



Engineering Flow Solutions

2NK

CENTRELINE-MOUNTED, SINGLE-STAGE OVERHUNG PROCESS PUMPS

OH2 TYPE, API 610



2NK SINGLE-STAGE OVERHUNG PROCESS PUMPS



HMS Group, with its proven experience in design and manufacturing of pumps for various industrial applications, using 3D and CFD methods supported by efficient customers feedback, continues to upgrade and retrofit its existing products and develop new products lines.

GENERAL DESCRIPTION

A new 2NK series of the centerline-mounted single-stage overhung pumps is designed for operation at refineries, various processes in chemical and petrochemical industry as well as the other industries to handle chemicals products, crude oil, petroleum products, liquefied gases and other similar liquids (by specific gravity, viscosity, corrosion effect on materials, and other factors).

2NK pumps comply with API 610 (latest edition) standard, qualified by the modern requirements to efficiency and reliability, and completely interchangeable with currently applied similar series pumps by overall and fitting dimensions.

MATERIAL OPTIONS

	S-5	S-6	S-8	C-6	A-8	D-1	D-2
Casing	Carbon steel (WCB)	12% chromium steel	316L AUS	12% chromium steel	316L AUS	Duplex steel	Super duplex steel
Shaft	AISI 4140	AISI 4140	316L AUS	12% chromium steel	316 AUS	Duplex steel	Super duplex steel
Bearing housing	Carbon steel (WCB)	Carbon steel (WCB)	Carbon steel (WCB)	Carbon steel (WCB)	Carbon steel (WCB)	Carbon steel (WCB)	Carbon steel (WCB)
Impeller	Carbon steel (WCB)	12% chromium steel	316L AUS	12% chromium steel	316L AUS	Duplex steel	Super duplex steel

APPLICATION

2NK pumps have been designed for various oil & gas industry applications, including but not limited to:

In fractionation tower processes

- Refluxing
- Condensate removal
- Product feeding
- Residues removal

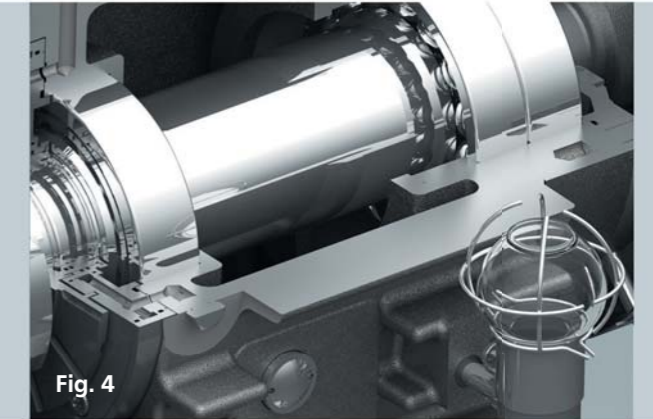
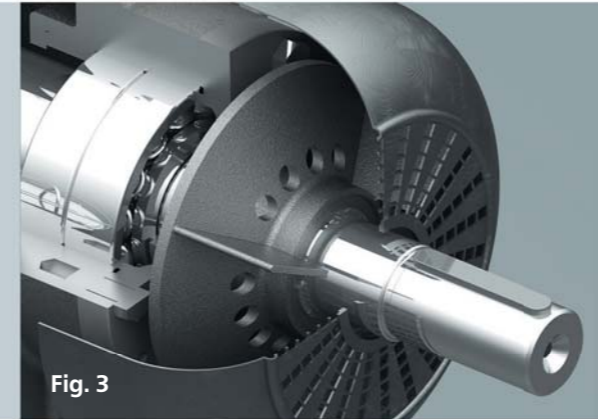
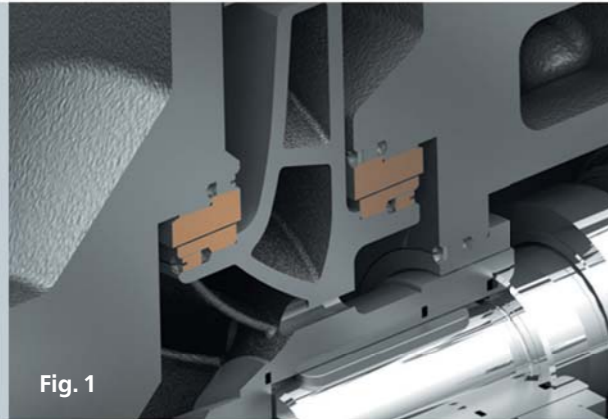
In pumping

- Hot oil
- Overhead products
- Heavy fraction

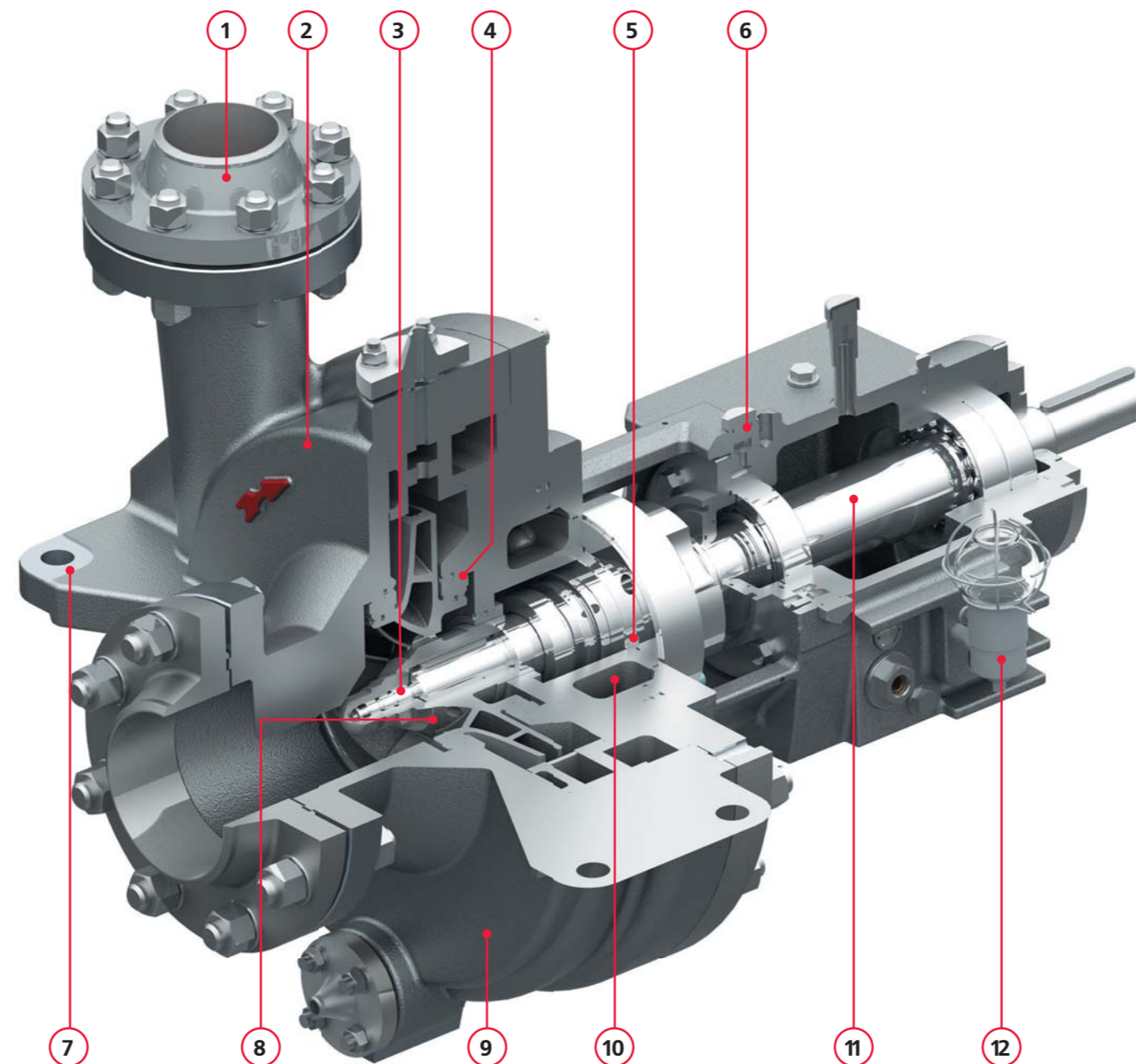
In the following processes

- Stirring
- Injection
- Circulation
- Heat exchange
- Feeding

DESIGN FEATURES & ADVANTAGES



1. Design of the suction and discharge nozzles corresponds to ANSI/ASME, DIN/EN being rated for 64 bar pressure
2. Heavy duty casing rated for up to 64 bar pressure
3. The pump rotor can be pulled out without dismantling of the pump casing and pipelines that simplifies the maintenance operations
4. The hard-alloy wearing rings ensure the pump's performance throughout the whole operational lifetime (Fig. 1)
5. The seal chamber meets API 682 and API 610 requirements for application of any compliant mechanical seal
6. The pumps of various sizes have highly unified main parts that significantly reduces the cost of maintenance
7. The casing support pads are placed on the pump centreline to avoid misalignment between pump and motor shafts at temperature expansion
8. A screw-type inducer is installed at the suction side for lowered NPSH (Fig. 2)
9. A new energy-efficient flow path provides:
 - High efficiency of the pump with rated and optional rotors
 - Retention of the rated performance with slightly trimmed impellers
 - Increased efficiency with deeply trimmed rated and optional impellers
 - Decreased radial load and shaft runout leading to extended operational lifetime of bearings and mechanical seals



10. The high-efficient cooling system keeps the pump casing and its bracket at a preset temperature for handling of the high-temperature liquids

The shaft mounted fan is optionally available for better cooling of the bearings houses (Fig. 3)

11. The rigid shaft with increased diameter provides minimal deflection and runout that extends operational lifetime of bearings and mechanical seal

12. The efficient bearings lubrication system ensures their long operational lifetime (Fig. 4)

A special mounting of pump to the base plate allows slight displacements of the casing to compensate its temperature expansion

A rigid welded base frame prevents shafts misalignment between pump and motor

Reliable and durable steel membrane coupling reduces vibration and requires no maintenance

The pump vibration does not exceed limits in accordance with API 610 requirements

The design of the flow path keeps the rotor unloaded from axial forces to extend operational lifetime of the bearings

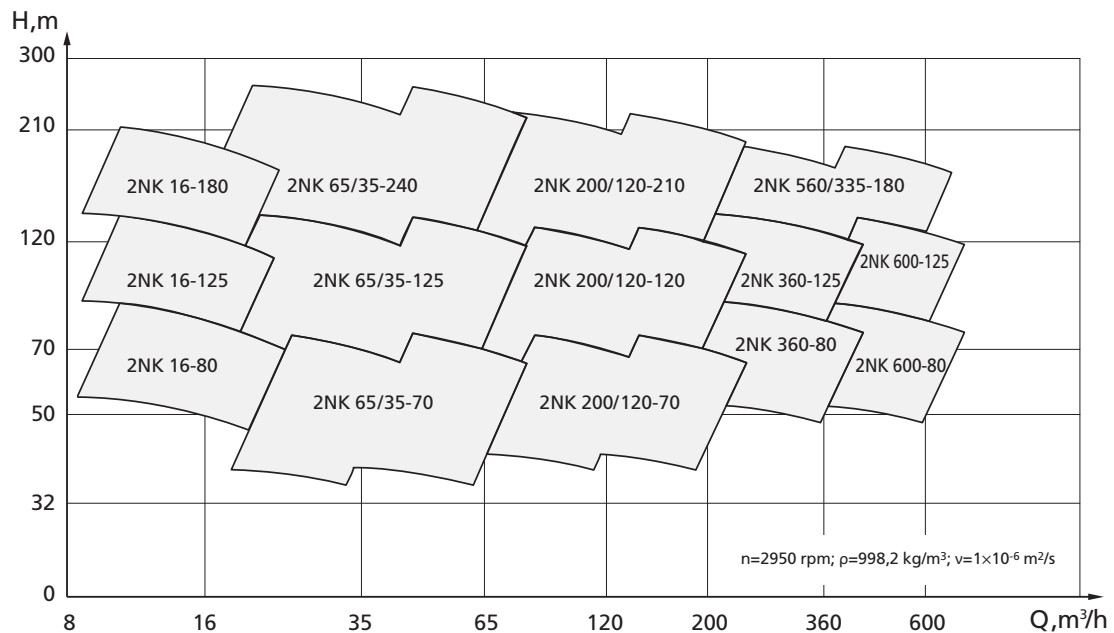
The design of pump and its base plate provide smooth operation in seismicity areas of up to 9 degree by EMS-98 / MSK-64 scales

2NK SINGLE-STAGE OVERHUNG PROCESS PUMPS



TECHNICAL DATA

- Capacity: 9 ... 720 m³/h
- Head: 35 ... 255 m
- Motor power: 7.5 ... 630 kW
- Temperature: -80 ... +400 °C



SCOPE OF SUPPLY

- Pump compliant with API 610 (latest edition)
- ANSI/ASME or DIN/EN compliant counter flanges by customer's choice
- API 682 compliant double or single mechanical seal (installed)
- API 682 compliant sealant system
- Flexible metal membrane coupling with guard (API 671 compliant coupling as an option)
- Explosion-proof electric motor (VFD speed control as an option)
- Motor adjustments bolts and leveling shims
- API 610 compliant rigid baseplate with anchor bolts
- In-skid piping, cables and terminal box
- Control instruments (bearing temperature and vibration, sealant system control)
- Set of spare parts for commissioning, start-up and 2 years of operation
- Operation manuals and documentation

HMS Group Moscow
International Sales Department

Phone: + 7 (495) 730 6601 (ext. 2112)

Fax: + 7 (495) 730 6602

E-mail: export@hms.ru

www.grouphms.com www.hms.biz

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