian sales:**

Limited Liability Company «Trade House «Kurgankhimmash»  
Phone/fax: +7 (495) 651-67-20  
e-mail: zakaz@td-khm.ru

### **Export sales:**

CIS & Overseas Project Department (Kurgan)  
Phone/fax: +7 (3522) 47-75-94, 47-75-92  
e-mail: export@khm.zaural.ru, zakaz@khm-msk.ru

