



Engineering Flow Solutions

THERMAL POWER PLANT SOLUTIONS



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.

- Company foundation: 1993
- Production facilities in Russia, CIS, and Germany
- Own engineering institutes and R&D centers
- 14,500 professional employees
- Considerable experience in realizing integrated projects for various industries
- Branch and representative offices in Kazakhstan, Turkmenistan, Iran, Iraq and UAE

HMS Group offers contemporary, reliable and energy-efficient solutions based on pumps and compressors for thermal power plants: from equipment engineering, development and production to complex procurement and integrated turn-key projects.

ENGINEERING

Modern R&D base with years of experience in pumps and compressors development is represented by the engineering centers with centralized control, located in Russia and CIS.

The up-to-date 3D-modeling methods and CAD techniques are applied for development new and modernization of existing equipment to ensure high efficiency and performance of pump and compressor systems.

HMS Group engineers cooperate closely with clients' technical divisions, participating in equipment specifications development and adapting new technical solutions to clients' requirements.

MANUFACTURING

All critically important units and components of pumps and compressors are produced at the HMS Group plants, equipped with modern CNC machinery from the leading manufacturers from Germany, United Kingdom, and South Korea.

The casing parts and impellers of pumps and compressors are manufactured at the own foundries, equipped with new efficient molding lines and induction furnaces.

TESTING

HMS Group plants are equipped with unique equipment for mechanical, thermal and research tests of the pump and compressor units under real operation conditions.

The tests are conducted in accordance with international standards, or by special methods developed jointly with the customer. Automated measurement systems ensure high accuracy of test results.

SERVICE

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

STANDARDS & QUALITY

The design and materials of manufactured pumps and compressors meet the requirements of the Russian standard GOST and the main international standards ISO, API, DIN EN, AISI, ANSI, NEMA.

DESIGN AND PRODUCTION



HYDROMASHSERVICE

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

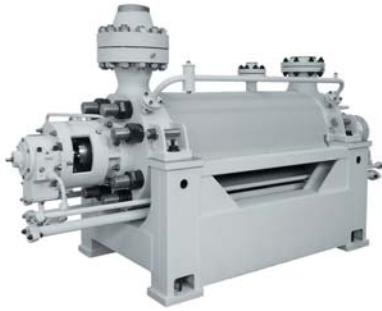
Founded in 1947, Livny, Russia
 Manufacturing of pumps and pumping systems for
 oil & gas, nuclear and thermal energy, water & utilities,
 shipbuilding, and other industries

KAZANCOMPRESSORMASH

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

FEED WATER PUMPS

Single-Casing Pumps. Series PE



Application

Supply of feed water to the waste heat boilers at power plants with steam-gas units (CCGTs) and to the power boilers at steam-powered power plants

Q: up to 900 m³/h **T:** up to 180 °C
H: up to 2,200 m **P:** up to 4,000 kW

Design Features

Single-casing ring-section multistage centrifugal pumps with in-line impellers arrangement and rotor unloading hydraulic device (hydraulic balancing disc). The pumps are supplied with mechanical seals. Fluid coupling or variable frequency drive are optionally available

Double-Casing Pumps. Series PE



Application

Feed water supply to power boilers of thermal power plants operating on organic fuel

Q: up to 720 m³/h **T:** up to 165 °C
H: up to 2,030 m **P:** up to 6,300 kW

Design Features

Double-casing ring-section multistage centrifugal pumps with in-line impellers arrangement and rotor unloading hydraulic device (balance piston or hydraulic balancing disc). The pumps are supplied with mechanical seals. Fluid coupling or variable frequency drive are optionally available

High-Speed Pumps. Series PE, PTN



Application

Feed water supply to boiler units of thermal power plants with 250-300 MW capacity

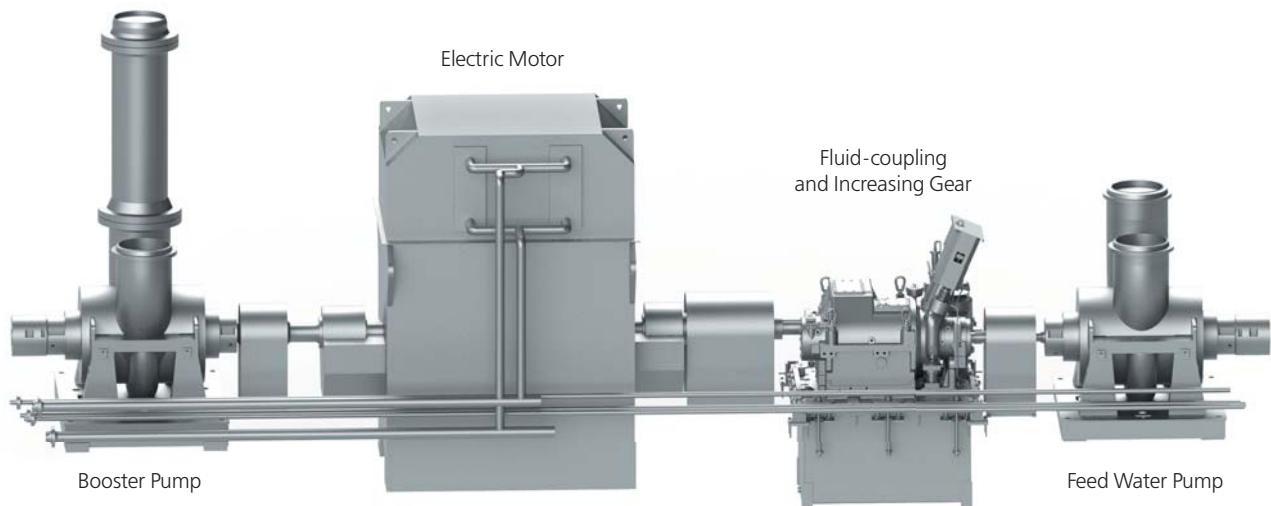
Q: up to 1,150 m³/h **T:** up to 180 °C
H: up to 3,500 m **P:** up to 12,500 kW

Design Features

Double-casing ring-section multistage centrifugal pumps with in-line impellers arrangement and rotor unloading hydraulic device (balance piston or hydraulic balancing disc). The pumps are supplied with mechanical seals. Fluid coupling or variable frequency drive are optionally available. The pumps are driven by the electric motor or steam turbine

FEED WATER PUMPS

Electric-Driven Pumping Units. Series APENA



Application

Secondary feed water supply from deaerator to steam generator

Q: up to 2,800 m³/h **H:** up to 3,500 m
T: up to 184 °C **P:** up to 17,000 kW

Design features

The pumping unit consists of a main feed water supply pump and a booster pump. Both pumps are the centrifugal type and driven by the single electric motor. The booster pump is coupled directly with the motor while the main pump is connected with the motor via the fluid-coupling and increasing gear. The pumping unit is equipped with its own oil lubrication system integrated with the fluid coupling and increasing gear. All the pumping unit's components are placed on the common base frame.

BOOSTER PUMPS

Series PD



Application

The pump is intended to supply water to feed pumps to provide their cavitation-free operation in power generating units at thermal power plants

Q: up to 1,600 m³/h **T:** up to 180 °C
H: up to 200 m **P:** up to 1,000 kW

Design Features

Radially or axially split, one-stage, between-bearings pumps with double-entry impeller. The pumps are driven by the electric motor or steam turbine (model PD 1600-180-2).

CONDENSATE PUMPS

Series KsV



Application

Pumping of the main condensate of turbines and condensate of heating steam of network heaters at thermal power plants operating on organic fuel

Q: up to 2,200 m³/h **T:** up to 160 °C
H: up to 260 m **P:** up to 1,000 kW

Design Features

Double-casing ring-section multistage vertical pumps with in-line impellers arrangement and rotor unloading hydraulic device (balance piston or hydraulic balancing disc). The pumps are supplied with gland or mechanical seals. Rolling bearings or plain bearings operating on the pumped fluid are optionally available

Series Ks



Application

Pumping of condensate heaters in steam-water networks of thermal power plants operating on organic fuel, as well as pumping water in heat and water supply systems

Q: up to 80 m³/h **T:** up to 160 °C
H: up to 155 m **P:** up to 55 kW

Design Features

Single-casing ring-section multistage pumps with in-line impellers arrangement and rotor unloading hydraulic device (balance piston or hydraulic balancing disc). The bearings operating on the pumped fluid are optionally available

Series KsD



Application

Pumping of the turbines main condensate, network heaters heating steam condensate and condensate of steam-water heaters of thermal power plants using organic fuel

Q: up to 230 m³/h **T:** up to 150 °C
H: up to 140 m **P:** up to 160 kW

Design Features

Three-stage axially split pumps with a semi-coil inlet and a spiral outlet. First stage is equipped with a double-entry impeller. The pumps are supplied with gland or mechanical seals

CONDENSATE PUMPS

Series KO, 2KO, 3KO, KOSH, 2KOSH



Application

Condensate pumping in steam and water networks of thermal power plants operating on organic fuel, as well as for pumping water in heat and water supply systems

Q: up to 200 m³/h **T:** up to 160 °C
H: up to 160 m **P:** up to 75 kW

Design Features

One-, two- or three-stage overhung pumps with axial supply of the pumped liquid to impeller. The KOSH and 2KOSH series pumps are equipped with an inducer. The pumps are available with gland seals as a standard option.

MAIN PIPELINE PUMPS

Series DeLium



Application

Pumping water in heat networks, cooling systems and recycling water supply

Q: up to 10,000 m³/h **T:** up to 150 °C
H: up to 250 m **P:** up to 3,750 kW

Design Features

One-stage axially split pumps with double-entry impeller. Available with the flow path made of duplex stainless steel and a bronze impeller.

Series SE



Application

Pumping water in heat networks

Q: up to 5,000 m³/h **T:** up to 180 °C
H: up to 180 m **P:** up to 3,125 kW

Design Features

Two-stage axially split spiral pumps with double-entry impeller. The pumps are supplied with gland or mechanical seals

GENERAL APPLICATION INDUSTRIAL PUMPS

Series D



Application

Pumping water and other liquids similar to water by viscosity and chemical activity

Q: up to 12,500 m³/h **T:** up to 150 °C
H: up to 125 m **P:** up to 2,000 kW

Design Features

One-stage axially split pumps with double-entry impeller. The pumps are supplied with gland or mechanical seals

Series CN



Application

Pumping water and other liquids similar to water by viscosity and chemical activity

Q: up to 1,000 m³/h **T:** up to 100 °C
H: up to 380 m **P:** up to 1,000 kW

Design Features

Two- or four-stage axially split pumps, supplied with gland or mechanical seals

BAGGER PUMPS

Series HDP



Application

Pumping of ash and slag hydromixes in hydraulic ash removal systems of thermal power plants

Q: up to 14,000 m³/h **T:** up to 80 °C
H: up to 100 m **P:** up to 3,200 kW

Design Features

Double-casing one-stage overhung slurry pumps, supplied with gland or mechanical seals. The inner casing is made of wear-resistant high-chrome cast iron or rubber / polyurethane lining

AUXILIARY PUMPS

Series VVN



Application

Pumping out air, gases and vapor-gas mixtures (previously cleaned from the main mass of condensed moisture) in degassing installations, vacuum drying and other processes, as well as filling the suction pipelines with the pumped fluid for centrifugal pumps in water and heat supply systems

Q: 0.8 - 150 m³/min

P_{suction}: 0.02 - 0.04 MPa

N: up to 250 kW

Design Features

The pumps are capable to remove gases with mechanical impurities without prior cleaning, and allow liquid entering the working space together with the inlet gas. The pumps are supplied with a gland seal as a standard option. Mechanical seals are available by request. Explosion-proof pumps version are optionally available

Series VVN2-300



Application

Pumping out air, inert gases, vapors and steam-gas mixtures, pre-cleaned from mechanical impurities

Q: up to 300 m³/min

P_{suction}: 0.02 - 0.04 MPa

N: up to 420 kW

Design Features

The pump are supplied with sealing based on thermo-expanded graphite or with mechanical seals

Vacuum Pumping Units. Series UVNZHK



Application

Removal of non-condensable gases and maintenance of vacuum in condensers of steam turbines at thermal power plants

Q: 45 m³/min

P: 0.04 MPa

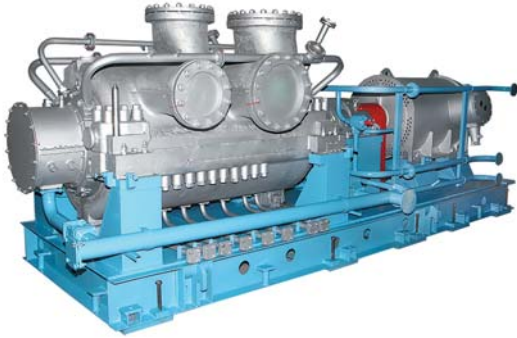
N: up to 160 kW

Design Features

The pumping units are based on two-stage water-ring vacuum pumps

COMPRESSORS

Centrifugal Compressors with Horizontally and Vertically Split Casing



Application

Compression of virtually all types of gases, including toxic, corrosive and explosive

Series: GC, CK, CKO, CKK, HTK, KTK

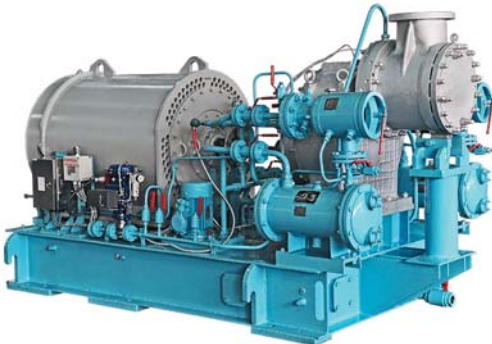
Q: up to 600 m³/min **P:** up to 5,2 MPa

N: up to 6,300 kW

Design Features

Compressor systems with horizontally or vertically split casing. Depending on required discharge pressure value may include one or several compression stages

Integrally Geared Centrifugal Compressor Systems



Application

Compression of virtually all types of gases, including toxic, corrosive and explosive

Series: AEROKOM, VC, CKON, CNON, GC, GCM, KCKU

Q: up to 1,200 m³/min **P:** up to 5 MPa

N: up to 8,000 kW

Design Features

Compressor systems with built-in rotation speed increasing gear (multiplier). Depending on required pressure increase value may include from one to eight compression stages

Rotary Screw Oil-Filled and Oil-Free Compressor Units



Application

Compression of air, nitrogen, hydrocarbon, fuel and other gases in various processes

Series: MKU TAKAT, GV, VV, 6VV

Q: up to 150 m³/min **P:** up to 5 MPa

N: up to 4,000 kW

Design Features

Rotary screw oil-filled or oil-free compressor systems; available in block-container version, and with intermediate gas coolers

PUMPS FOR THERMAL POWER PLANTS: SELECTED PROJECTS

**HEATING POWER PLANT BERLIN-MARZAHN (GERMANY)**

Scope of works: equipment engineering, manufacturing and supply

Scope of supply

Pumping units based on HPD-150B/8, GSTV-200A/1+3, ZMK-500/630 and other pump series for feed water supply, condensate handling and other applications at the natural gas-fired gas and steam turbine power plant: 21 units

- Capacity: up to 5,113 m³/h
- Head: up 2,500 m

Equipment supply: 2019

**MOSENERGO-22 COMBINED HEAT AND POWER PLANT (RUSSIA)**

Scope of works: engineering, manufacturing, testing, supply of equipment, installation and commissioning supervision

Scope of supply

UVNZHK series vacuum pumping unit based on two-stage water ring pump to maintain vacuum in the steam turbine condenser at the power plant: 1 unit

- Capacity: 45 m³/h
- Pressure: 0,04 MPa

Equipment supply: 2018

**BALAKOVO-4 COMBINED HEAT AND POWER PLANT (RUSSIA)**

Scope of works: engineering, manufacturing, testing, supply of equipment, installation and commissioning supervision

Scope of supply

Pumping unit based on the PE 500-180-6 pump with electric motor and air-cooled oil lubrication system for supplying feed water to the CHP boiler: 1 unit

- Capacity: 380 m³/h
- Head: 1,975 m

Equipment supply: 2018

**NIZHEGORODSKAYA STATE DISTRICT POWER PLANT (RUSSIA)**

Scope of works: manufacturing, testing, equipment supply, installation and commissioning supervision

Scope of supply

Boiler feed water pump PE 500-180-6 pump with electric motor and high-efficient air-cooled oil lubrication system

- Capacity: up to 580 m³/h
- Head: up to 1,975 m

Equipment supply: 2016

PUMPS FOR THERMAL POWER PLANTS: SELECTED PROJECTS



DESALINATION PLANT (UNITED ARAB EMIRATES)

Scope of works: equipment engineering, manufacturing and supply

Scope of supply

Fuel oil supply system skid-mounted pumping units based on API 610 compliant centreline-mounted single-stage overhung pumps (type OH2): 14 units

- Capacity: up to 350 m³/h
- Head: up to 80 m

Auxiliary systems including filters, flow meters, accumulators and other equipment

Equipment supply: 2016



OZMEN-1 GEOTHERMAL POWER PLANT (TURKEY)

Scope of works: equipment engineering, manufacturing and supply

Scope of supply

ORC power unit n-Butane circulation pumps GSTV-300I/1+4-305/CN with auxiliary systems and components: 3 units

- Capacity: 111 m³/h
- Head: 419 m

Equipment supply: 2016



WIRYE COMBINED HEAT & POWER PLANT (SOUTH KOREA)

Scope of works: equipment engineering, manufacturing and supply

Scope of supply

Deaerator condensate skid-mounted pumping units based on GH-125C1/4-508/CN pumps with measuring devices, cooling systems, pressure gauges and junction boxes for measuring points: 3 units

- Capacity: 383 m³/h
- Head: 348,4 m

Equipment supply: 2016



NIEHL-3 COMBINED HEAT & POWER PLANT (GERMANY)

Scope of works: equipment engineering, manufacturing and supply

Scope of supply

Two pumping units based on KRH-100/180-308/CN for hot water supply in the district heating system

- Capacity: up to 129 m³/h
- Head: up to 25 m

Equipment supply: 2014

PUMPS FOR THERMAL POWER PLANTS: SELECTED PROJECTS



SURGUT STATE DISTRICT POWER PLANT (RUSSIA)

Scope of works: manufacturing, testing, equipment supply, installation and commissioning supervision

Scope of supply

Feed water supply pumping units of APE 720-185-6 series with electric motors and auxiliary process equipment: 5 units

- Capacity: 720 m³/h
- Head: up to 2,030 m

Project duration: 2014 -2016



KRASNODAR COMBINED HEAT AND POWER PLANT (RUSSIA)

Scope of works: manufacturing, testing, equipment supply, installation and commissioning supervision

Scope of supply

Over 30 pumping units of PE, Ks, KsV, PSG, SE, D series for supplying feed water, pumping condensate, network and cooling water, as well as other processes of the PGU-410 power unit

- Capacity: 2,500 m³/h
- Head: up to 2,030 m

Project duration: 2010 -2011



SOUTHWESTERN ST.PETERSBURG COMBINED HEAT & POWER PLANT (RUSSIA)

Scope of works: manufacturing, testing, equipment supply, installation and commissioning supervision

Scope of supply: API-617 compliant integrally geared centrifugal compressor systems GCM-107/7-31 for supply natural gas to the gas turbine of the PGU300 power plant (2 units), nitrogen recovery station, compressed air station, methane-nitrogen mixture removal unit

- Capacity: 107 m³/min
- Discharge pressure: 3.0 MPa

Equipment commissioning: 2016



KAZAN COMBINED HEAT & POWER PLANT - 1 (RUSSIA)

Scope of works: manufacturing, testing, equipment supply, installation and commissioning supervision

Scope of supply

Rotary screw compressor system of TAKAT-22/6-45 series with electric motors and auxiliary process equipment for compressing and supplying natural gas to the gas turbine power plant: 2 units

- Capacity: 22 m³/min
- Discharge pressure: 4.3 MPa

Equipment supply: 2005



**HMS Group Moscow
International Sales Department**

Phone: + 7 (495) 730 6601
E-mail: export@hms.ru
www.grouphms.com
www.hms.biz

The information contained in this brochure is intended for reference purposes only and basic selection of products manufactured by HMS Group and its affiliated companies. Full and detailed technical information regarding specific products of HMS Group or its affiliated companies is available in relevant manufacturer's technical manuals. HMS Group reserves the right to alter the products without prior notice and is not responsible for possible errors and misprints in catalogs, brochures and other printed or published materials in any form.