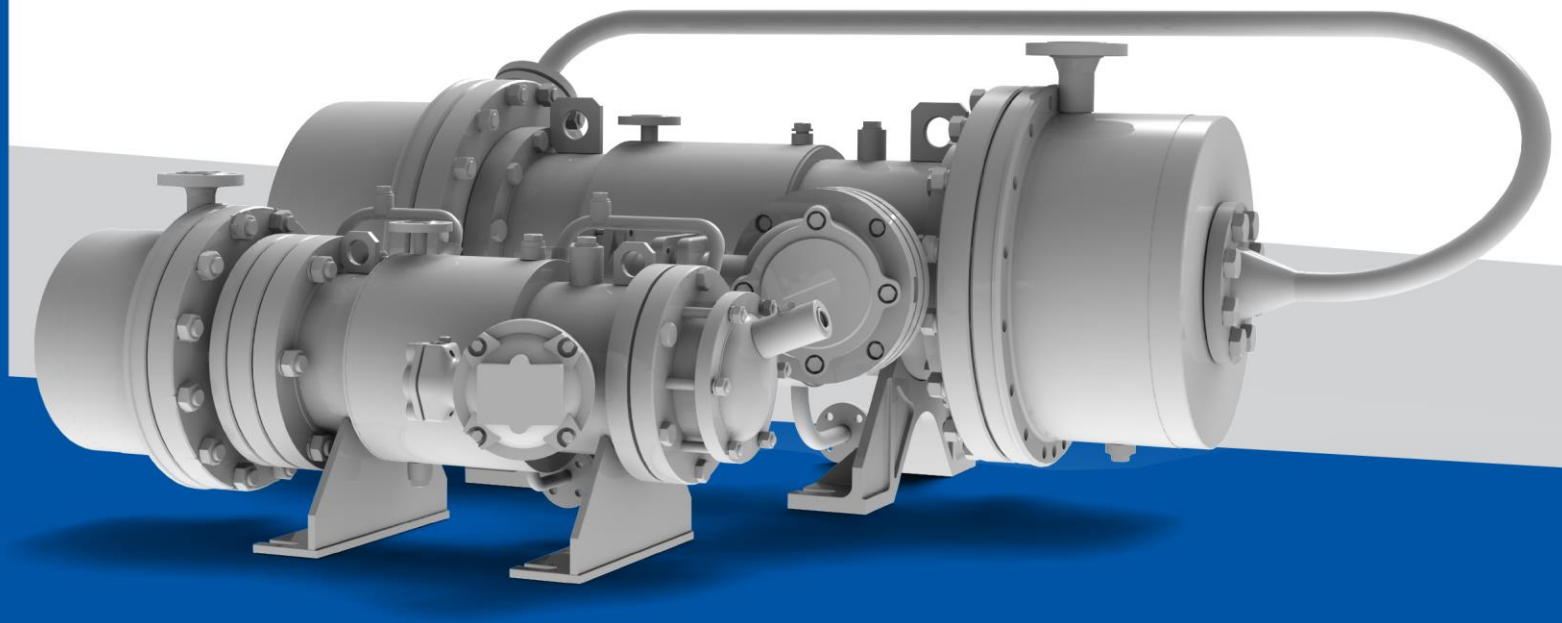
CRIS
HERMETIC PUMPS

COMPANY PRESENTATION, PRODUCT OVERVIEW

CANNED MOTOR PUMPS



CRIS
HERMETIC PUMPS

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CHAPTER I
HISTORICAL BACKGROUND of CRIS HERMETIC PUMPS

Historical background of CRIS Hermetic Pumps

The company **CRIS Hermetic Pumps** specializes in the design and manufacture of reliable and economical centrifugal explosion-proof sealless electric pumps, whose family has been produced and refined in Republic of Moldova since 1961.

Starting with 1961, the plants producing explosion-proof sealless centrifugal pumps in Republic of Moldova have been providing the entire Soviet Union with electric pump units for use in the chemical, oil and gas, nuclear, metallurgical, pharmaceutical industry, defense industry enterprises, as well as in the energy and transport fields.

Thus, our specialists have continuity and a very good experience and understanding of the scope of application, development and production of this pumping equipment class.

Historical background of CRIS Hermetic Pumps

- In 1994 the sealless pumps plant CRIS Hermetic Pumps was founded as a company, specializing in the supply, commissioning and maintenance of industrial and pumping equipment.
- Since 1998 one of the main activities of CRIS Hermetic Pumps was the introduction in technological processes and the implementation in the petrochemical complex enterprises of the CIS countries, Baltic and Eastern European countries of sealless explosion-proof electric pumps of CH, NH and CMP series manufactured by "Moldovahidromash“, as an official dealer of the company.
- Starting with 2005-2006 a comprehensive development work of own production was performed, and since 2007, CRIS Hermetic Pumps is certified as a manufacturer of explosion-proof sealless centrifugal pumps of CH, NH and CMP series, as well as the sealless transformer electric pumps of MT, TT and TE type.

Historical background of CRIS Hermetic Pumps

- 2009-2011. Regular customers of the company become the flagships of the petrochemical industry JSC LukOil, OJSC Sibur, OJSC Naftan, JSC Nizhnekamskneftekhim, OJSC Mogilevkhimvolokno, Kazansky NPZ and many other large enterprises of the CIS countries.
- In 2013 it was decided to establish a foundry production.
  In late 2014, commissioning works are completed and the first batch of parts of hermetic electric pumps was casted.
- In 2015 the implementation process takes place, as well as the quality management system certification in accordance with **ISO 9001** international standard and certification of products manufactured in accordance with **API 685** standards.
- Currently CRIS Hermetic Pumps is a dynamic engineering company, numbering about 100 personnel, equipped with advanced technology and equipment, certified under **ATEX** Directive **2014/34/EU**.

CHAPTER II
GOALS AND MISSION of CRIS HERMETIC PUMPS

Goals and mission of CRIS Hermetic Pumps

Our goal
is to become the leading company in the production of explosion-proof sealless centrifugal electric pumps.

Our mission, as a leading company, we see it in the providing the highest quality goods and services at the best price.

Our values are to act for the benefit of everyone around us, including our customers' benefit.

CHAPTER III
CUSTOMERS of
CRIS HERMETIC PUMPS

Some Customers of CRIS Hermetic Pumps

CRIS HERMETIC PUMPS

CHAPTER IV
WHY SEALLESS ELECTRIC PUMPS?

Why sealless electric pumps?

CRIS HERMETIC PUMPS

ENVIRONMENT PROTECTION AND SAFETY

- absolute tightness of the electric pump
- safety of personnel, equipment and environment
- low noise and vibration levels

LOW OPERATING COSTS

- one-piece structure of the electric pump
- low maintenance costs
- easy installation
- increased reliability
- lack of wear parts
- durable radial and plain thrust bearings

INCREASED RELIABILITY

- simple structure
- explosion-proof design
- corrosion-resistant materials

CHAPTER V
PRODUCTS of CRIS HERMETIC PUMPS

Electric pumps by CRIS Hermetic Pumps are produced in accordance with the requirements of international standards and norms, including the API 685 standard, and provide pumping in steady-state conditions of reactive, corrosive, toxic, flammable and containing harmful substances liquids of all classes of danger (including liquefied gases and neutral liquids), pairs of which combined with air may form explosive mixtures.

Products of CRIS Hermetic Pumps

CRIS HERMETIC PUMPS

TYPES OF ELECTRIC PUMPS

- Electric pumps of **CH** series represent a parametric range in accordance with ISO 5799:2002, ISO 9908:1993, ISO 9905:1994 and are designed for pumping in steady-state conditions of more than 500 types of reactive, corrosive, toxic, flammable and other liquids, vapors of which in combination with air may form explosive mixtures, with a mass fraction of solid nonabrasive impurities of up to 0,2%, and particle size of up to 0,2 mm.
- Electric pumps of **NH** series are designed on the basis of the parameters range of the same standard and are designed for pumping liquefied hydrocarbons, petroleum fuels and other similar non-corrosive liquids.
- Special pumps of **CMP** series are developed for specific parameters and operating conditions, specified by the Customer and are designed for pumping in stationary conditions of reactive, corrosive, toxic, flammable and containing hazardous substances liquids of all hazard classes, vapors of which in combination with air may form explosive mixtures.
- Transformer electric pumps **MT**, **TT** and **TE** are designed for providing circulation in transformer cooling systems, both stationary (**MT**, **TE**) and for rolling stock (**TT**).

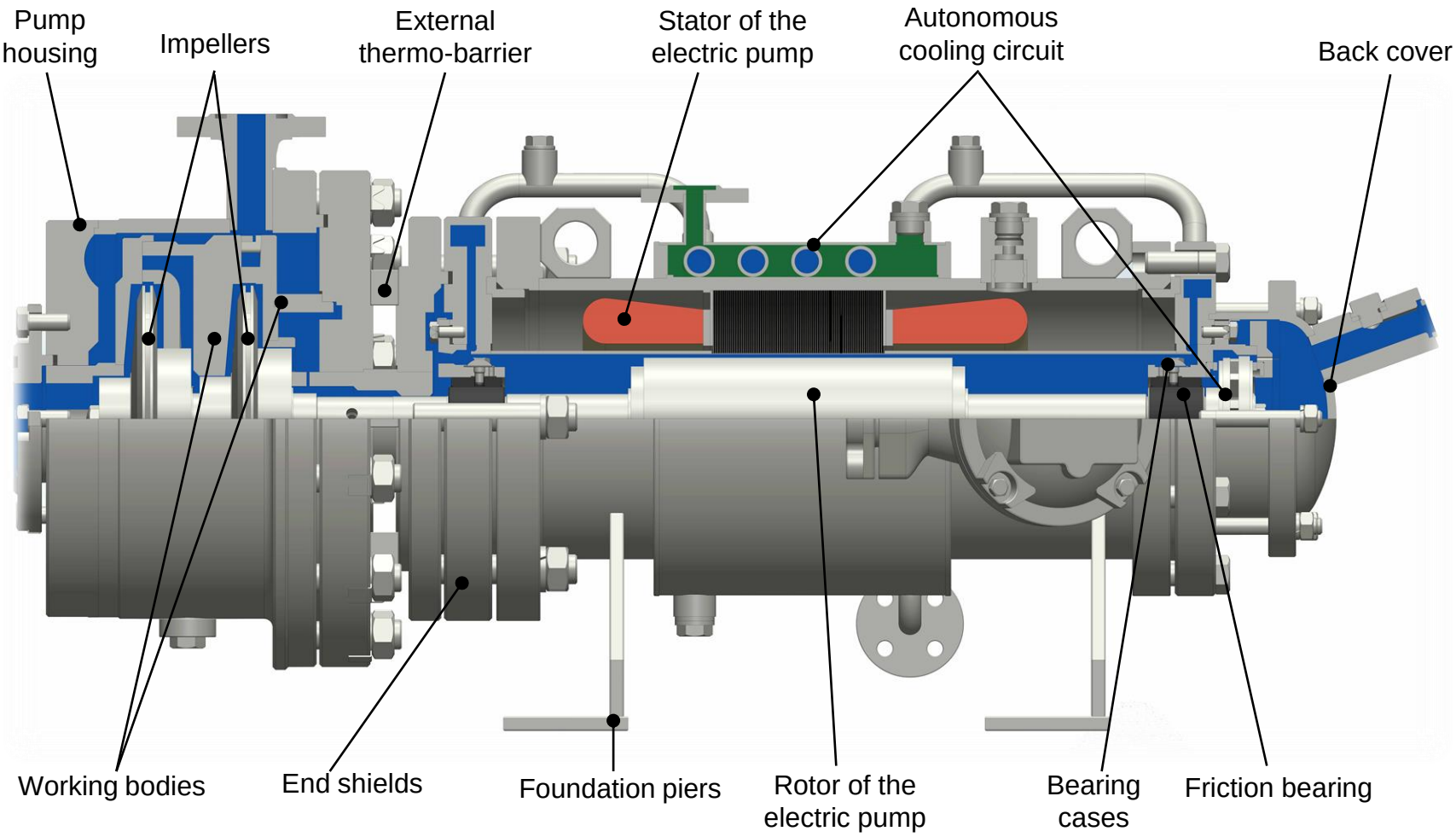
Products of
CRIS Hermetic Pumps

STRUCTURAL FEATURES OF ELECTRIC PUMPS BY CRIS

- One-piece structure design that combines the pump body and the integrated hermetic induction motor in a single mono-block;
- No external seal of rotating parts;
- Cooling of the inner chamber of the motor, secured with thin-walled non-magnetic sleeves and lubrication of plain bearings is made by the pumped liquid;
- The one-sided entrance impeller is of closed type with a groove seal, which eliminates the possibility for random particles of falling into the motor chamber;
- The construction of sealed one-piece electric pumps provides automatic unloading from axial forces arising during operation, thus providing an optimum location of rotor with the impellers fixed on it.

Products of CRIS Hermetic Pumps

MAIN COMPONENTS OF HERMETIC ELECTRIC PUMPS



HERMETIC PUMPS

CHAPTER VI
CANNED MOTOR PUMPS OF CH SERIES

Canned motor pumps of CH series, are designed for pumping in steady-state condition of more than 500 types of chemically active, corrosive, toxic, flammable and other liquids, vapors of which may form explosive mixtures with air.

Canned motor pumps of CH series

CANNED MOTOR PUMPS OF CH SERIES, TYPES 1, 4

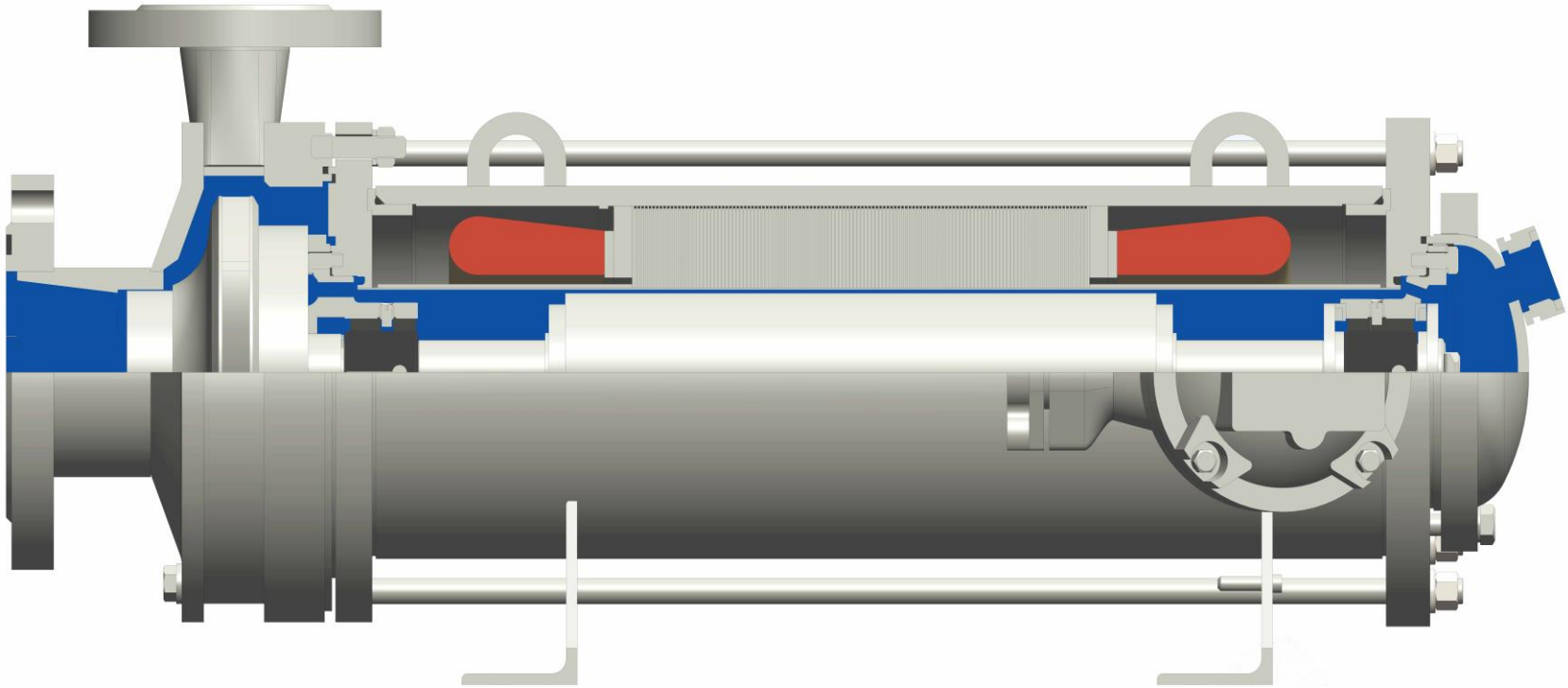
- Single-stage pumps;
- Pumping of corrosive liquids with a corrosion rate of 0,01 mm per year for the steel of flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT 4X.

Productive capacity:	3,2 - 100 m^3/h
Pumping head:	12,5 - 125 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	max +50°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 50 bar
Engine power:	1,1 - 37 kWt

Canned motor pumps of CH series

CRIS HERMETIC PUMPS

CANNED MOTOR PUMPS OF CH SERIES, TYPES 1, 4



Canned motor pumps of CH series

Canned motor pumps of CH series, types 2, 5

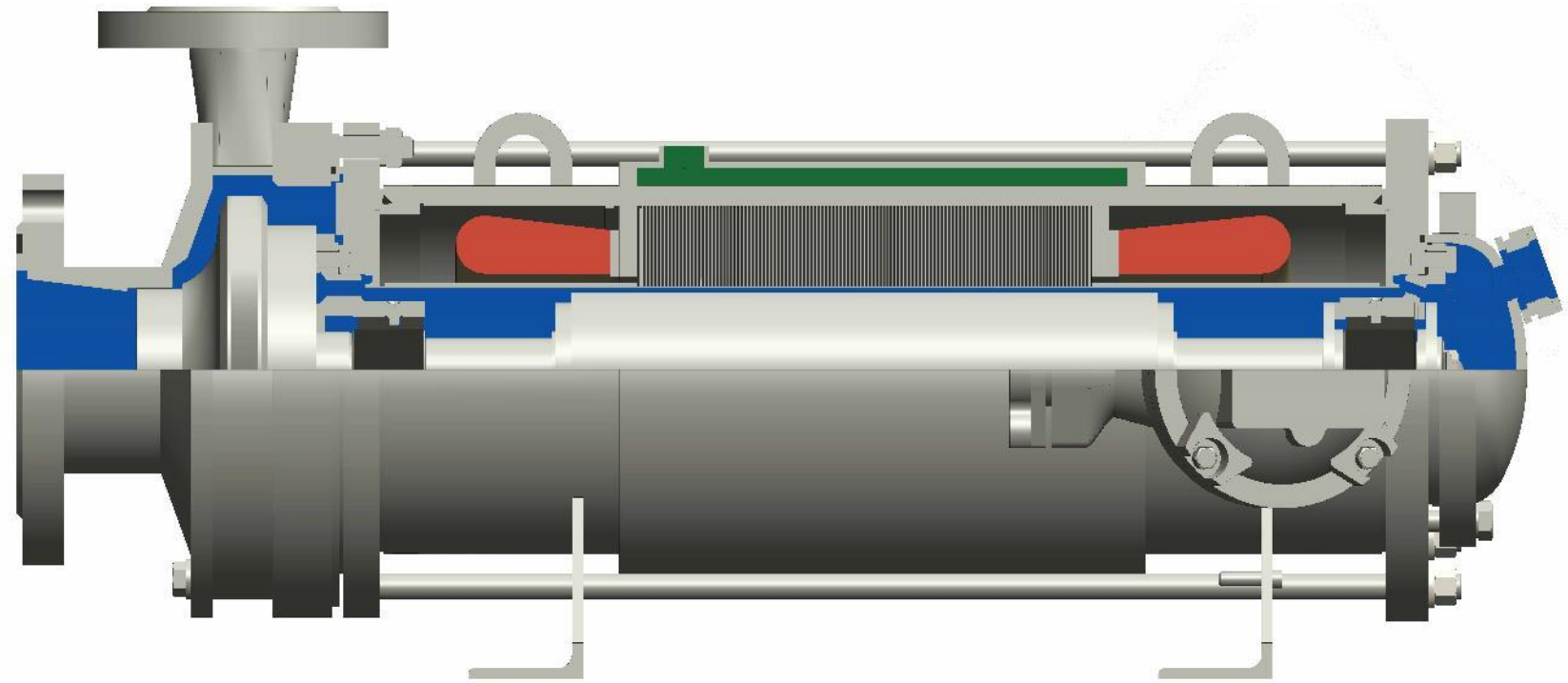
- Sealed one-piece single-stage;
- Pumping of corrosive liquids with a corrosion rate of up to 0,01 mm per year for the steel of flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT 4X.

Productive capacity:	3,2 - 200 m^3/h
Pumping head:	12,5 - 200 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	max +100°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 50 bar
Engine power:	1,1 - 132 kWt

Canned motor pumps of CH series

CRIS HERMETIC PUMPS

Canned motor pumps of CH series, types 2, 5



Canned motor pumps of CH series

Canned motor pumps of CH series, types 3, 6

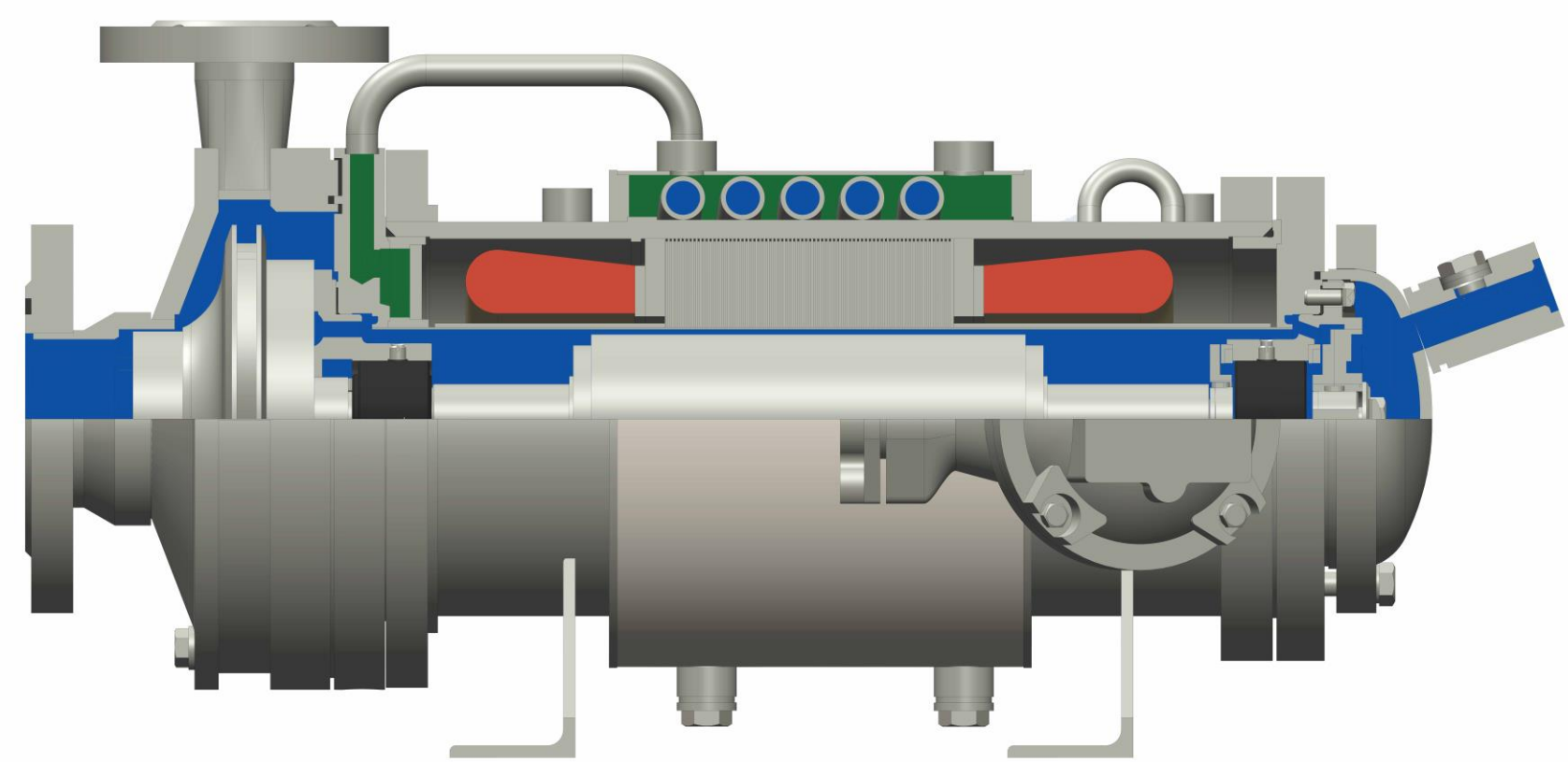
- Sealed one-piece single-stage;
- Pumping of corrosive liquids with a corrosion rate of up to 0.01 mm per year for the steel of flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT (1-4)X.

Productive capacity:	3,2 - 200 m^3/h
Pumping head:	12,5 - 125 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	max +360°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 50 bar
Engine power:	1,1 - 75 kWt

Canned motor pumps of CH series

CRIS HERMETIC PUMPS

Canned motor pumps of CH series, types 3, 6



HERMETIC PUMPS

CHAPTER VII
ELECTRIC PUMPS OF NH SERIES

Electric pumps of NG type are designed for pumping liquefied hydrocarbons, petroleum fuels and other similar non-corrosive liquids.

Canned motor pumps of NH series

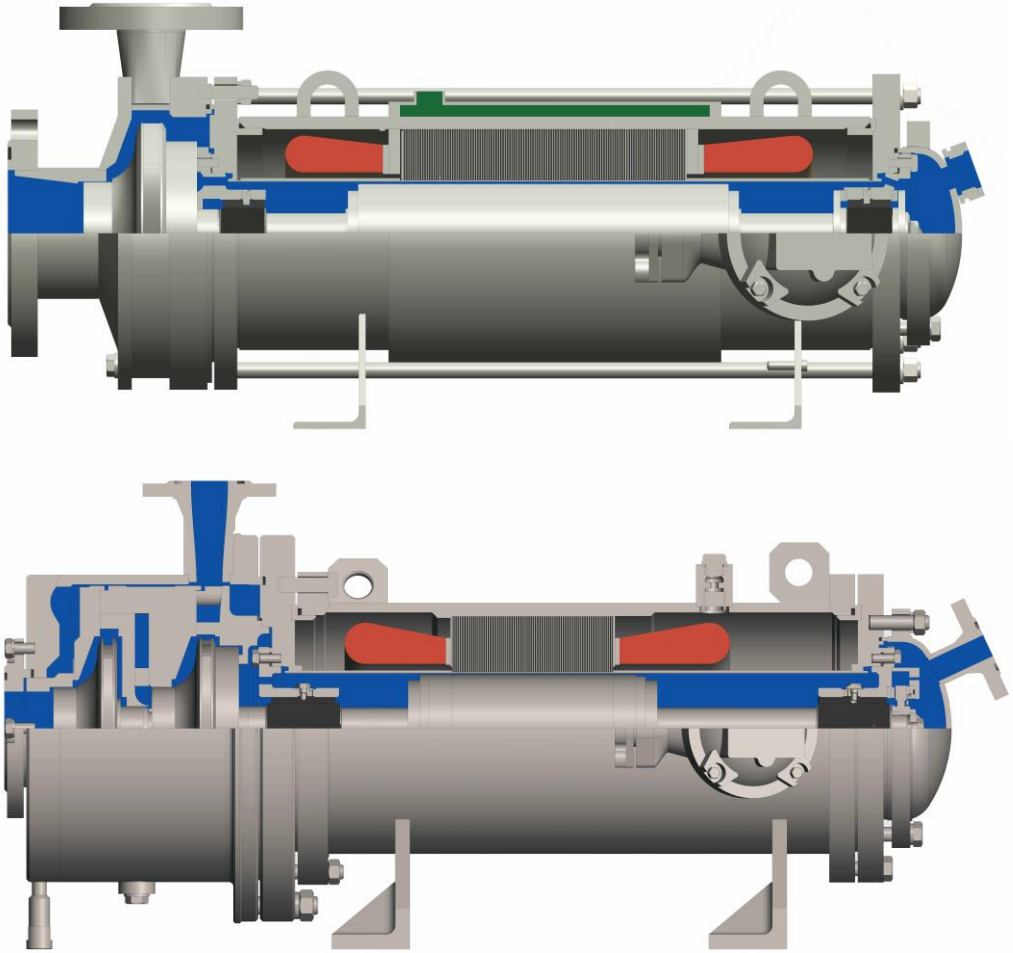
Canned motor pumps of NH series, types 1, 2, 4, 5

- Sealed one-piece single-stage;
- Pumping of non-aggressive liquids with a corrosion rate of up to 0,01 mm per year for the carbon steel flow section;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X.

Productive capacity:	3,2 - 500 m^3/h
Pumping head:	20 - 125 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	from -40 to +100°C
Viscosity:	up to 40 mm^2/s
Pressure in the circuit:	up to 40 bar
Engine power:	1,5 - 132 kWt

Canned motor pumps of NH series

Canned motor pumps of NH series, types 1, 2, 4, 5



CHAPTER VIII
ELECTRIC PUMPS OF CMP SERIES

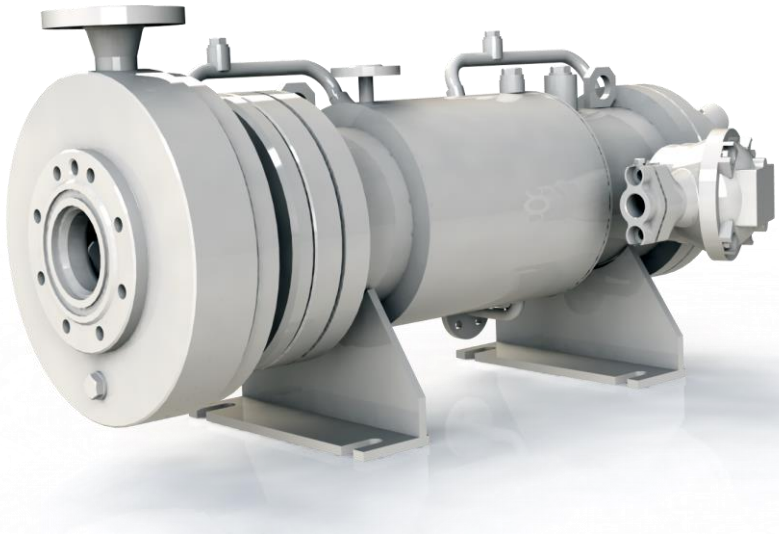
Electric pumps of CMP series are developed under the specific operating conditions and are designed for pumping in stationary conditions of chemically active, corrosive, toxic, flammable and other liquids, vapors of which may form explosive mixtures with air.

Canned motor pumps of CMP series

Canned motor pumps of CMP O series

- Single-stage pumps;
- Pumping of aggressive liquids with a corrosion rate of up to 0,01 mm per year for the steel flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT (1-4)X.

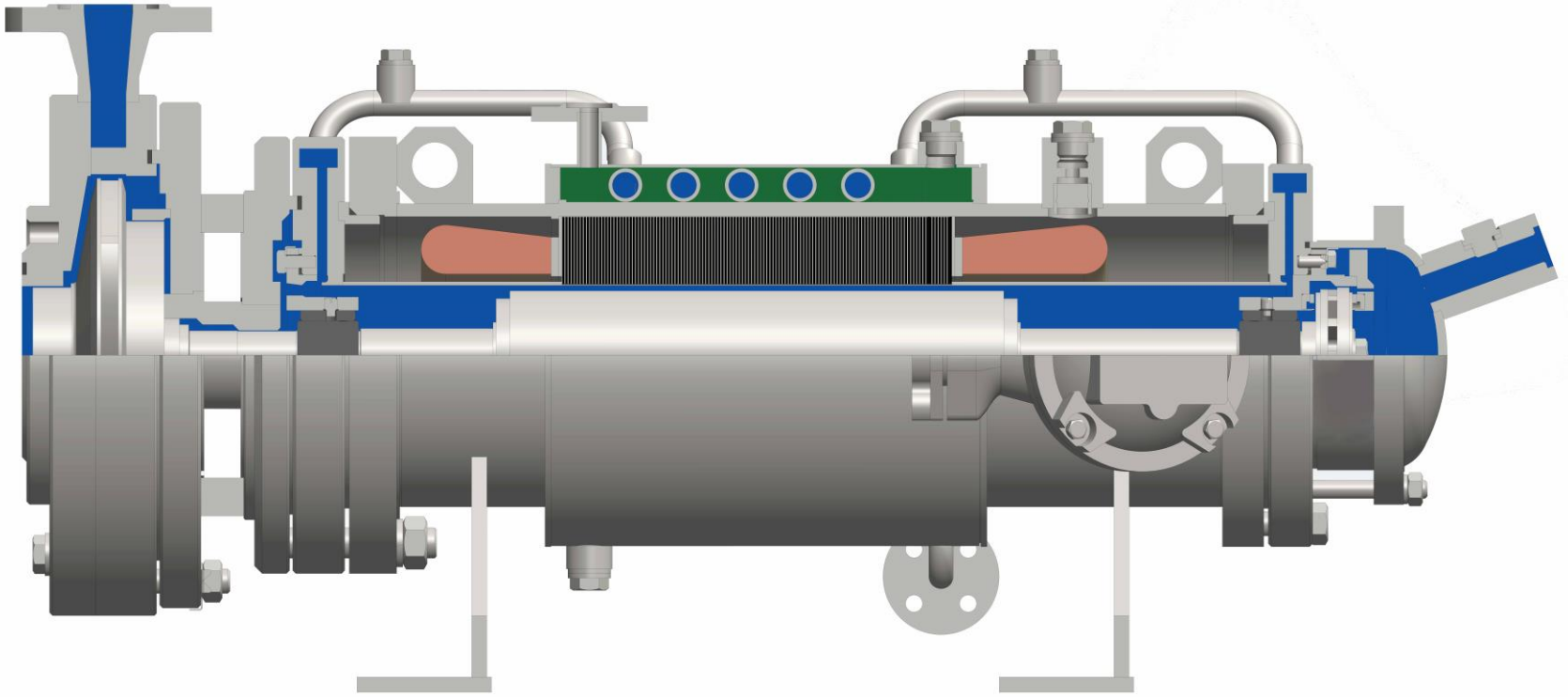
Productive capacity:	0,5 - 500 m^3/h
Pumping head:	20 - 200 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	-100°C to +450°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 100 bar
Engine power:	1,1 - 200 kWt



Canned motor pumps of CMP series

CRIS HERMETIC PUMPS

Canned motor pumps of CMP O series

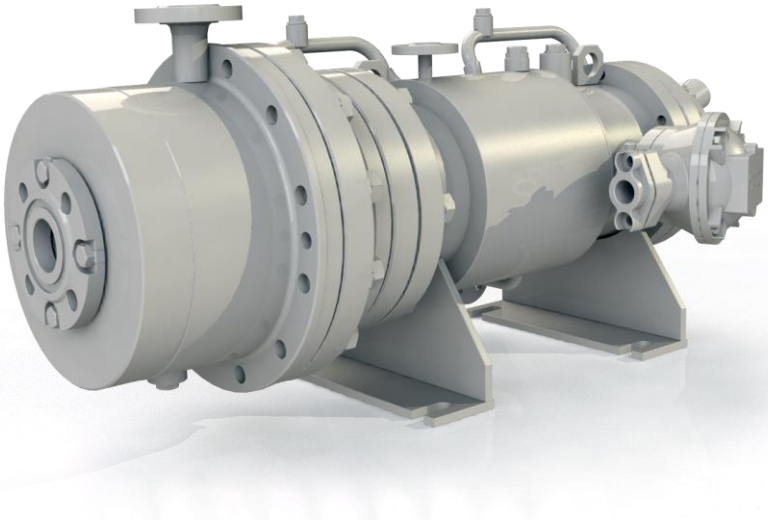


Canned motor pumps of CMP series

Canned motor pumps of CMP M series

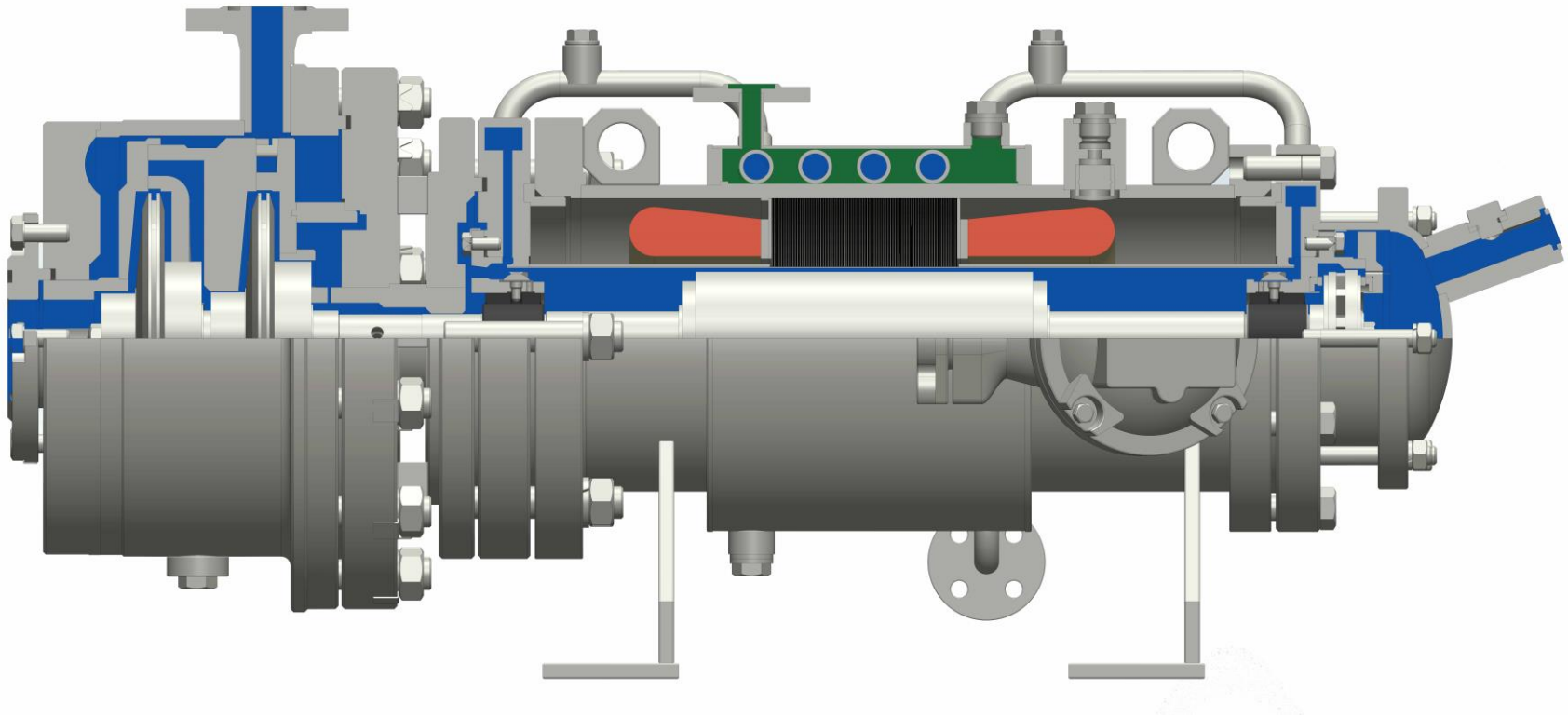
- Multistage pumps;
- Pumping of aggressive liquids with a corrosion rate of up to 0,01 mm per year for the steel flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT (1-4)X.

Productive capacity:	0,5 - 500 m^3/h
Pumping head:	40 - 400 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	-100°C to +450°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 100 bar
Engine power:	1,1 - 250 kWt



Canned motor pumps of CMP series

Canned motor pumps of CMP M series

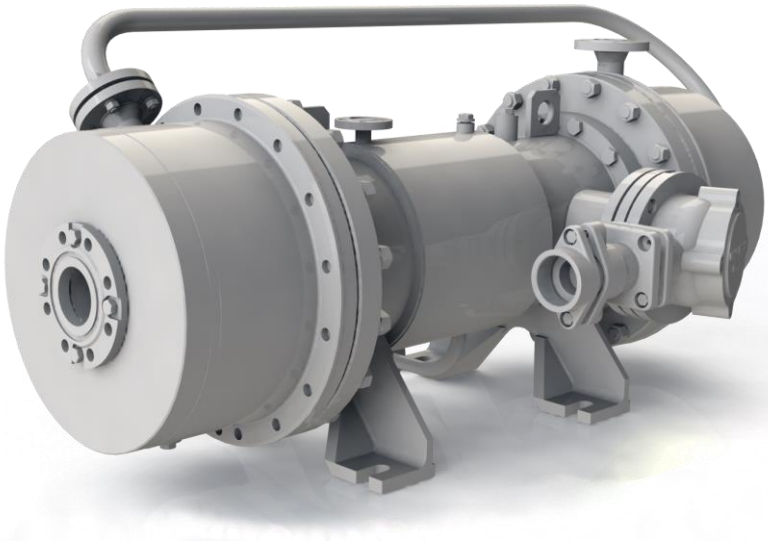


Canned motor pumps of CMP series

Canned motor pumps of CMP BM series

- Multistage pumps
- Pumping of aggressive liquids with a corrosion rate of up to 0,01 mm per year for the steel flow section AISI 321, AISI 316Ti;
- Explosion protection in accordance with 1ExdbhsbIIBT 4X, 1ExdsIICT (1-4)X.

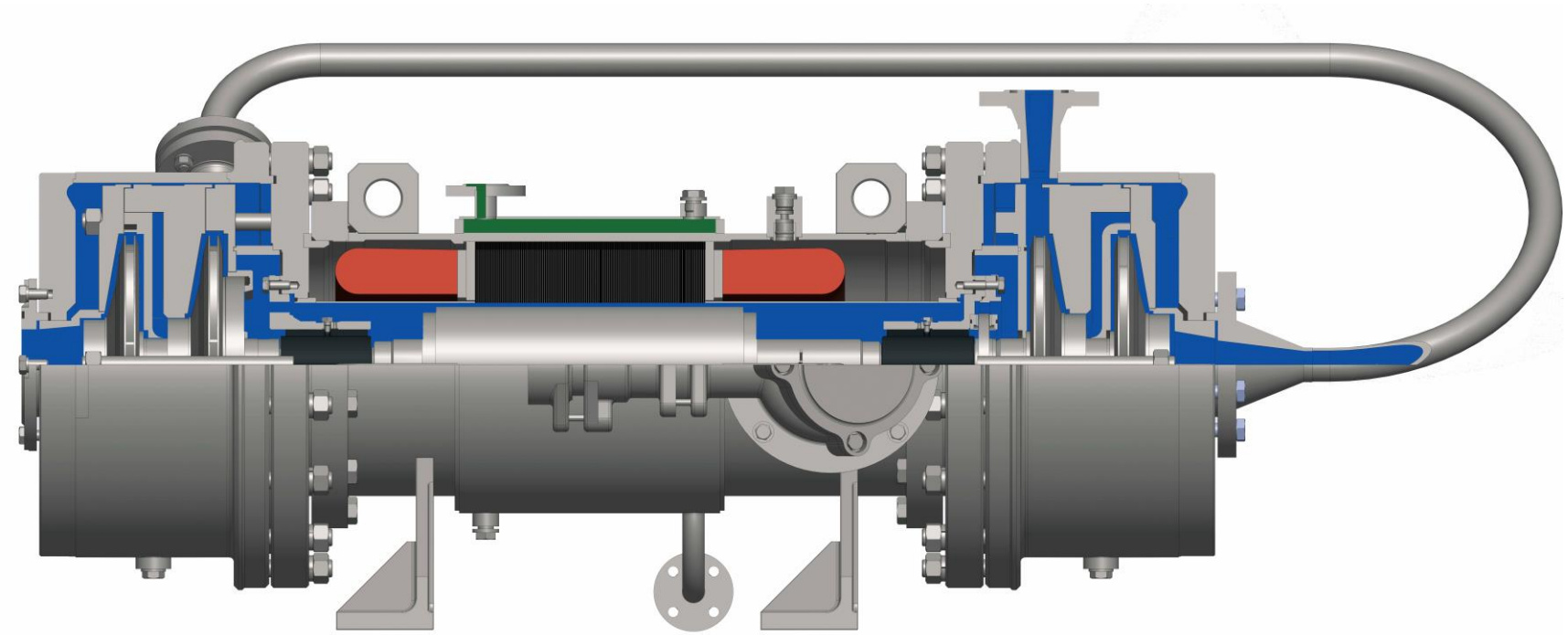
Productive capacity:	0,5 - 250 m^3/h
Pumping head:	80 - 1000 m
Rotary speed:	1500 - 3000 min^{-1}
Working temperature:	max +100°C
Viscosity:	up to 50 mm^2/s
Pressure in the circuit:	up to 100 bar
Engine power:	5 - 250 kWt



Canned motor pumps of CMP series

CRIS HERMETIC PUMPS

Canned motor pumps of CMP BM series



Transformer electric pumps

Transformer electric pumps

Designed for creating a circulation of transformer oil in the cooling systems of power transformers of mainline electric locomotives (TT) and stationary power transformers of power plants (TE, MT). Features: one-piece pumps, with oil-flooded stators (TT and MT) and sleeved stator (TE).

Reference code of the electric pump	Supply, m^3/h	Head, m	Engine power, kWt	Cavitation margin, m	Pressure in the system, not more, kgf/cm^2	Liquid density, kg/m^3	Liquid temperature, ^0C
TT 63-10	63	10	2,2	3,5	4	840	85
MT 16-10	16	10	1,1	4,0	4	840	85
2TE 100-8	100	8	3,5	5,0	4	840	80
1TE 100-15	100	15	7,5	5,0	4	840	80
1TE 100-20	100	20	7,5	5,0	4	840	80
6TE 160-10	160	10	5,5	5,0	4	840	80

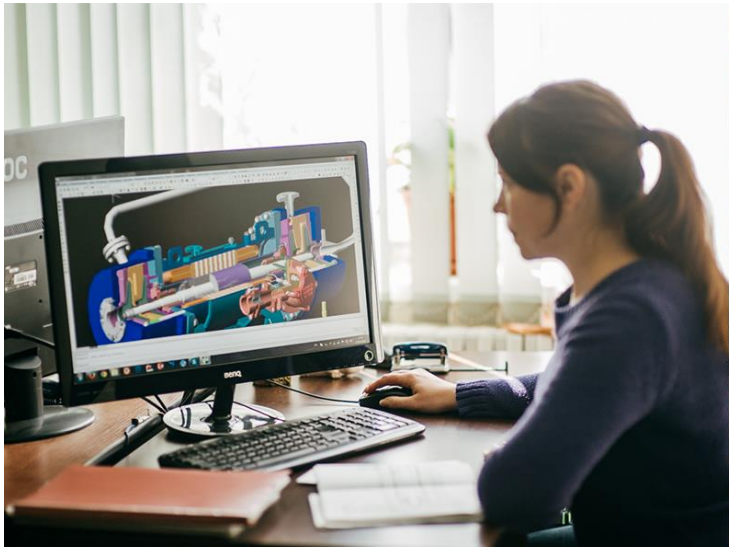
CHAPTER IX
DEVELOPMENT AND PRODUCTION OF PUMPS BY CRIS HERMETIC PUMPS

Development and production of pumps by CRIS Hermetic Pumps

Design and Technology department

The most important division of the company, the goal of which is the development of sealless electric pump units, as well as the normative and technical documentation.

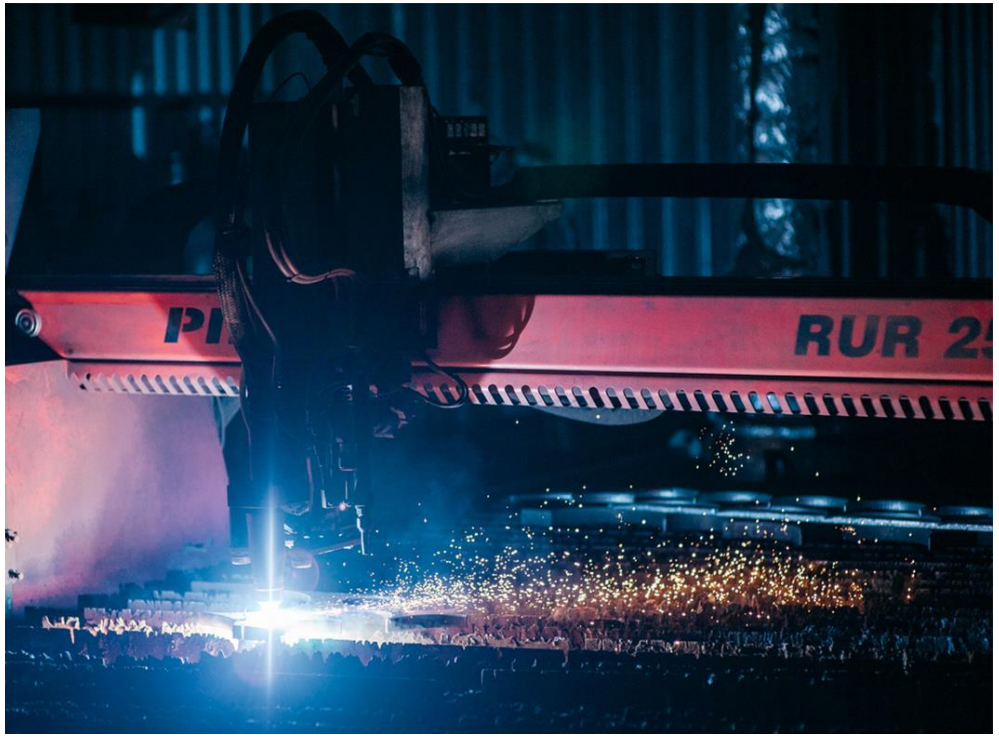
Individual approach of the department specialists to each project and the use of modern CAD, CAM, CAE solutions in the design allows obtaining a high-quality pumping equipment that best matches the needs of the Customer.



Development and production of pumps by CRIS Hermetic Pumps

Blank section

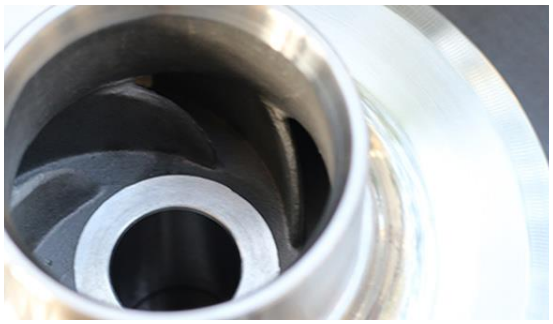
Provision of core production with the entire range of blanks and semi-finished products using the most modern equipment, including the plasma metal cutting unit.



Development and production of pumps by CRIS Hermetic Pumps

Foundry production

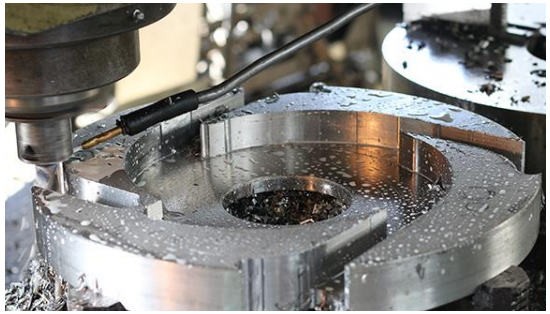
Using modern inductor furnaces, hot investment casting techniques and casting in HTS provides the core production with cast components of pumping equipment - impellers, bearing housings, pump housings, terminal boxes, etc. At that, it provides a high casting quality and strict adherence to the required chemical composition of the cast parts.

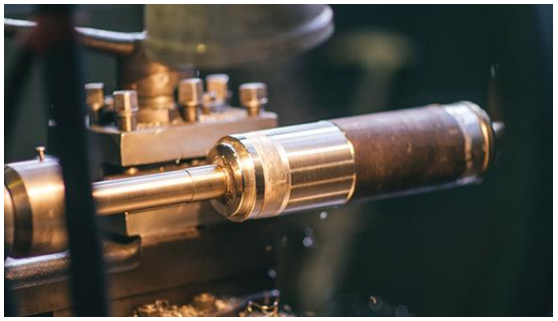


Development and production of pumps by CRIS Hermetic Pumps

Mechanical manufacturing

Main manufacturing process of the Company, performing the mechanical processing of parts and assembly units of the pump equipment. Using numerically controlled machines, advanced materials processing methods and high production culture allow providing a high quality level of manufactured products and, respectively, of the final pump equipment.





Development and production of pumps by CRIS Hermetic Pumps

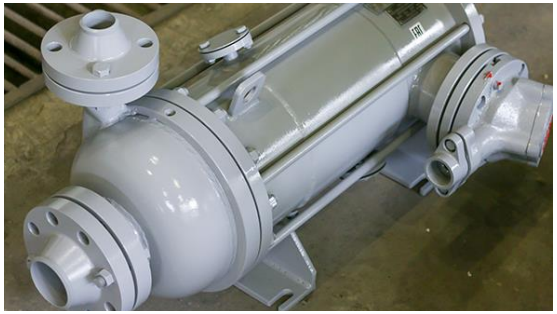
Winding production

Production of hermetic stators for electric motors with a capacity of 1,1 kW to 250 kW. Modern technologies and materials, vacuum impregnation method, and high drying techniques determine the high quality level of the finished product.

Development and production of pumps by CRIS Hermetic Pumps

Assembly department and electric pumps testing

An extremely responsible phase in the manufacture of products is the process of assembly and testing of electric pumps - tasks performed on the production assembly and testing station. Full inspection of parts and components in the products assembly process, strict implementation of assembly technology, as well as 100% testing of finished products allow the Company to guarantee high quality of manufactured products.



Development and production of pumps by CRIS Hermetic Pumps

Department of Technical Maintenance of pumping equipement

Whose goal is to resolve all Customer issues that may arise during the operation of pumping equipment, including participation in commissioning (including online), supply of spare parts and components and, if necessary, pump repair, including at the Customer's facil ty.

CRIS
HERMETIC PUMPS

THANK YOU FOR ATTENTION

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