



Engineering Flow Solutions

INTEGRATED SOLUTIONS FOR OIL & GAS



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HMS GROUP AT A GLANCE



HMS Group – a leading international holding, integrating major machine building and engineering companies. Scope of HMS Group's activities covers oil & gas industry, nuclear and thermal energy, water supply & sewage disposal, and other industries

KEY FACTS AND FIGURES

- 4 complementary business units:
 - Industrial pumps
 - Compressors
 - Oil & gas equipment and projects
 - Construction
- 12 manufacturing facilities in Russia, CIS, and Germany
- 4 design engineering institutes and 3 research & development centers
- 1,400 high-skilled designers and engineers
- 15,000 professional employees
- Branch and representative offices in Kazakhstan, Uzbekistan, Turkmenistan, Italy, Iran, and UAE

CUSTOMERS & PARTNERS



INNOVATIONS & TECHNOLOGIES



DESIGN, RESEARCH & DEVELOPMENT

- Design center at Apollo in Goessnitz, Germany
- VNIIAEN research institute in Sumy, Ukraine
- Specialized R&D center of the HMS Group in Moscow, Russia
- R&D center at HMS Livgidromash in Livny, Russia
- R&D center at NIIturbokompressor in Kazan, Russia
- Engineering center at HMS Neftemash in Tyumen, Russia
- Design and R&D institute Giprotymenneftegaz in Tyumen, Russia

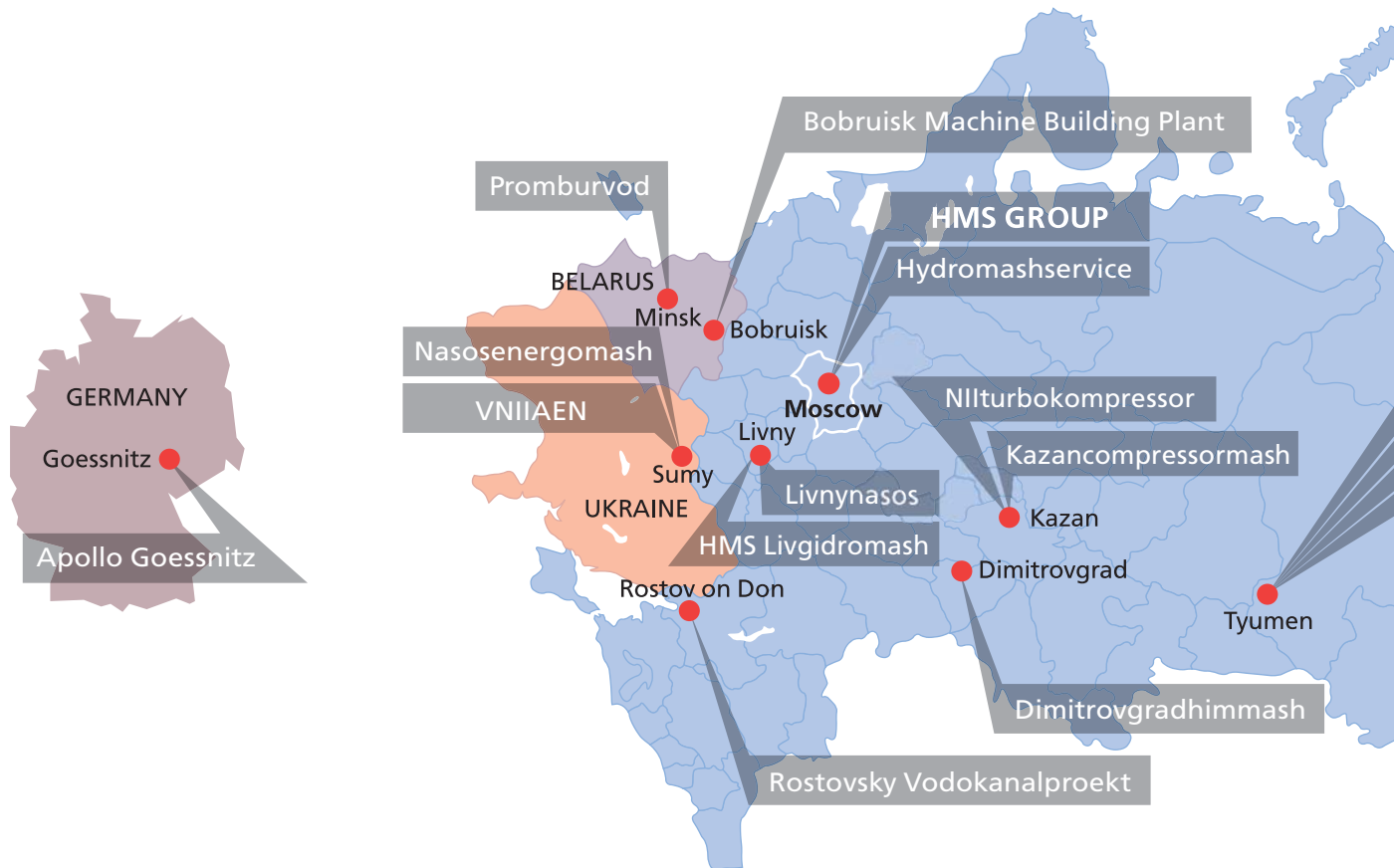
MANUFACTURING

- Processing centers and NC machine tools by Schiess, Skoda, Doosan, Demag, Schenk, Sodik, Ibarria, and other manufacturers
- Four large cast houses equipped with the modern molding lines and induction furnaces made in the Great Britain, Germany, Turkey
- A new cast house with annual capacity of 6,000 ton was launched in 2014 facilities of HMS Livgidromash

TESTING

- The largest in Russia and CIS 14 MW stand stand for the pumping equipment in-situ test
- One of the largest in Europe testing facilities with 35 stands for the assembled compressor systems testing

HMS GROUP COMPANIES MANUFACTURING PRODUCTS AND IMPLEMENTING PROJECTS FOR OIL & GAS INDUSTRY



HYDROMASHSERVICE

Founded in 1993, Moscow, Russia
 Integrated commercial and engineering company of HMS Group. Supplies the equipment by the Group's companies and implements integrated turnkey projects

APOLLO GOESSNITZ GmbH

Founded in 1863, Goessnitz, Germany
 Manufacturing of sophisticated pumps and pumping systems for oil refining, gas processing, offshore oil & gas production platforms, thermal energy, and other industries

NASOENERGOMASH

Founded in 1949, Sumy, Ukraine
 Specializes in manufacturing of pumps and pumping systems for production and transportation of oil and petroleum products, for nuclear and thermal energy, water & utilities

BOBRUISK MACHINE BUILDING PLANT

Founded in 1898, Bobruisk, Belarus
 Manufacturing of the pumping equipment for oil refining, petroleum chemistry, steel & mining, and other industries

HMS LIVGIDROMASH

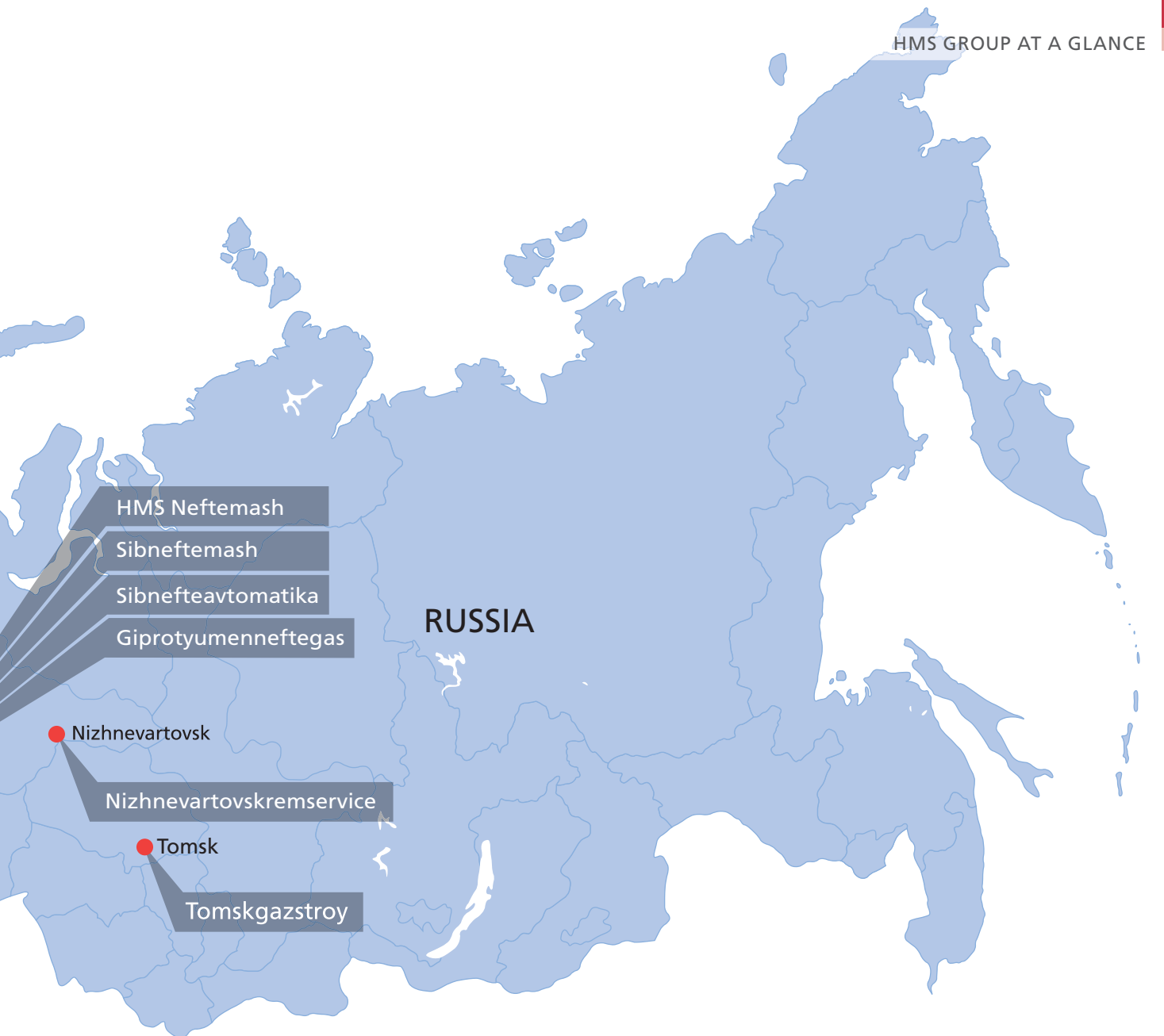
Founded in 1947, Livny, Russia
 Manufacturing of pumps and pumping systems for oil & gas, nuclear and thermal energy, water & utilities, shipbuilding, and other industries

DIMITROVGRADHIMMASH

Founded in 1931, Dimitrovgrad, Russia
 Manufacturing of a wide range of pumps, tanks, pressure vessels, reservoirs, separators, and heat exchangers

NIZHNEVARTOVSKREMSERVICE

Founded in 1998, Nizhnevartovsk, Russia
 Oil pumps manufacturing and integrated service of repair, maintenance, and retrofit of pumping, drilling, and other oil & gas equipment

**VNIIAEN**

Founded in 1956, Sumy, Ukraine
R&D institute specializing in pump engineering for oil, gas, and power industries

KAZANCOMPRESSORMASH

Founded in 1951, Kazan, Russia
Manufacturing of compressors, gas compression systems and complete compressor stations for oil & gas, petrochemistry, and other industries

NIITURBOKOMPRESSOR

Founded in 1957, Kazan, Russia
The leading in Russia and CIS research & development institute of compressor equipment design engineering

HMS NEFTEMASH

Founded in 1965, Tyumen, Russia
Specializes in manufacturing of a wide range of skid-mounted equipment for oil & gas industry

SIBNEFTEMASH

Founded in 1976, Tyumen, Russia
Engineering and manufacturing of specialized oilfield equipment

SIBNEFTEAVTOMATIKA

Founded in 1986, Tyumen, Russia
Engineering and manufacturing of the flow rate metering equipment for oil, gas, and water

GIPROTYUMENNEFTEGAZ

Founded in 1964, Tyumen, Russia
Front end engineering design, basic and detailed engineering of the oil & gas field facilities complex development

TOMSKGAZSTROY

Founded in 1968, Tomsk, Russia
Construction of trunk and infield pipelines, process and infrastructure facilities for oil & gas fields development

HMS GROUP FOR OIL & GAS

EQUIPMENT DESIGN AND MANUFACTURING

- PUMPS AND PUMPING SYSTEMS
- COMPRESSORS AND COMPRESSOR SYSTEMS
- SKID-MOUNTED OILFIELD EQUIPMENT
- TANKS, VESSELS, AND HEAT EXCHANGERS

SUPPLY OF PROCESS SYSTEMS

- ENGINEERING AND MANUFACTURING
- FACTORY ASSEMBLY
- TESTING IN REAL OPERATION CONDITIONS
- ON-SITE INSTALLATION SUPERVISION AND COMMISSIONING

BASIC AND DETAILED ENGINEERING OF OIL & GAS INDUSTRY FACILITIES

- PROCESS ENGINEERING
- CONSTRUCTION AND ENGINEERING RESEARCH
- SCIENTIFIC SUPPORT OF PROJECTS
- CONSTRUCTION SUPERVISION

CONSTRUCTION AND RECONSTRUCTION OF OIL & GAS INDUSTRY FACILITIES

- PUMPING STATIONS
- COMPRESSOR STATIONS
- OILFIELD FACILITIES OF HYDROCARBONS GATHERING, STORAGE, AND PROCESSING
- PROCESSING FACILITIES FOR PETROLEUM REFINERIES AND NATURAL GAS PLANTS

PUMPS: COMPETENCES



The pumping equipment design and manufacturing is carried out by the HMS Group affiliates: **Apollo Goessnitz** (Germany), **Bobruisk Machine Building Plant** (Belarus), **HMS Livgidromash** (Russia), **Dimitrovgradhimmash** (Russia), – the proven suppliers for the oil & gas industry.

APPLICATION

HMS Group companies offer a wide range of the pumping equipment for all stages of production, transportation and processing of hydrocarbons:

- **Upstream:** production and primary treatment processes of oil, gas and condensate
- **Midstream:** transportation of liquid hydrocarbons such as crude oil, petroleum products, natural gas condensate and other liquids via pipelines and other ways of transport
- **Downstream:** oil refineries, gas and condensate processing plants, petroleum & gas chemistry applications

RESEARCH & DEVELOPMENT

Contemporary R&D base is represented by own engineering centers in Russia, CIS and Europe with centralized management and application of the latest 3D design software based on SolidWorks, ANSYS CFX and other CAD and CAM platforms.

While designing the pumps and pumping systems the HMS Group specialists are focused on high energy efficiency of proposed solutions.

MANUFACTURING

The cast pump elements are made at the own large foundry shops provided with the newest molding lines and induction furnaces.

A full-cycle production of the pumping equipment including all critical components is arranged by the HMS Group companies equipped with up-to-date CNC machine tools and processing centers from the leading manufacturers of Germany, Great Britain, and South Korea.

TESTING

HMS Group companies have the unique equipment for in-situ testing of pumps and pumping systems in accordance with international standard ISO 9906:2012 Grade 2B or by special, customer-approved methods, within the following range of the main operating parameters:

- Capacity: up to 16,000 m³/h
- Head: up to 4,200 m
- Drive power: up to 14,000 kW

SERVICE

The HMS Group customers are provided with a full range of related services for pumps & systems including installation & commissioning supervision, routine maintenance, repair and overhaul, supply of original spare parts, integrated retrofit, extended engineering and technical support.

STANDARDS & QUALITY

The pumps are designed and manufactured in compliance with API 610 standard of 11th edition, API 685, API 675 and other international and national industry standards as ISO, DIN, ANSI, ASME.

The integrated Quality Management System at production facilities of the HMS Group companies is compliant with ISO 9001 standard requirements.

PUMPS: PRODUCT RANGE

WATER INJECTION SYSTEMS

Single-casing, radially split, multistage, between-bearings (ring-section) pumps
Series CNS, CNSz, CNSp (type BB4)

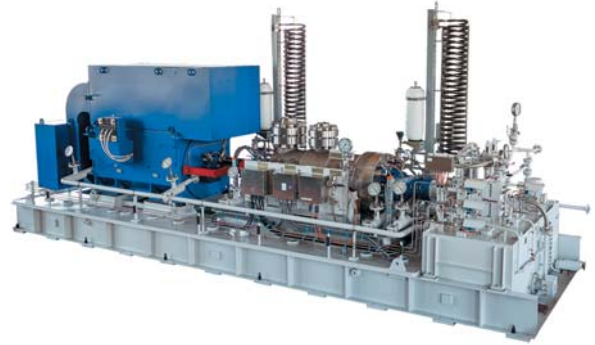


APPLICATION

Injection of treated water, produced / formation water, and oilfield water into formation for pressure retention

Q: up to 1,500 m³/h **H:** up to 2,400 m
T: up to + 80 °C

Double-casing, radially split, multistage, between-bearings (barrel) pumps
Series CNSDp (type BB5)



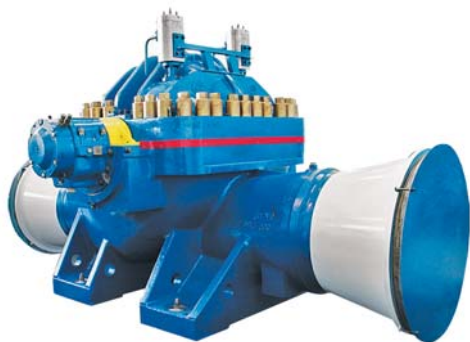
APPLICATION

Injection of treated water, produced / formation water, and oilfield water into formation for pressure retention

Q: up to 1,840 m³/h **H:** up to 2,800 m
T: up to + 400 °C

OIL AND PETROLEUM PRODUCTS TRUNK PIPELINES

Axially split, one-stage, between-bearings pumps
Series NM, NGPN-M (type BB1)

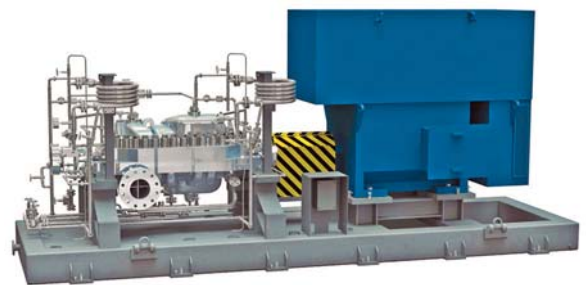


APPLICATION

Mainline and booster pumps for low head transportation of oil and petroleum products via trunk pipelines

Q: up to 13,000 m³/h **H:** up to 470 m
T: up to +85 °C

Axially split, multistage, between-bearings pumps. Series AMG, NPS (type BB3)



APPLICATION

Transportation of oil and petroleum products via trunk and process pipelines

Q: up to 3,800* m³/h **H:** up to 2,400* m
T: up to + 250 °C

* The parameters can be increased by customer request

OIL AND PETROLEUM PRODUCTS TRUNK PIPELINES

Single /double-casing, radially split, multistage, between-bearings pumps
Series NM, CNSn (type BB4, BB5)



APPLICATION

High head transportation of oil and petroleum products via trunk and process pipelines

Q: up to 1,500 m³/h H: up to 1,000 m
T: up to + 60 °C

Double-casing, diffuser, vertically suspended pumps. Series NMV (type VS6)



APPLICATION

Transportation of oil and petroleum products via trunk and process pipelines

Q: up to 2,250 m³/h
H: up to 420 m
T: up to + 50 °C

AUXILIARY PROCESSES

Double-casing, diffuser, vertically suspended pumps. Series NPV, NPV-M, 20NV, 24NV (type VS6)



APPLICATION

Supply of oil, petroleum products, fuel mixtures to the trunk pumps for their cavitation-free operation; operations at the oil blending facilities, loading/unloading racks, fuel storage depots

Q: up to 6,000 m³/h
H: up to 150 m
T: up to + 50 °C

Axially split, one-stage, between-bearings pumps
Series HMS DeLium, D, 1D, 2D, NCN-E, ND



APPLICATION

Supply of oil, petroleum products, chemically active liquids in oil refining, gas processing, chemical industry facilities; industrial water supply

Q: up to 12,500 m³/h H: up to 250 m
T: up to + 150 °C

AUXILIARY PROCESSES

Twin-screw multiphase pumps Series 2VV



APPLICATION

Pumping of oil, water and associated petroleum gas mixtures

Q: up to 500 m³/h P: up to 63 kgf/cm²
T: up to + 100 °C

One-screw progressive cavity pumps Series N1V



APPLICATION

Pumping of commercial oil and petroleum products out of drainage reservoirs and delivery to a trunk pipeline

Q: up to 10 m³/h
P: up to 100 kgf/cm²
T: up to + 50 °C

Vertically suspended, ring-section, multistage centrifugal pumps. Series NOU



APPLICATION

Pumping oil, water, oil-water emulsion out of tanks and reservoirs

Q: up to 50 m³/h
H: up to 800 m
T: up to + 60 °C

Vertically suspended, single-casing, volute, line-shaft-driven sump pumps Series NV, NV-M (type VS4)



APPLICATION

Pumping oil, water, oil-water emulsion out of tanks and reservoirs with depth up to 6.2 m

Q: up to 60 m³/h
H: up to 110 m
T: up to + 80 °C

PRODUCTION OF OIL, GAS AND CONDENSATE*, OIL REFINING AND PETROLEUM CHEMISTRY

Centreline-mounted, single-stage overhung pumps. Series KRH, KRHA, KRPO, KGHL (type OH2)



APPLICATION

Oil, gas and condensate extraction processes; primary and secondary processing of oil and petroleum products, end products handling at refineries; various processes at petrochemical and gas processing plants

Q: up to 5,000 m³/h **H:** up to 390 m

T: up to + 450 °C

Centreline-mounted, single-stage overhung pumps. Series 2NK, 2NKG (type OH2)



APPLICATION

Extraction of oil, gas and condensate; processing of oil and petroleum products; handling of end products at refineries; processes at petrochemical and gas processing plants

Q: up to 720 m³/h **H:** up to 255 m

T: up to + 400 °C

Axially split, one- and two-stage, between-bearings pumps. Series ZMK, ZMKV (type BB1)



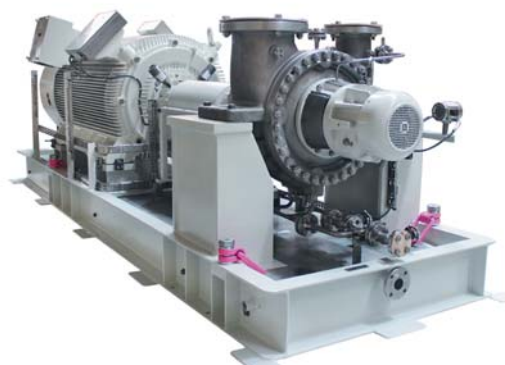
APPLICATION

Production of oil, gas and condensate; petroleum products processing at refineries, petrochemical and gas processing plants

Q: up to 10,000 m³/h **H:** up to 140 m

T: up to + 150 °C

Radially split, single-stage, between bearings pumps. Series ZPR, ZPRA, NND (type BB2)



APPLICATION

Processing of oil, petroleum products at refineries, gas processing plants and petroleum chemistry applications

Q: up to 4,000 m³/h **H:** up to 400 m

T: up to + 450 °C

* Including offshore platforms and FPSO (Floating Production, Storage and Offloading) – a floating vessel used by the offshore oil and gas industry for the production, processing of hydrocarbons and for storage of oil.

PRODUCTION OF OIL, GAS AND CONDENSATE, OIL REFINING AND PETROLEUM CHEMISTRY

Radially split, two-stage, between-bearings pumps. Series KGR, KGRD (type BB2)



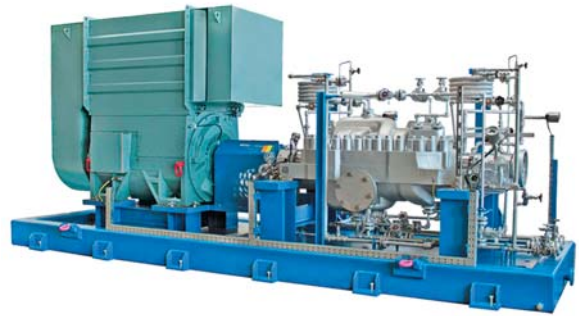
APPLICATION

Oil, gas and condensate extraction processes; primary and secondary processing of oil and petroleum products, end products handling at refineries; various processes at petrochemical and gas processing plants

Q: up to 1,600 m³/h **H:** up to 600 m

T: up to + 400 °C

Axially split, multistage, between-bearings pumps. Series AMG, NPS (type BB3)



APPLICATION

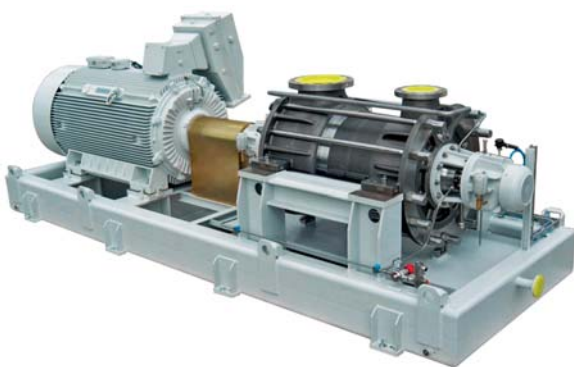
Secondary processing of oil and petroleum products, end products handling at refineries; various processes at petrochemical and gas processing plants

Q: up to 3,800* m³/h **H:** up to 2,400* m

T: up to + 250 °C

* The parameters can be increased by customer request

Single-casing, radially split, multistage, between-bearings pumps
Series HP, GP, GMHD (type BB4)



APPLICATION

Production of oil, gas, and condensate at offshore platforms; water injection systems; oil refineries and gas processing plants

Q: up to 1,400 m³/h **H:** up to 2,600 m

T: up to + 200 °C

Double-casing, radially split, multistage, between-bearings pumps
Series TL, TG, TGDX (type BB5)



APPLICATION

Production of oil, gas, and condensate at offshore platforms; water injection systems; gas washing systems; oil refineries and petrochemical plants

Q: up to 1,500 m³/h **H:** up to 4,200 m

T: up to + 450 °C

PRODUCTION OF OIL, GAS AND CONDENSATE, OIL REFINING AND PETROLEUM CHEMISTRY

Vertical, in-line, single-stage overhung pumps with separate bearing brackets
Series KRI, KRIL (type OH3)



APPLICATION

Extraction processes of oil, gas and condensate including offshore platforms; oil and petroleum products primary and secondary processing, handling of end products at refineries; various processes at petrochemical and gas processing plants

Q: up to 600 m³/h **H:** up to 320 m

T: up to + 385 °C

Wet pit, vertically suspended, single-casing diffuser pumps. Series HPV, HPVX, GDV (type VS1)



APPLICATION

Booster pumps for supply of crude oil, petroleum products, fuel mixtures, flammable liquids from the tanks; crude oil circulation systems in processes at refineries

Q: up to 3,200 m³/h

H: up to 600 m

T: up to + 180 °C

Double-casing, diffuser, vertically suspended pumps. Series GSTV, GLKV (type VS6)



APPLICATION

Oil, gas and condensate extraction including offshore platforms; oil and petroleum products primary and secondary processing, end products handling at refineries; petrochemical and gas processing plants applications

Q: up to 3,000 m³/h

H: up to 1,400 m

T: up to + 160 °C

Double-casing, diffuser vertically suspended pumps. Series HPTV, GDTV (type VS6)



APPLICATION:

Oil, gas and condensate extraction processes including offshore platforms; processing of oil and petroleum products, end products handling at refineries; petrochemical and gas processing plants applications

Q: up to 3,200 m³/h

H: up to 1,400 m

T: up to + 260 °C

WEST QURNA-2 OIL FIELD, IRAQ PUMPING UNITS FOR WATER INJECTION SYSTEM



Customer	LUKOIL Mid-East Ltd (LUKOIL Overseas)
Scope of works	Engineering, manufacturing, factory testing, supply, installation and commissioning supervision
Scope of supply	<p>Supply of complete pumping units for sea water injection systems</p> <ul style="list-style-type: none"> ▪ 7 high pressure water injection pumping units based on double-casing multistage centrifugal pumps CNSDp 240-1422 (BB5 type by API 610) ▪ 2 low pressure water distribution pumping units based on axially split between-bearings centrifugal pumps ZMK-400/700-618/CN (BB1 type by API 610)
Technical data	<p>Pumps CNSDp 240-1422</p> <ul style="list-style-type: none"> ▪ Capacity: 286 m³/h ▪ Head: 1,388 m <p>Pumps ZMK-400/700-618/CN</p> <ul style="list-style-type: none"> ▪ Capacity: 2,640 m³/h ▪ Head: 136 m
Features & advantages	<ul style="list-style-type: none"> ▪ Cartridge design of the double-casing pumps with back-to-back impellers arrangement ▪ Heavy duty Super Duplex steel construction material ▪ Double mechanical seals with lockup system ▪ Mean time between overhauls (MTBO): over 40000 hours ▪ Casing parts service life: over 30 years ▪ Full compliance with API 610 (ISO 13709:2009), API 682, API 614, API 670, API 661, NORSOK M-650 standards
Year of supply	2015

RUMAILA OIL FIELD, IRAQ WATER INJECTION PUMPS FOR CLUSTER PUMP STATION



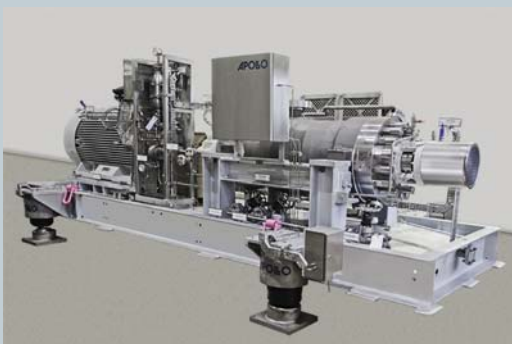
Customer	BP Iraq NV
Scope of works	Manufacturing, factory testing, procurement, installation supervision commissioning, acceptance tests
Scope of supply	<p>8 main water injection pumps CNS 500-1900 (BB4 type of API 610), including:</p> <ul style="list-style-type: none"> ▪ Coupling with coupling guard ▪ Installation fixture & tools ▪ Operational spare parts ▪ Auxiliaries, piping and fittings <p>4 CPS pump/motor skid bases incorporating lubrication oil tank</p>
Technical data	<p>Pumps CNS 500-1900</p> <ul style="list-style-type: none"> ▪ Capacity: 500 m³/h ▪ Head: 1,900 m
Features & advantages	<ul style="list-style-type: none"> ▪ API 610 / ISO 13709:2009 compliance with customer-approved deviations ▪ Reliable design with decades of proven operational reliability ▪ High-strength stages casings of chromium steel ▪ Single-suction in-line arranged impellers with corrosion-resistant wearing rings ▪ Single mechanical seal as the end rotor's sealing option ▪ Forced lubrication with pressure lube oil unit ▪ Full compatibility with existing baseplates and motors
Commissioning	2014 - 2015

RUMAILA OIL FIELD, IRAQ PUMPING EQUIPMENT FOR WATER TREATMENT FACILITY



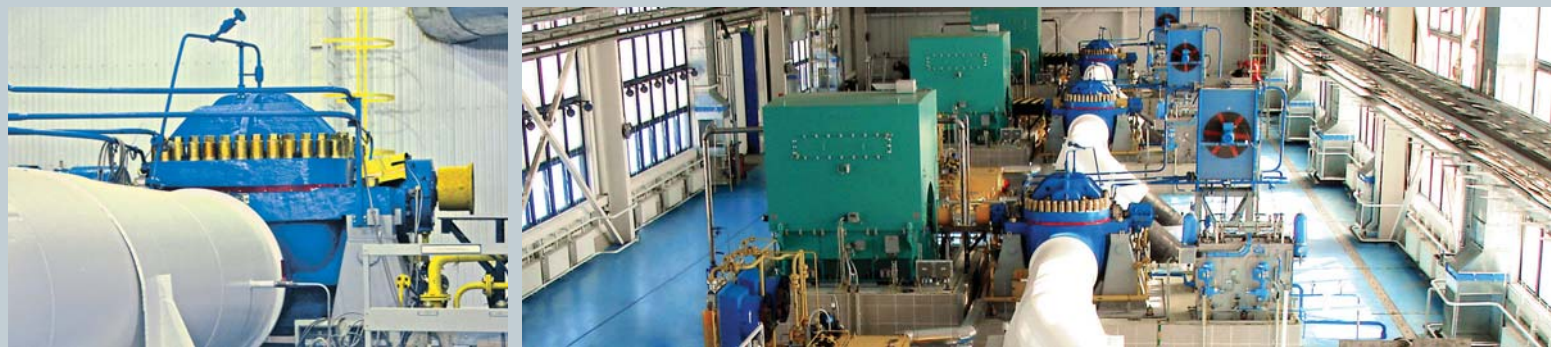
Customer	BP Iraq NV
Scope of works	Project audit, manufacturing and supply of the main and auxiliary equipment, repair and retrofit of operated equipment, installation supervision and commissioning, acceptance tests
Scope of supply	<ul style="list-style-type: none"> ▪ Pumping equipment with spare parts and expendables: <ul style="list-style-type: none"> ▪ 4 main pumps D 6300-27 ▪ 2 main pumps CN 3000-197 ▪ 10 supplementary pumps ▪ Auxiliary equipment, piping and fittings, elements of the water intake structure
Technical data	<p>Pumps D 6300-27</p> <ul style="list-style-type: none"> ▪ Capacity: up to 6,300 m³/h ▪ Head: up to 27 m <p>Pumps CN 3000-197</p> <ul style="list-style-type: none"> ▪ Capacity: up to 3,000 m³/h ▪ Head: up to 197 m
Features & advantages	<ul style="list-style-type: none"> ▪ High design reliability and efficiency of the pumping systems ▪ Maintenance without dismantling off the pipelines ▪ Exact matching of impeller diameter to the customer requirements ▪ Refurbishment of auxiliary equipment of the water treatment facility ▪ Repair and retrofit without shutting down the water treatment facility ▪ Compliance of works with corporate and project standards of BP
Commissioning	Phased, within 2012 - 2014

GUDRUN OIL AND GAS PRODUCTION PLATFORM, NORWAY PROCESS PUMPING UNITS



Customer	Statoil
Scope of works	Engineering, manufacturing, factory testing, procurement
Scope of supply	<p>Supply of complete heavy-duty process pumping units:</p> <ul style="list-style-type: none"> ▪ Multistage double casing pump TGD-50B/14-708/CN (BB5 type of API 610) ▪ Volute-casing pumps ZPR-150/400 with double-flow impeller (BB2 type of API 610)
Technical data	<p>Pump TGD-50B/14-708/CN</p> <ul style="list-style-type: none"> ▪ Capacity: up to 800 m³/h ▪ Head: up to 2,600 m <p>Pumps ZPR-150/400</p> <ul style="list-style-type: none"> ▪ Capacity: up to 1,500 m³/h ▪ Head: up to 400 m
Features & advantages	<ul style="list-style-type: none"> ▪ Heavy-duty duplex steel design for severe application conditions ▪ Short downtime and easy maintenance of BB5 pumps without dismantling off the pipelines due to cartridge-type casing ▪ Ultra high suction pressure BB2 pumps designed for 153 bar ▪ Application of noise enclosure and air controlled antivibration dampers ▪ Compliance with API 610 and NORSOK standards ▪ Factory witness testing of pumping units with the customer-approved motors
Project duration	2011 - 2012

WESTERN SIBERIA – PACIFIC OCEAN PIPELINE (ESPO-1), RUSSIA TRUNK OIL PUMPING STATIONS



Customer	Transneft
Scope of works	Engineering, manufacturing, testing, procurement, installation supervision, commissioning, personnel training, integrated maintenance
Scope of supply	<p>Supply of five oil transfer pumping stations with the following equipment:</p> <ul style="list-style-type: none"> ▪ 20 pumping units based on NM 10000-380-2 pumps (BB1 type of API 610) with variable frequency drives ▪ 234 units of auxiliary equipment
Technical data	<p>Pumps NM 10000-380-2</p> <ul style="list-style-type: none"> ▪ Capacity: 12,000 m³/h ▪ Head: up to 360 m
Features & advantages	<ul style="list-style-type: none"> ▪ Application of the up-to-date software platforms (Solid Works, ANSYS CFX) for the pumping units engineering ▪ Construction of a new testing facility for the full-scale tests of the any size trunk oil pumps at rated rotation speed ▪ Implementation of the installation and commissioning processes in severe climatic conditions ▪ Establishment of the regional representative office in Irkutsk ▪ Implementation of the project by the integrated project team including specialists of Hydromashservice (HMS Group's integrated commercial & engineering company), Nasosenergomash (HMS Group), VNIIAEN (HMS Group)
Project duration	2010 - 2013

PURPE-SAMOTLOR PIPELINE, RUSSIA TRUNK OIL PUMPING STATIONS



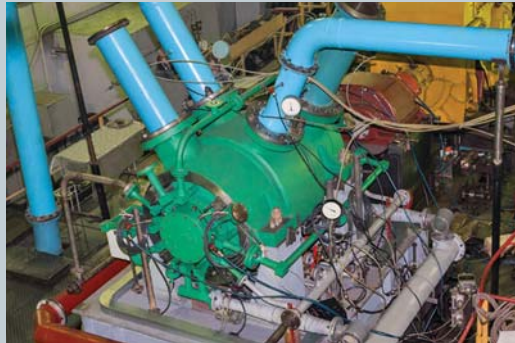
Customer	Transneft
Scope of works	Engineering, manufacturing, full-scale factory testing, procurement, installation supervision, commissioning
Scope of supply	<p>Supply of two oil transfer pumping stations with the following equipment:</p> <ul style="list-style-type: none"> ▪ 8 pumping systems based on NM 7000-250-3.1 pumps (BB1 type of API 610) with variable frequency drives ▪ 24 items of auxiliary equipment
Technical data	<p>Pumps NM 7000-250-3.1</p> <ul style="list-style-type: none"> ▪ Capacity: up to 7,000 m³/h ▪ Head: up to 250 m
Features & advantages	<ul style="list-style-type: none"> ▪ Application of the up-to-date software platforms (Solid Works, ANSYS CFX) for the pumping units engineering ▪ Optimization of the pumps flow parts for high energy efficiency ▪ Commissioning of the oil transfer pumping stations and the pipeline system 5 months ahead of schedule ▪ Establishment of the HMS Group regional representative office in Nefteyugansk ▪ Implementation of the project by the integrated project team including specialists of Hydromashservice (HMS Group's integrated commercial company), Nasosenergomash, VNIIAEN
Project duration	2010 - 2011

WESTERN SIBERIA – PACIFIC OCEAN PIPELINE (ESPO-2), RUSSIA TRUNK OIL PUMPING STATIONS



Customer	Transneft
Scope of works	Engineering, manufacturing, testing, procurement, installation supervision, commissioning, personnel training, integrated maintenance
Scope of supply	<p>Supply of seven oil transfer pumping stations with the following equipment:</p> <ul style="list-style-type: none"> ▪ 12 pumping systems based on NM 7000-250 pumps (BB1 type of API 610) with hydraulic couplings ▪ 16 pumping units based on NM 10000-250-3 pumps (BB1 type of API 610) with variable frequency drives ▪ 265 units of auxiliary equipment
Technical data	<p>Pumps NM 7000-250-3</p> <ul style="list-style-type: none"> ▪ Capacity: up to 7,000 m³/h ▪ Head: up to 265 m <p>Pumps NM 10000-250-3</p> <ul style="list-style-type: none"> ▪ Capacity: up to 10,000 m³/h ▪ Head: up to 250 m
Features & advantages	<ul style="list-style-type: none"> ▪ Application of the up-to-date software platforms (Solid Works, ANSYS CFX) for the pumping units engineering ▪ Using of hydraulic couplings and variable frequency drives for high energy efficiency and variable performance of the pumping units within given operation range ▪ Testing of the pumping units at the factory stand with rated operation speed ▪ Establishment of the HMS Group regional representative office in Khabarovsk ▪ Implementation of the project by the integrated project team including specialists of Hydromashservice (HMS Group's integrated commercial and engineering company), Nasosenergomash (HMS Group), VNIIAEN (HMS Group)
Project duration	2010 - 2012

COMPRESSORS: COMPETENCES



Engineering and manufacturing of compressors, gas compression systems, and complete compressor stations is performed by the integrated scientific and compressor production complex of HMS Group.

The product line includes a wide range of compressor equipment for almost all industrial gases including toxic, explosive, and corrosive ones.

RESEARCH & DEVELOPMENT

Engineering of compressors and compressor-based process systems is carried out by **Nilturbokompressor (a part of HMS Group)** – the leading in Russia and CIS research & development institute of compressor equipment engineering, situated in Kazan (Russia).

The Institutes experts have designed over 420 different types of compressors supplied to various industrial facilities in Russia and over 60 countries worldwide.

DESIGN FEATURES ADVANTAGES

- The newest gas dynamics calculation methods
- Systematic approach to design through parts unification and building-block concept
- Up-to-date technical solutions (dry gas seals, magnetic suspension of rotors, etc.)

MANUFACTURING AND TESTING

Compressors and compressor systems are produced at **Kazancompressormash (a part of HMS Group)** – one of the leading compressor manufacturing enterprises in Russia and CIS, situated in Kazan (Russia).

The production facilities are equipped with all necessary machinery for manufacturing of up-to-date and reliable compressor equipment:

- Total production area: 420,000 square meters
- Modern manufacturing equipment including machine tools and processing centers from Germany, Great Britain, Italy, Canada
- Europe's largest facility of 35 stands for complete systems testing which provides 100% control of the technical parameters during the factory test and their confirmation on operation site

SERVICE

Own service centers provide integrated after-sales servicing of the compressor equipment:

- Installation supervision and commissioning
- Design supervision
- Line maintenance
- Delivery of spare parts and accessories
- Retrofit of compressor systems
- Audit of equipment technical conditions

QUALITY

Integrated Management System certified in accordance with ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 (quality management, environmental management, occupational health and safety).

The equipment is manufactured in accordance with Russian state standards and API 617 of the 8th edition standard.

COMPRESSORS: PRODUCT RANGE

Multistage centrifugal compressors with horizontally split casing



TECHNICAL DATA

Capacity: up to 1,400 m³/min (120,000 Nm³/h)

Discharge pressure: up to 45 bar (4.5 MPa)

Drive power: up to 6,300 kW

COMPRESSIBLE GASES

- Associated petroleum gas
- Fuel gas
- Hydrocarbon process gas
- Flare gas
- Hydrogen-bearing gas
- Coke oven gas
- Other industrial gases

DESIGN FEATURES & ADVANTAGES

Quick and easy access to the flow path components and elements for inspection, maintenance, and repair

Low-cost and time-saving routine maintenance of bearings and seals without disassembling of the casing

Compression of flammable and sediment-forming gases

Multistage barrel-type centrifugal compressors with vertically split casing



TECHNICAL DATA

Capacity: up to 900 m³/min (220,000 Nm³/h)

Discharge pressure: up to 450 bar (45 MPa)

Drive power: up to 32,000 kW

COMPRESSIBLE GASES

- Natural gas
- Associated petroleum gas
- Fuel gas
- Hydrocarbon process gas
- Flare gas
- Hydrogen-bearing gas
- Other industrial gases

DESIGN FEATURES & ADVANTAGES

High-pressure compression of explosive gases

Outer casing with solid forged caps and special locks for quick and easy maintenance

High purity of compressed gas and no leaks due to dry gas seals

Active magnetic bearings for the rotor suspension

COMPRESSORS: PRODUCT RANGE

Integrally geared centrifugal compressors



TECHNICAL DATA

Capacity: up to 1,200 m³/min (80,000 Nm³/h)

Discharge pressure: up to 50 bar (5 MPa)

Drive power: up to 8,000 kW

COMPRESSIBLE GASES

- Acid hydrocarbon gas
- Associated petroleum gas
- Fuel gas
- Hydrocarbon process gas
- Refrigerants
- Other industrial gases

DESIGN FEATURES & ADVANTAGES

High-efficient multi-shaft compressor

A wide capacity control range 30%..110%

Compact size and footprint

Short installation lead time

Turbine powered gas pumping units



TECHNICAL DATA

Capacity: up to 1,400 m³/min (220,000 Nm³/h)

Discharge pressure: up to 450 bar (45 MPa)

Drive power: up to 32,000 kW

COMPRESSIBLE GASES

- Natural gas
- Associated petroleum gas

DESIGN FEATURES & ADVANTAGES

A range of the flow paths of a special design allowing their application with any drive power to obtain high polytropic efficiency within discharge pressure values of 56, 76, 85, 100 kgf/cm² and pressure ratio of 1.36, 1.44, 1.5, 1.7, 2.0, 2.2, 3.0.

Spatial impeller blades in a combination with the bladeless diffuser providing to 85% polytropic efficiency in the operating point and a wide range of efficient operation

COMPRESSOR-BASED INTEGRATED SOLUTIONS

Kazancompressormash offers electric motor driven centrifugal compressors, gas compression systems, and complete compressor stations in compliance with international standards.

Highly qualified and experienced staff utilizes the latest technologies to produce a wide range of customized gas compression systems and compressor stations.

APPLICATION

- Natural gas pipeline transmission
- Associated petroleum gas treatment, transmission and processing
- Gas injection into formation
- Underground gas storage injection/withdrawal
- Gas-lift enhanced oil recovery
- Associated petroleum gas utilisation
- Flare gas utilisation

TECHNICAL DATA OF COMPRESSOR SYSTEMS

- Capacity up to 1,400 m³/min (3,000 million Nm³/year)
- Discharge pressure: up to 450 bar (45 MPa)
- Drive power: up to 32 MW

SYSTEM SOLUTIONS ADVANTAGES

- Engineering, manufacturing, packaging of compressors in accordance with specific customer requirements
- Equipment supply in containerized skids and quickly erectable modular structure solutions
- Every unit is pre-assembled and tested at the factory to reduce on-site installation expenses
- Complex procurement of process and auxiliary equipment for compressor stations
- Single supplier responsibility at all project stages including guarantee of equipment required parameters

COMPLETE SOLUTIONS SELECTED PROJECTS

Customer	Country	Gas compression system type, scope of supply	Compressed gas	Capacity*, m ³ /min	Pressure, bar		Drive power, MW	Commissioning
					suction	discharge		
ROSPAN INTERNATIONAL	Russia	4GC2-75/30-83 (5 units)	Hydrocarbon	75	28	84	8.2	2015 – 2017 (supply)
SiburTyumenGaz	Russia	4GC2-242/12-80 (1 unit)	Dry stripped	242	12	80	18	2016 (supply)
Stavrolen	Russia	5GC2-287/15-57 (1 unit)	Dry stripped	287	15	57	25	2016
Shurtanneftgaz	Uzbekistan	6GC2-380/10-37 (5 units)	Natural	380	6	37	18	2016
LUKOIL-Permnefteorgsintez	Russia	4GC2-70/17-62 (3 units)	Dry stripped	70	17	62	6	2014
LUKOIL-Komi	Russia	6GC2-260/2-38 (5 units)	Associated petroleum	260	2	38	6.3	2014
LUKOIL Neftochim Burgas	Bulgaria	96GV-285/19C (1 unit)	Flare	285	1	19	3	2014
Panjin Zhenao Chemical Co. Ltd	China	5GC1-387/12 (1 unit)	Chloromethyl	387	1	12	4	2013
SiburTyumenGaz	Russia	6GC2-375/4-77 (1 unit)	Associated petroleum	364	4	76	18	2012
	Russia	66GC-1162/1.3-38 (3 units)	Associated petroleum	1,162	1	37	16	2012

* by suction conditions

SHURTAN FIELD BOOSTER STATION, UZBEKISTAN TURBINE-DRIVEN GAS COMPRESSION SYSTEMS



Customer	Uzbekneftegaz
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	Complete gas compression system based on 6GC2-380/10-37 centrifugal compressors (5 units) powered by a gas turbine
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 380 m³/min ▪ Suction pressure: 6 - 14 bar ▪ Discharge pressure: 37 bar ▪ Drive power: 18,000 kW
Application	Compression of natural gas with suction pressure dropping from 14 to 6 bar coming from the gas and condensate field
Design features	<ul style="list-style-type: none"> ▪ Compression stages based on radially split casings ▪ Each compressor system is designed to meet changing parameters (pressure and capacity) within years of operation using the same flow path
Solution features	<ul style="list-style-type: none"> ▪ Equipment supplied as highly prefabricated units ▪ Minimal scope of installation works due to a modular design ▪ Handling of natural gas with variable pressure value
Commissioning	2016

PANJIN ZHENAO BUTYL RUBBER PLANT, CHINA COMPLETE COMPRESSOR SYSTEM



Customer	Panjin Zhenao Chemical Co. Ltd
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	Complete electric driven compressor system based on axially split centrifugal compressor 5GC1-387/12
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 387 m³/min ▪ Suction pressure: 1 bar ▪ Discharge pressure: 12 bar ▪ Drive power: 4,000 kW
Application	Compression of chloromethyl-containing gas in butyl rubber production
Design features	<ul style="list-style-type: none"> ▪ High-efficient single stage compressor ▪ Horizontally split casing with embedded flow path parts ▪ Maintenance of bearings and seals without disassembling the compressor casing ▪ Access to the rotor and embedded parts through the upper casing half
Solutions features	<ul style="list-style-type: none"> ▪ Simple installation and easy transportation due to integrated baseplate for compressor casing and multiplier ▪ Compressor designed in a corrosion-resistant version
Commissioning	2013

HARIAGINSKOYE OILFIELD AND USINSK GAS PROCESSING PLANT, RUSSIA COMPLETE COMPRESSOR STATIONS



Customer	LUKOIL-Komi
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	<ul style="list-style-type: none"> ▪ 2 gas compression system 6GC2-260/2-38 GTU with a 6.3 MW turbine drives for Hariaginskoye oil field ▪ 3 gas compression system 6GC2-260/2-38 GTU with a 6.3 MW turbine drives for Usinsk gas processing plant ▪ 4 fuel gas preparation systems based on TAKAT 14.5-27 compressor system ▪ Skid-mounted equipment on turn-key conditions
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 250 million Nm³/year ▪ Suction pressure: 2 bar ▪ Discharge pressure: 38 bar ▪ Drive power: 6,300 kW
Application	Compression of low pressure associated petroleum gas from the oil & gas fields
Design features	<ul style="list-style-type: none"> ▪ High performance due to efficient compression stages in a single casing ▪ Dry gas seals of a compressor rotor ▪ Integrated heat recovery system of exhaust gases with performance control ▪ Surge protection and regulation systems with bypass valves
Solutions features	<ul style="list-style-type: none"> ▪ Equipment supplied as completely prefabricated ready-to-use modules ▪ Single-source responsibility of general designer and supplier
Commissioning	2015 - 2017

LUKOIL-PERMNEFTEORGSINTEZ, RUSSIA TURBINE-DRIVEN GAS COMPRESSION SYSTEMS



Customer	LUKOIL-Permnefteorgsintez			
Scope of works	Engineering, manufacturing, supply, installation supervision, commissioning			
Scope of supply	<ul style="list-style-type: none"> ▪ 3 turbine-driven gas compression systems 4GC2-70/17-62 GTU ▪ 2 unique compressor refrigerating systems GCMZ-250/0.9-15.8 ▪ 1 modular containerized compressor system 3GC2-83/25-48K ▪ 1 rotary-screw compressor system 6GV-14.16-35M3 			
Technical data		4GC2-70/17-62 GTU	3GC2-83/25-48K	6GV-14.16-35M3
	Capacity, m ³ /min	70	83.5	13.8
	Suction pressure, bar	1.7	2.46	1.6
	Discharge pressure, bar	6.2	4.7	3.4
	Drive power, kW	6,000	3,200	600
Application	<ul style="list-style-type: none"> ▪ Delivery of dry stripped gas into a trunk gas pipeline and to the power unit ▪ Compression of propane in a cold producing system ▪ Compression of associated petroleum gas 			
Design features	<ul style="list-style-type: none"> ▪ High-efficient compressor flow part in a single case ▪ Dry gas seals of a compressor rotor ▪ Gear pair of the screw compressor with peripheral speed of 39 m/sec 			
Solution features	<ul style="list-style-type: none"> ▪ Supply of maximally prefabricated equipment ▪ Provision of automatic control and regulation systems ▪ Provision of the surge protection and firefighting systems ▪ Single-source responsibility of the general designer and supplier 			
Equipment supply	2014 - 2017			

STAVROLEN PETROCHEMICAL FACILITIES, RUSSIA COMPLETE GAS COMPRESSION SYSTEM



Customer	LUKOIL
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	Complete gas compression system 5GC2-287/15-57 GTU
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 2,200 million Nm³/year ▪ Suction pressure: 15 bar ▪ Discharge pressure: 57 bar ▪ Drive power: 25,000 kW
Application	<ul style="list-style-type: none"> ▪ Compression of dry stripped associated petroleum gas and its supply to the trunk pipeline ▪ Generation of steam with temperature +310 °C and pressure 39 bar for gas processing
Design features	<ul style="list-style-type: none"> ▪ Operation with two fuel gas types: dry associated petroleum and dry stripped gas; switching between fuel gas types is performed on-the-run ▪ Rotor and diffuser are designed in horizontally split diaphragms ▪ Easy access to bearings and seals for installation and maintenance
Solution features	<ul style="list-style-type: none"> ▪ Supplied with steam heat recovery boiler, gas separators, air cooling units, fuel gas treatment unit and water treatment plant ▪ Gas compression system designed in a hangar version with all engineering systems ▪ Minimal scope of installation works due to supply of equipment as highly prefabricated and factory assembled units
Commissioning	2016

YUZHNO-BALYKSKIY GAS PROCESSING PLANT, RUSSIA COMPLETE GAS COMPRESSION SYSTEM



Customer	SiburTyumenGaz
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	Complete turbine driven gas compression system 4GC2-242/12-80 GTU
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 489 million Nm³/year ▪ Suction pressure: 12 bar ▪ Discharge pressure: 80 bar ▪ Drive power: 18,000 kW
Application	Compression of a dry stripped gas and its supply to low temperature condensation and rectification unit and further to a trunk gas pipeline
Design features	<ul style="list-style-type: none"> ▪ High efficiency due to single-casing design of compression stages ▪ Dry gas seals provide complete purity of compressed gas and prevent its leakage into compressor room ▪ Surge protection systems with bypass valves ▪ Duplicated lube oil air cooling units
Solution features	<ul style="list-style-type: none"> ▪ Supplied as completely prefabricated and factory-assembled units ready for transportation ▪ Minimal scope of installation works due to skid-mounted design
Commissioning	2012

VYNGAPUR GAS PROCESSING PLANT, RUSSIA COMPLETE COMPRESSOR STATION



Customer	SiburTyumenGaz
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	<p>A complete compressor station including:</p> <ul style="list-style-type: none"> ▪ Gas compression system based on 6GC2-375/4-77 centrifugal compressor with a gas turbine drive ▪ Skid-mounted equipment on turn-key conditions
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 780 million Nm³/year ▪ Suction pressure: 4 bar ▪ Discharge pressure: 76 bar ▪ Drive power: 18,000 kW
Application	Compression of low pressure associated petroleum gas
Design features	<ul style="list-style-type: none"> ▪ High performance due to efficient compression stages in a single casing ▪ Dry gas seals of a compressor rotor ▪ Surge protection and regulation systems with bypass valves
Solutions features	<ul style="list-style-type: none"> ▪ Equipment supplied as completely prefabricated ready-to-use modules ▪ Minimal scope of installation works due to a modular design ▪ Single-source responsibility of general designer and supplier
Commissioning	2012

NOVY URENGOY LICENSE AREA, RUSSIA COMPLETE GAS COMPRESSION SYSTEMS



Customer	ROSPAN INTERNATIONAL (Rosneft)
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	Complete turbine driven gas compression systems 4GC2-75/30-83 GTU (5 units)
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 1,150 million Nm³/year ▪ Suction pressure: 28 bar ▪ Discharge pressure: 84 bar ▪ Drive power: 8,200 kW
Application	Compression of low pressure associated petroleum gas
Design features	<ul style="list-style-type: none"> ▪ High performance due to efficient compression stages in a single casing ▪ Dry gas seals of a compressor rotor ▪ Surge protection and regulation systems with bypass valves
Solutions features	<ul style="list-style-type: none"> ▪ Equipment supplied as completely prefabricated ready-to-use modules ▪ Minimal scope of installation works due to a modular design ▪ Single-source responsibility of general designer and supplier
Equipment supply	2015 (1-st batch); 2016 -2017 rr. (2-nd batch)

SYZRAN OIL REFINERY, RUSSIA COMPRESSOR SYSTEMS FOR PROCESS GASES



Customer	Rosneft		
Scope of works	Engineering, manufacturing, supply, installation supervision, commissioning		
Scope of supply	Complete compressor systems based on centrifugal axially split compressors: <ul style="list-style-type: none"> ▪ 42GC2-275/1.9-18 driven by the electric motor ▪ 5GC2-216/14-26 driven by the steam turbine 		
Technical data		42GC2-275/1.9-18	5GC2-216/14-26
	Capacity, m ³ /min	275	216
	Suction pressure, bar	1.9	14
	Discharge pressure, bar	18	26
	Drive power, kW	3,100	4,500
Application	Compression of process hydrocarbon and hydrogen-containing gases		
Design features	<ul style="list-style-type: none"> ▪ High-efficient stages of a compression section flow part ▪ High reliability and efficiency of structural elements proven by long-term operation at site conditions 		
Solution features	<ul style="list-style-type: none"> ▪ The technical data is confirmed by successful tests at the own testing facility ▪ Minimum installation expenses due to axially split casing design 		
Commissioning	2015		

EKATERINOVKA, PISAREVKA, BUBNOVKA, RUSSIA COMPLETE GAS COMPRESSION STATIONS



Customer	Gazprom			
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning			
Scope of supply	Natural gas superchargers: <ul style="list-style-type: none"> ▪ NC16-76/1.35 (4 units) ▪ NC16-101/1.7 (7 units) ▪ NC16-76/1.44 (6 units) 			
Technical data		NC16-76/1.35	NC16-101/1.7	NC16-76/1.44
	Capacity, Nm ³ /h	1,820,833	900,000	1,195,833
	Suction pressure, bar	59	60	53
	Discharge pressure, bar	74	99	74
	Drive power, kW	16,000	16,000	16,000
Application	Compression of natural gas in the trunk pipeline gas compression systems			
Design features	<ul style="list-style-type: none"> ▪ The rotor and a stationary flow path are designed in form of horizontally split diaphragms ▪ Dry gas seals provide complete purity of compressed gas and prevent its leakage into compressor room 			
Solution features	<ul style="list-style-type: none"> ▪ Each supercharger consists of two or three compression stages ▪ Supplied with oil lubricated slide bearings ▪ Gas turbine drive 			
Commissioning	2015			

OFFSHORE STATIONARY PLATFORM PRIRAZLOMNAYA, RUSSIA COMPRESSOR SYSTEMS FOR ASSOCIATED PETROLEUM GAS



Customer	Gazprom Neft			
Scope of works	Engineering, manufacturing, supply, installation supervision, commissioning			
Scope of supply	Complete systems based on vertically split centrifugal compressors <ul style="list-style-type: none"> ■ 32GC2-52/2-29M3.1 (1 unit) ■ 5GC2-310/0.66-5M3.1 (1 unit) ■ 3GC2-46/6-35M3.1 (1 unit) 			
Technical data		5GC2-310/0.66-5M3.1	32GC2-52/2-29M3.1	3GC2-46/6-35M3.1
	Capacity, Nm ³ /h	12,300	6,000	16,500
	Suction pressure, bar	0.6	2	6
	Discharge pressure, bar	5	29	35
	Drive power, kW	1,600	2,500	2,000
Application	<ul style="list-style-type: none"> ■ Compression and delivery of associated petroleum gas to the gas turbine ■ Compression and delivery of absorbing (hydrocarbon) gas to the stripping column for crude oil purification from the sulfur-containing impurities 			
Design features	<ul style="list-style-type: none"> ■ Compact, detachable integrated lube oil system placed inside the base frame ■ Dry gas seals of a compressor rotor ■ Elastic dampers for vibration and noise protection 			
Solution features	<ul style="list-style-type: none"> ■ Packaging of the compressor systems into a single unit ■ Compliance with requirements to design materials and explosion protection ■ Design, manufacture, testing and certification under supervision of the Russian Maritime Register inspectors 			
Commissioning	2014			

OIL & GAS EQUIPMENT: COMPETENCES



HMS Group integrates the leading Russian companies manufacturing a wide range of the process oil and gas equipment: **HMS Neftemash, Sibneftemash, Dimitrovgradkhimmash, Sibnefteavtomatika.**

APPLICATION

The manufactured equipment is widely used by the oil and gas companies in Russia and CIS in production, transportation and processing of hydrocarbons:

- Drilling, operation and maintenance of wells
- Increasing production of hydrocarbons
- Measurement of well production and commercial accounting of hydrocarbons
- Treatment of oil, gas and water
- Collection, transportation, storage and delivery of hydrocarbons
- Separation, treatment and processing of gas-liquid mixtures
- Processes of oil and gas refining facilities

RESEARCH & DEVELOPMENT

The HMS Group companies, having their own engineering centers on designing the new oil and gas equipment, actively cooperate with specialists from the leading Russian institutes of the oil and gas industry to offer contemporary solutions in design and manufacture of up-to-date and high-efficient process systems for oil & gas field facilities.

MANUFACTURING

A park of industrial machinery includes numerical control machine tools, new laboratory, metal cutting, welding, heat-treatment, painting, control, and measuring equipment.

The up-to-date manufacturing capabilities allow production of oil & gas equipment in stationary, modular and mobile versions.

The oil & gas process systems are tested at the factory in accordance with requirements of the customer.

Fabrication of equipment with long production cycle is possible in parallel with the project engineering that provides significant saving of commissioning time and total project costs (up to 25%).

SERVICE

Service divisions of HSM Group provide installation supervision and commissioning of supplied equipment and process systems, guarantee and post-guarantee service, running maintenance and overhaul, customer's personnel training.

QUALITY

The quality management system of the HMS Group divisions meets the requirements of ISO 9001:2008.

The range of manufactured equipment is approved by all necessary permissions from the state authorities for application at oil & gas industry facilities claimed as hazardous objects.

OIL & GAS EQUIPMENT: PRODUCT RANGE

Pumping stations



- Block-type cluster pumping stations
- Oil transfer stations
- Auxiliary pumping stations

Oil and water treatment facilities



- Oil treatment units
- Oil separation and transfer complexes
- Water treatment units
- Free water knock-out units

Gas treatment facilities



- Comprehensive gas treatment units
- Natural gas treatment units
- Gas distribution stations (nitrogen, oxygen)
- Condensate stabilization units

Auxiliary oilfield equipment



- Buildings for administrative, living and process purposes
- Power supply equipment and facilities
- Fire fighting stations and fire suppression systems

OIL & GAS EQUIPMENT: PRODUCT RANGE

Reservoirs, separators, heat-exchangers



- Tanks and reservoirs
- Pressurized vessels
- Separators, settling tanks, electric dehydrators
- Heat exchangers, air cooling units

Oilfield equipment



- Equipment for well workover operations
- Fracturing equipment
- Stationary and mobile cement storages
- Chemical dosing units

Downhole equipment



- Packers and anchors
- Downhole equipment and tools

Flow control & measurement systems



- Stationary and mobile measuring units (including units without separation)
- Oil quality and flow measuring units
- Water, gas and condensate flow meters

NADYM-PUR-TAZ REGION FIELDS, RUSSIA NGLs PRODUCTION, TRANSPORTATION AND PROCESSING COMPLEX



Nadym-Pur-Taz region is located at the territory of the Yamal-Nenets autonomous district of Russia where the main oil & gas reserves are concentrated within the large oil, gas, and condensate fields including Urengoy, Yamburg, Yuzhno-Russkoye and others.

Customer	Gazprom	
Scope of works	Engineering, manufacturing, procurement, installation & commissioning supervision	
Supplied equipment	Processing systems, skid-mounted rotating equipment, pressure vessels	
Technical data	Object	Capacity
	Gas condensate transport preparation plant (2 nd stage), Novy Urengoy	12 million tons/year
	Delivery & acceptance point of Urengoy-Purpe oil and gas condensate pipeline	10 million tons/year
	Oil transfer pumping station Urengoykaya	10 million tons/year
	Condensate stabilization unit for Achimov horizon deposits	4 million tons/year
Features & advantages	<ul style="list-style-type: none"> ▪ The equipment and systems are engineered in accordance with the customer requirements and site operation conditions ▪ State-of-the-art equipment with high reliability ▪ Supplied items are delivered as prefabricated modules ready for operation that provided minimum installation and commissioning lead time ▪ Supplier's single-source responsibility for every project stage 	
Project duration	2014 - 2016	

EAST-URENGOY LICENSE AREA, RUSSIA PROCESS EQUIPMENT MODULES



East Urengoy license area of the Urengoy oil and gas condensate field contains the field's Achimov deposits which are the deepest ones being developed by Rospan International (subsidiary of Rosneft) at the Yamal Peninsula located in the Yamal-Nenets autonomous district of northwest Siberia, Russia.

Customer	ROSPAN INTERNATIONAL (Rosneft)
Scope of works	Engineering, manufacturing, procurement, installation supervision and commissioning, personnel training, performance testing
Supplied equipment	Over 80 process modules including separators, heat exchangers, air cooler, stable condensate pumps, turboexpanders and other process and auxiliary equipment
Constructed facilities & production capacity	<ul style="list-style-type: none"> ▪ Deethanization compressor station: 916 million Nm³/year ▪ Condensate stabilization unit: 2.72 million Nm³/year ▪ Methanol regeneration unit: 24.2 thousand tons/year ▪ Low temperature separation unit: 12 million Nm³/day
Features & advantages	<ul style="list-style-type: none"> ▪ Equipment supplied as completely prefabricated ready-to-use modules ▪ Minimal scope of installation works due to a modular design ▪ Single-source responsibility of general designer and supplier
Project duration	2014 - 2017

VANKOR OIL AND GAS FIELD, RUSSIA PROCESS MODULES FOR OIL CENTRAL COLLECTION POINT



The Vankor field is one of the largest oil and gas fields (with area of about 416.5 square kilometers) in Russia, located in the northern part of the Eastern Siberia. The field is developed by Vankorneft, a subsidiary company of Rosneft.

Customer	Vankorneft (Rosneft)
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	12 process modules of the frame-panel type
Technical data	The process module is a building of 40x 16x 12 meters equipped with various pumping systems, heat exchangers, measuring and auxiliary equipment
Features & advantages	<ul style="list-style-type: none"> ▪ A high degree of prefabrication of each module facilitated significantly the equipment installation and reduced the commissioning time by 30-40% ▪ Control assembling/disassembling of all the modules at the factory before shipment ▪ Increased operational lifetime (up to 30 years) and extended warranty period (up to 4 years) for the pumps installed into the process modules
Project duration	2009 - 2012

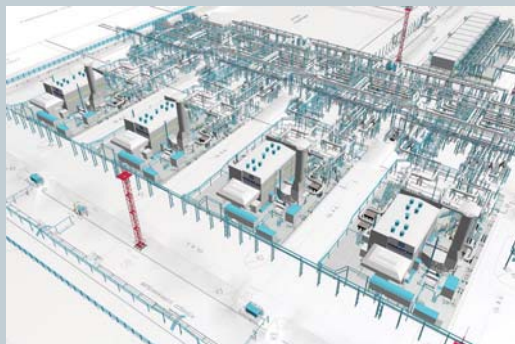
WESTERN SIBERIA – PACIFIC OCEAN PIPELINE (ESPO-1), RUSSIA EMERGENCY BACKUP OIL PUMPING STATIONS



ESPO-1 is the first phase of the Eastern Siberia-Pacific Ocean (ESPO) pipeline system, the largest trunk pipeline in Russia aimed to connect the Western and Eastern Siberia oilfields with a sea port of Kozmino in the Nakhodka Bay. The ESPO-1 pipeline, with length of 2694 km, runs from Taishet in Irkutsk region to Skovorodino in Amur region.

Customer	Transneft
Scope of works	Engineering, manufacturing, procurement, installation supervision, commissioning
Scope of supply	<p>Two emergency backup diesel-driven oil pumping stations:</p> <ul style="list-style-type: none"> ▪ 4 modular blocks with pumping units and auxiliary equipment ▪ 8 pumping units based on NM 500-560 pumps (BB4 type of API 610) driven by Cummins QSK60 diesel engines
Technical data	<p>NM 500–560 pumps</p> <ul style="list-style-type: none"> ▪ Capacity: 500 m³/h ▪ Head: up to 560 m
Features & advantages	<ul style="list-style-type: none"> ▪ High level of efficiency and reliability ▪ Independent operation of each pumping station with quick connection to any part of the main pipeline ▪ Easy operation and maintenance ▪ Autonomous power supply for the main and auxiliary systems by the diesel-driven electric power generators
Project duration	2009 - 2010

OILFIELD FACILITIES PROJECT ENGINEERING AND DESIGN



Integrated project engineering of the oil, gas, and condensate field facilities is performed by the specialists of **Giprotyumenneftegaz** – one of the largest in Russia and CIS project and R&D institutes of the oil & gas industry.

Considerable experience has been gained in implementation of a complete scope of works: feasibility study, FEED, basic engineering, detailed engineering, construction survey and supervision, scientific support of projects.

The up-to-date software platforms are applied for design and engineering survey – MicroStation, AutoPipe (Bentley Systems), Hysys, FLaReNet, Flow-3D; in the project management – Primavera. The uniform data are used at the all design stages.

The smart 3D engineering technologies make possible involvement of the designers into all stages of the object's life cycle: design, construction, operation, reconstruction.

Giprotyumenneftegaz has designed in Russia more than 300 oil, gas, and condensate fields at territories of the Western and Eastern Siberia, Sakhalin, the Krasnodar region and in the Komi Republic.

OBJECTS OF ENGINEERING

Extraction

- Development of productive and exploration wells clusters
- Block cluster pumping stations

Processing & treatment

- Oil and water treatment facilities
- Comprehensive gas treatment facilities
- Free water knockout systems
- Booster compressor and pumping stations
- Central collection points
- Oil transfer stations
- Petroleum products storages
- Flare systems

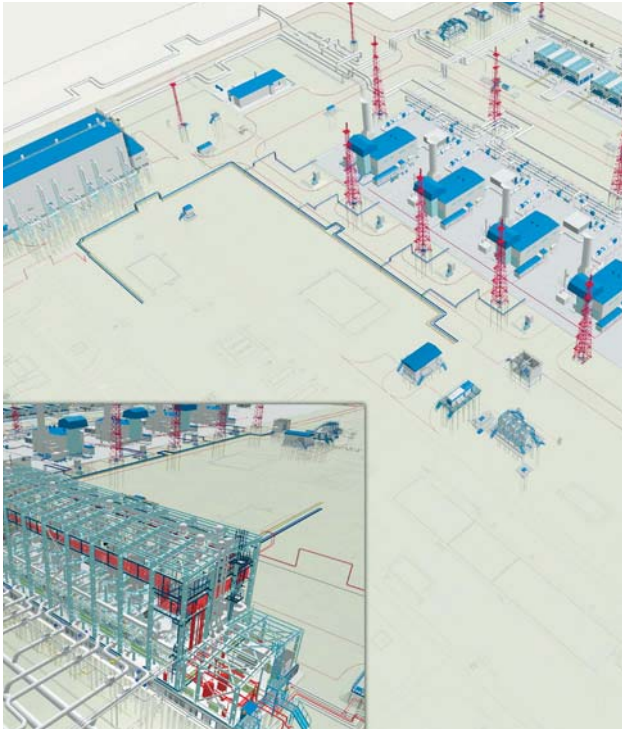
Transportation

- Infield and trunk pipelines for oil, gas, and condensate
- Objects and facilities for the trunk pipelines operation

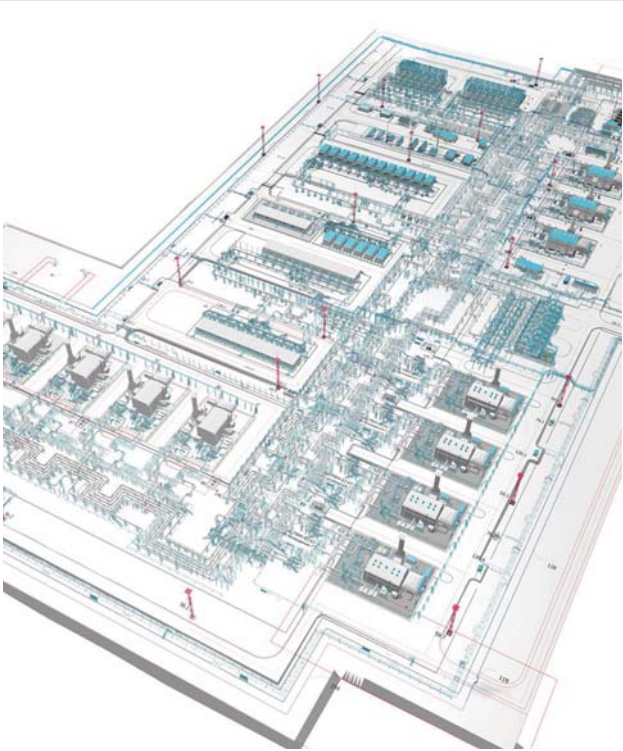
Field infrastructure

- Gas turbine and gas piston electric power stations
- Water intakes, water treatment units, sewage disposal systems, process systems, and other facilities

THE URENGOY OIL AND GAS CONDENSATE FIELD

Customer	Gazprom Dobycha Urengoy	
Project	Booster compressor station for Cenomanian deposit at the Pestsovaya area (2 nd stage)	
Scope of works	Project documentation development including site engineering investigation	
Designed facilities	Compressor station, gas treatment facility, fuel gas treatment facility	
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 29.5 billion Nm³/year ▪ Discharge pressure: 55 bar 	
Project duration	2013 - 2014	

THE YURKHAROVSKOYE OIL AND GAS CONDENSATE FIELD

Customer	NOVATEK-Yurkharovneftegas	
Project	Booster compressor station	
Scope of works	<ul style="list-style-type: none"> ▪ Integrated design, including site engineering investigation ▪ Construction supervision 	
Designed facilities	Air compressor station, gas treatment unit, nitrogen unit, condensate pumping station, lube oil facilities, and other objects	
Technical data	<ul style="list-style-type: none"> ▪ Capacity: 30.5 billion Nm³/year ▪ Discharge pressure: 104 bar 	
Project duration	2010 - 2013	

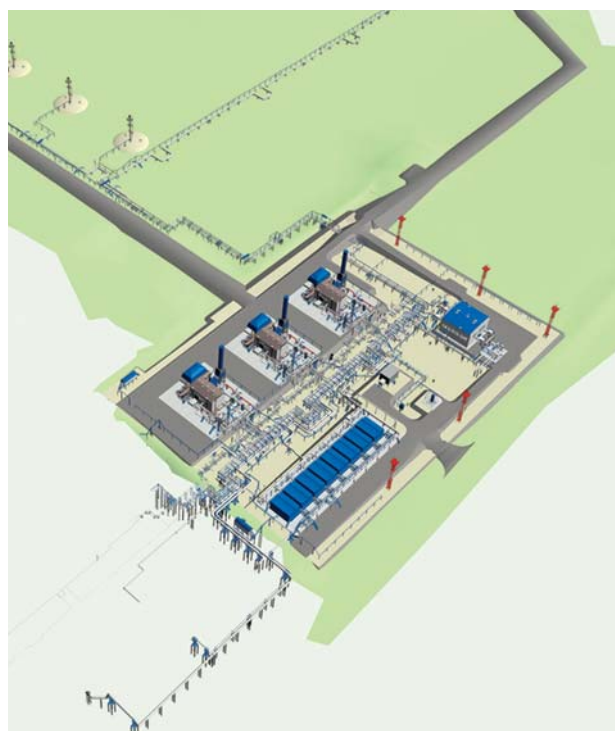
THE VANKOR OIL AND GAS CONDENSATE FIELD

Customer	Vankorneft (Rosneft)
Project	Free water knock-out system
Scope of works	<ul style="list-style-type: none"> Integrated design, including site engineering investigation Construction supervision Established representative office
Designed facilities	Free water knock-out system, water treatment facility, low-pressure compressor station, sloop treatment facility
Project duration	2010 - 2012



THE EAST-TARKOSALINSKOYE OIL AND GAS CONDENSATE FIELD

Customer	NOVATEK-Tarkosaleneftegas
Project	Booster compressor station (2 nd stage)
Scope of works	<ul style="list-style-type: none"> Integrated design, including site engineering investigation Construction supervision
Designed facilities	Comprehensive gas treatment unit, booster compressor station, separation unit, compressor systems area, air coolers area
Technical data	<ul style="list-style-type: none"> Capacity: 20.8 billion Nm³/year Discharge pressure: 77 bar
Project duration	2008



INTEGRATED PROJECTS



Competencies and resources of HMS Group provide optimal system of the complex projects management to ensure timely and high-quality solution of tasks that significantly increases efficiency of the implemented projects.

Project Management	Process Equipment & Systems Complex Procurement	After-Sales Service
<ul style="list-style-type: none"> ▪ Risk management ▪ Works quality control ▪ Meeting the deadlines ▪ Installation & commissioning management ▪ Building & construction supervision ▪ Logistic support ▪ Production management 	<ul style="list-style-type: none"> ▪ Basic & detailed engineering, as-build documentation ▪ Main process equipment manufacturing ▪ Outsourcing of auxiliary systems and equipment ▪ Factory assembling ▪ Stress tests (optional) ▪ Transportation to site of operation ▪ Installation & commissioning works 	<ul style="list-style-type: none"> ▪ Technical audit and inspection ▪ Site inspection by manufacturer's representatives ▪ Servicing on site or in service centers ▪ Supply of original spare parts ▪ Optimization and adjustment of process systems

ADVANTAGES OF WORKING WITH HMS GROUP



UNIQUE COMPETENCES IN ENGINEERING AND MANUFACTURING OF PUMPS, COMPRESSORS, TANKS & VESSELS, AND SKID-MOUNTED EQUIPMENT

- A wide range of pumps, compressors, pressure vessels, and packaged equipment for various applications in accordance with API standards
- Own research and development capabilities
- Decades of proven experience

EXPERIENCE IN INTEGRATED SUPPLIES OF OWN AND OUTSOURCED EQUIPMENT INCLUDING PROCESS MODULES AND SYSTEMS ON TURNKEY CONDITIONS

- Single-source responsibility
- Better delivery, installation lead time, and projects commissioning
- Integrated project management
- Cost control and optimization
- Effective risk management

FULL RANGE OF WARRANTY AND AFTER-SALES SERVICE OF PUMPS, COMPRESSORS, AND OIL & GAS FIELD EQUIPMENT

- Basic service options: installation & commissioning works, warranty repair, personnel training
- Extended service options: after-warranty repair, supply of spare parts & expendables, technical and engineering support, equipment retrofit and overhaul

PROVEN TRACK RECORDS OF EQUIPMENT SUPPLIES FOR LARGE PROJECTS WORLDWIDE

- Strong installation base in Europe, Middle East and Africa supplied directly as well as through EPC companies, duly supported by a thorough network of specialized companies, sales representatives & Sales Office in MENA (Dubai, UAE)
- Successfully implemented projects in 30 countries

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