

Partnership in the Oilfield Processing

Within Business Unit Pumps & Systems, the Business Field Oil & Gas Downstream in cooperation with the subprocess "special pumps" is specialized in individual solutions for pump systems and skids in various processes of the oil industry.

It is Partnership that counts

As oil resources are limited and the global requirements are subject to change we deem it our job to optimize and improve our customers' processes. New, innovative technologies increase productivity and safety.

Quality comes first

Our high-quality products for the oilfield processing are manufactured according highest international standards in our own production plants in Germany, Brazil, China and India.

Responsibility for the Environment

The growing awareness of the environment challenged us to develop new solutions for pump systems in the off and on-shore areas.

Our Contribution to Partnership

- special internal and external trainings for customers
- flexibility
- customized solutions



It is Partnership that counts

Whether you are moving your fluid from the bottom of the well or from point to point on the surface, the best solution is the NETZSCH progressing cavity pumping system. It is an intelligent, flexible and efficient method for a wide range of fluid properties and volumes.

If offshore or onshore, NEMO® pumps can transfer crude oil, heavy oil, viscous oil and oil-gas-water-sand mixture. In the oil processing the pumps can optimize your process in separation, treatment, dehydration, H₂S and Sulfur removal and stabilization of the crude oil. In the shipping, the pump can process sewage and mud besides transferring fuel.

Engineering Partnerships

With our customers from all over the world we are able to incorporate the latest market trends and requirements

into the development and improvement of our products. Therefore new possibilities for your manufacturing process continually arise.

Driving Forces

Two different types of pumps are available for various process requirements: NEMO® progressing cavity pumps and NETZSCH TORNADO® rotary lobe pumps.

We are where you are

Competent and reliable advice, onsite; guarantees optimal service, fast response and delivery times. With more than 1,400 employees at six development and production sites as well as 25 sales offices, a cooperation partner and another 200 NETZSCH representatives we are close to you wherever you are.

Products and Components

Products and Components

NEMO® Progressing Cavity Pumps

- Standard pumps
- Hopper pumps
- Immersible pumps
- High pressure pumps
(injection pumps)
- Custom built pumps

TORNADO® Rotary Lobe Pumps

- Standard pumps
- Custom built pumps

NETZSCH Engineering

- Testing and quality control
- Inspection and certification
- Special documentation

NETZSCH Accessories

- Protection devices
- Flushing/Sealing pressure devices
- Control systems
- Trolley assemblies
- Tools
- Skids
- Valves

The highest standards for equipment and safety are a basic requirement for oil field work to ensure that processes remain safe and reliable. NEMO® and TORNADO® pumps contribute to such safety and reliability. The complexity of pump media ranges from highly viscous to low-viscous, from shearing-sensitive to heavily laden with solid matter. The sophisticated and reliable design meets the particular pump job requirements and contributes to efficient process control. These pumps meet the requirements of API 676 3rd edition and also NACE MR-0-175.

Wide Range of Applications

NEMO® progressing cavity pumps are normally used for fluids having the following properties:

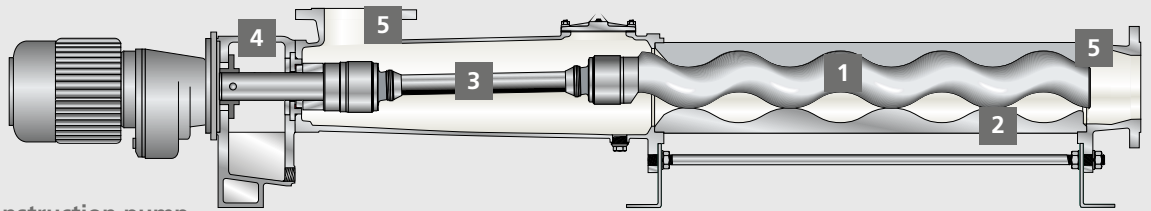
- Shear-sensitive
- Of low up to high viscosity
- With or without solids
- Dilatant or thixotropic
- Abrasive
- Adhesive

Quality and choice

We manufacture according to international standards and are certified according to DIN EN 9001: 2000. We weld in accordance with ASME IX and use materials such as Chromium-Nickel steels, Duplex and Super Duplex steels, Hastelloy, Titanium, as well as synthetic and ceramic materials. NBR, HNBR and Viton are employed as elastomers. Materials are coated with corresponding material products.

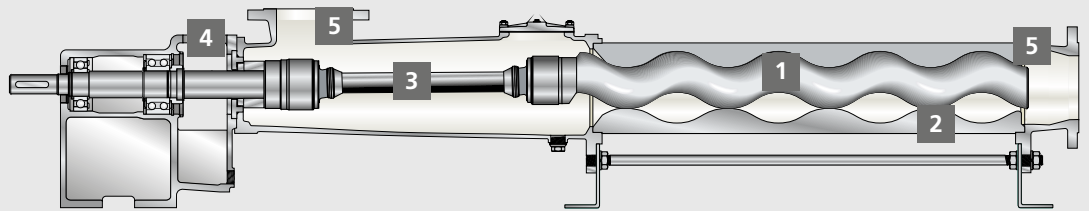
The shaft seals are available according to API 682 with installation space API 610. Stuffing-box packing, lip seals, single-acting mechanical seals with and without quenching, dual-acting mechanical seals (back-to-back or tandem) as well as shaft-seal-free designs with magnetic coupling. Thermosyphon systems according to API designs.

Design of NETZSCH Progressing Cavity Pump



NEMO® block construction pump

Compact design with flanged drive; low investment, operating and maintenance costs. Four rotor/stator geometries for optimised performance.



NEMO® bearing housing pump

Bare shaft pumps with double bearing for high torques in material cast iron. Connection to the drive through flexible couplings, spacer couplings according to DIN or API.

1 Rotor

Wear and corrosion resistant design in all usual materials, as well as Duplex, Super Duplex, 254 SMO, Monel etc. (materials acc. to NACE possible). The hardened rotor is ease to transfer medium with sand.

2 Stator

Vulcanised into a tube, with integrated seals on both ends in a variety of elastomers, plastics or metals. Stators with equal wall thickness for high temperature variations. We also supply special materials HSB, HNBR for products including H₂S and high temperature.

3 Drive Chain

Drive shaft and connecting shaft with coupling rod and two universal joints for power transmission from the drive to the rotor in all usual materials, as well as Duplex, Super Duplex, 254 SMO, Monel etc. (materials according to NACE possible). For high volume and high pressure application double seal pivot joint available. Its feature is high intensity, long-life and steady transmission.

4 Shaft Seal

Standard design with single acting, wear resistant mechanical seal independent of the direction of rotation; on request different types of single/double acting mechanical seals by various manufacturers, cartridge and special seals with circulation systems.

5 Suction and Pressure Housing

Flanges acc. to DIN, ANSI, JIS etc. or threads. Materials in Cast Iron, Cast Iron internal rubber-lined, Halar® coated, AISI 316 L or Ti, Duplex, Super Duplex, 254 SMO, Monel etc. (materials according to NACE possible).

NETZSCH Multiphase Pumps

NETZSCH Multiphase Pump

Applications

- Pumping of oil, gas or water mixtures with solids
- Pumping from the well to the manifolds or gathering stations

Large Range of Capacities and Pressures

- Flow rate from a few m³/h up to 600 m³/h (91,000 bpd)
- Pressure up to 60 bar



NM105SY
Capacity: 44-94 m³/h
Pressure: 18 bar
Medium: multiphase water, gas, crude oil, H₂S
Gas rate: 85%

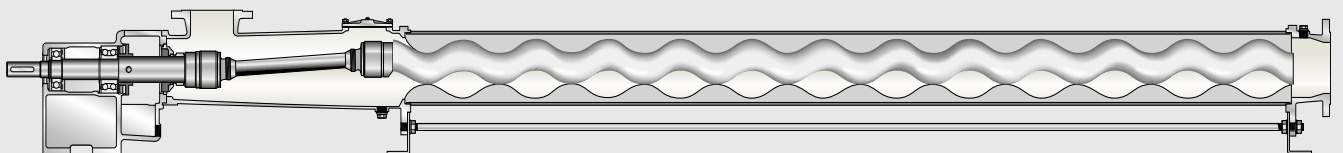


NM090SY
Capacity: 11,5-50-55 m³/h
Pressure: 23-30-35 bar
Medium: oil, water, gas
Gas rate: 35%

Advantages

- High content of sand and/or gas
- Low operating and maintenance cost
- Very low emulsify effect to oil/water mixtures
- Efficient transport of oil/water mixtures with a very high content of sand and/or gas
- Efficient transport of highly viscous products
- Almost pulsation-free pumping
- Installation in any position
- Efficient transport medium with high content of gas
- Near no shear rate

NM053SY
Capacity: 2-12 m³/h
Pressure: 28-40 bar
Medium: oil, water, gas 20-30%
Gas rate: 32%



NETZSCH Transfer- and Multiphase pump

NETZSCH Transfer NEMO® Progressing Cavity Pumps NETZSCH Transfer TORNADO® Rotary Lobe Pumps



NETZSCH Transfer Pump for low Pressure Applications

Large Range of Capacities and Pressures

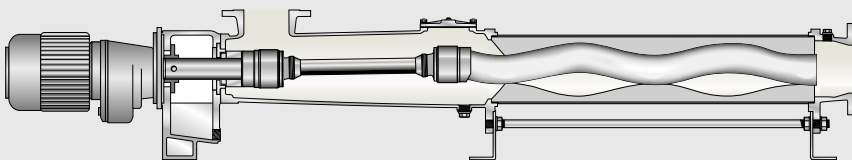
- Flow rate from a few m³/h up to 700 m³/h (91,000 bpd)
- Pressure up to 6 bar

Advantages

- Low operational cost
- Efficient handling of viscous mediums
- Transfer with high metering, repeated precision up to ±1 %
- Only low emulsion of oil/water mixtures

Applications

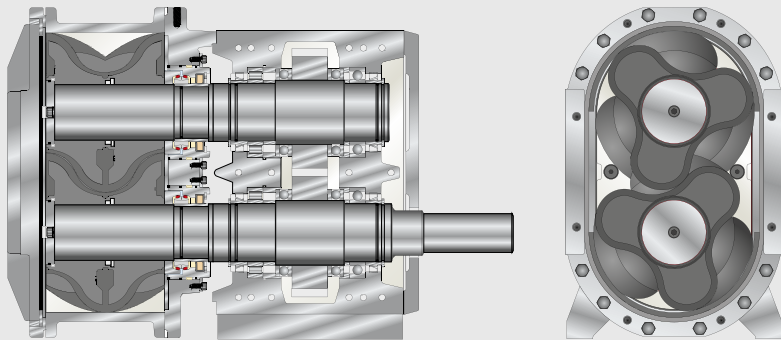
- Transfer viscous polymer from storage-tank to the polymer stations
- Transfer dilute polymer to well
- Transfer crude oil to unite station from well
- Pumping exhausted polymer
- Transfer sewage and mud
- Pumping of drilling sludge
- Pumping of slurries
- Pumping of cuttings
- Unloading of tank-truck (special version for low ambient temperatures)
- Tank cleaning



NEMO® High Flow Transfer Pump

TORNADO® Rotary Lobe Pump

The NETZSCH TORNADO® positive displacement, self priming, valveless pumps offer high performance and are selected and configured for the individual requirements of each application. They are designed for intermittent or continuous operation and provide gentle pumping of the pumped media and ideally suited to transfer, process and dosing applications.



Large Range of Capacities and Pressures

- Flow rate from a few m³/h up to 1,000 m³/h (151,000 bpd)
- Pressure up to 6 bar

Advantages

- Variable, modular system
- Robust and space saving design
- Three lobe geometries
- Highly abrasion resistant and replaceable protection plates on both faces of the housing
- Adjustable housing for long service life
- Standard mechanical seal, will accept any DIN 24960 seal (optional)
- The patented timing gear, together with separate seals for pump and drive housings prevent ingress of any product leakage
- Bearing shafts on the rotary lobes with polygonal plug-in connection simplify maintenance



NETZSCH Injection Pumps

NETZSCH Sump and Caisson Pumps



NETZSCH Injection Pump

Applications

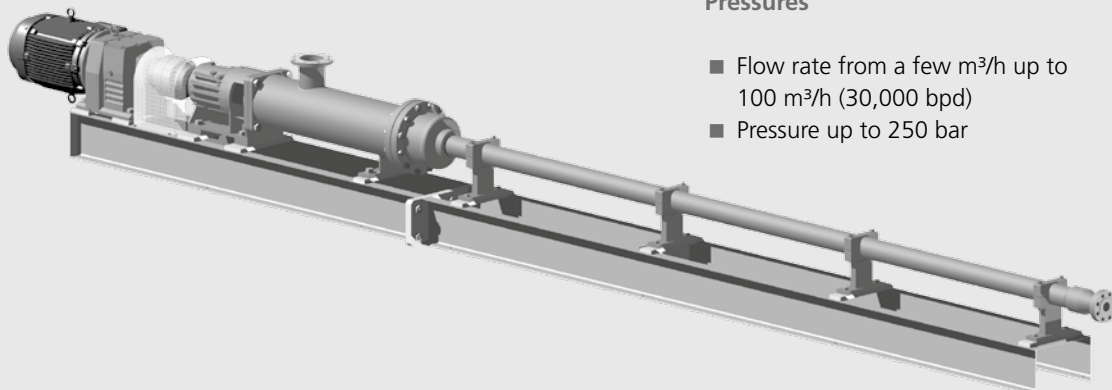
- Injecting water, produced water and slurry into oil well
- Injecting polymer into oil well
- Conveyance over long distances
- Conveyance at high systems pressure

Advantages

- Low operating and maintenance cost
- Low amount of wearing parts
- Efficient conveyance of highly viscous products
- Almost pulsation-free conveyance

Large Range of Capacities and Pressures

- Flow rate from a few m³/h up to 100 m³/h (30,000 bpd)
- Pressure up to 250 bar



NETZSCH Sump and Caisson Pump

Applications

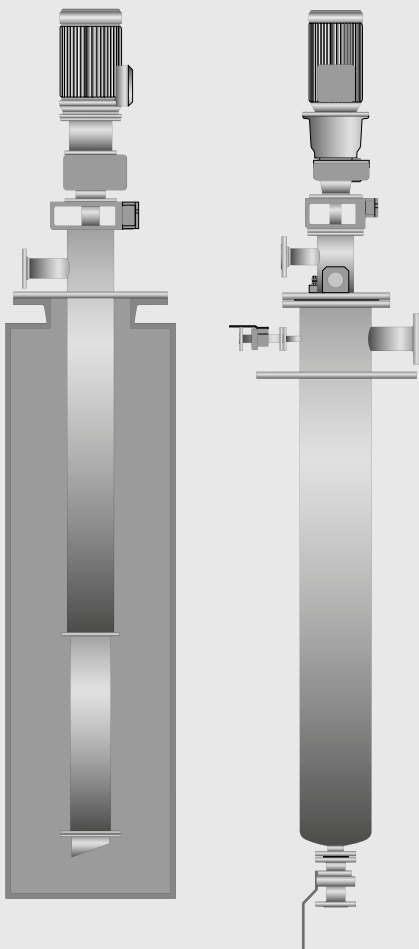
- Handling of reclaimed oil
- Oil-seawater
- Mud-seawater
- Emptying of crude oil wagon
- Emptying tanks
- Hydrocarbon condensate

Advantages

- Compact equipment
- High efficiency
- Transfer viscous medium with solid
- Avoiding dry-running because of medium directly into pump house
- Convenient installation
- Single or double acting seal according API 682 possible

Large Range of Capacities and Pressures

- Flow rate from a few m³/h up to 300 m³/h (45,000 bpd)
- Pressure up to 24 bar
- Immersible depth up to 12 m



PCP – Pump System

The Progressing Cavity Pump System



NETZSCH can offer a wide range of Upstream solutions

Your Contact for Upstream

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Efficiency

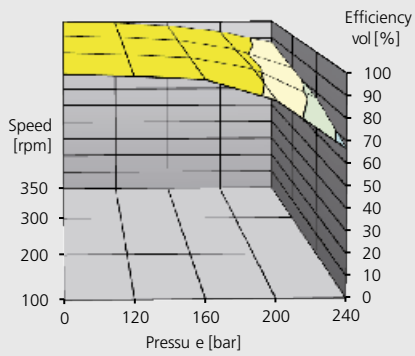
The NETZSCH downhole progressing cavity pumps (PCP) systems are simple in structure, have very few moving parts, low hydraulic losses and high efficiency in performance. The general efficiency is normally between 40% and 70%; compared to a 30% efficiency for plunger pumping units and 35% for electrical submerged centrifugal pumps.

The range of volumetric efficiency of NETZSCH downhole PC pump systems is 75% – 95%.

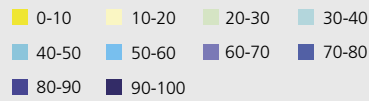
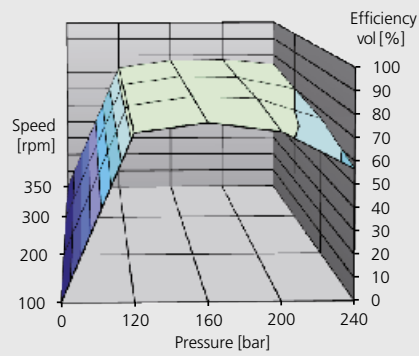
Efficient Handling of Fluid

- High viscosity oil – up to 5,000 cP at the well head
- High sand content – up to 40% at the suction side
- High gas content – app. 40% free gas at the suction side
- Water cut – up to 100%
- Density – up to 0.82 kg/dm³
- Temperature – up to max. 140°C
- Pressure – up to 300 bar
- Production – up to 300 m³/day (1,900 bpd)

Volumetric Efficiency



Overall Efficiency



Key Advantages

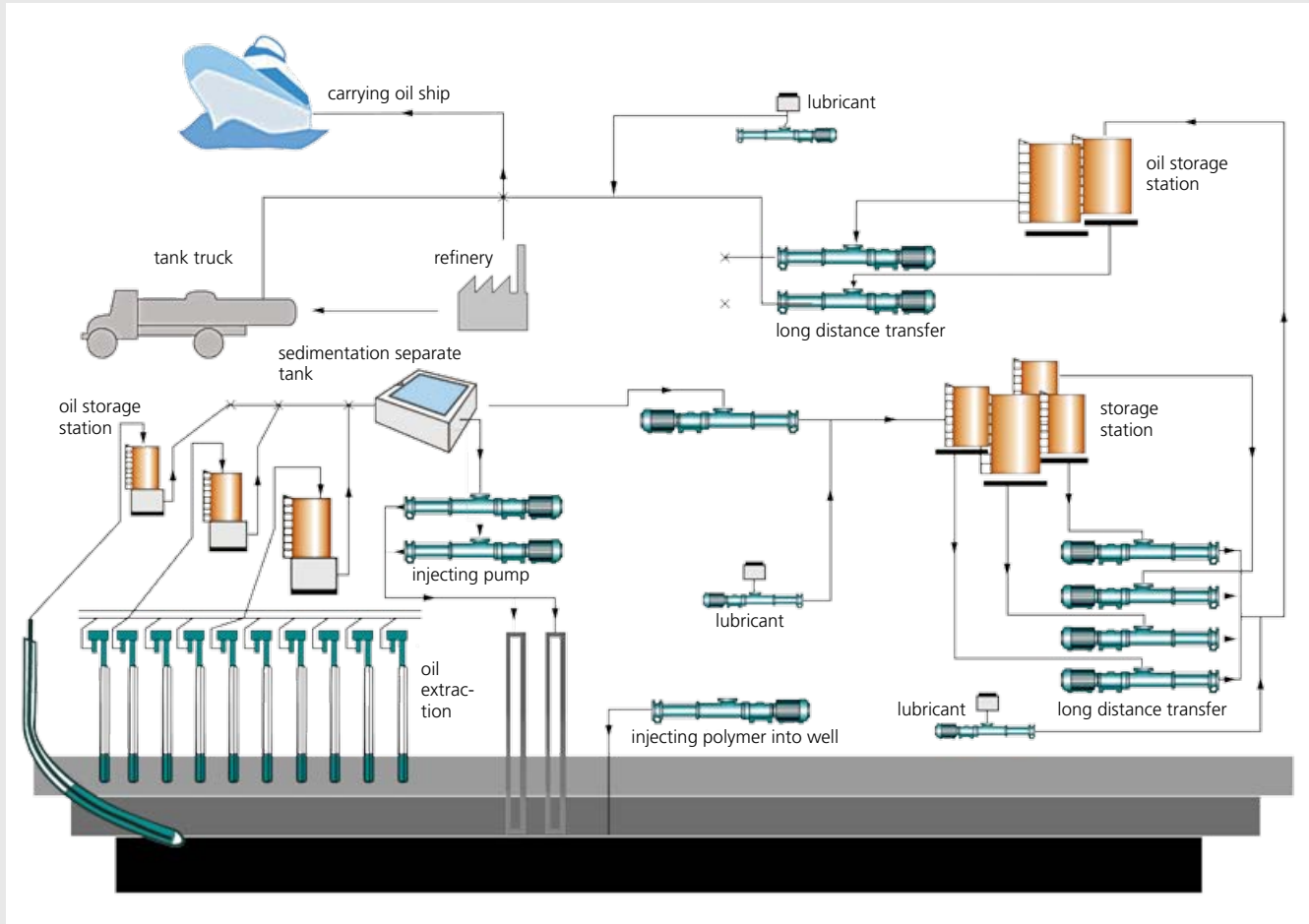
- Low operating cost
- Low investment cost
- Energy saving
- Easy production control

Application Range

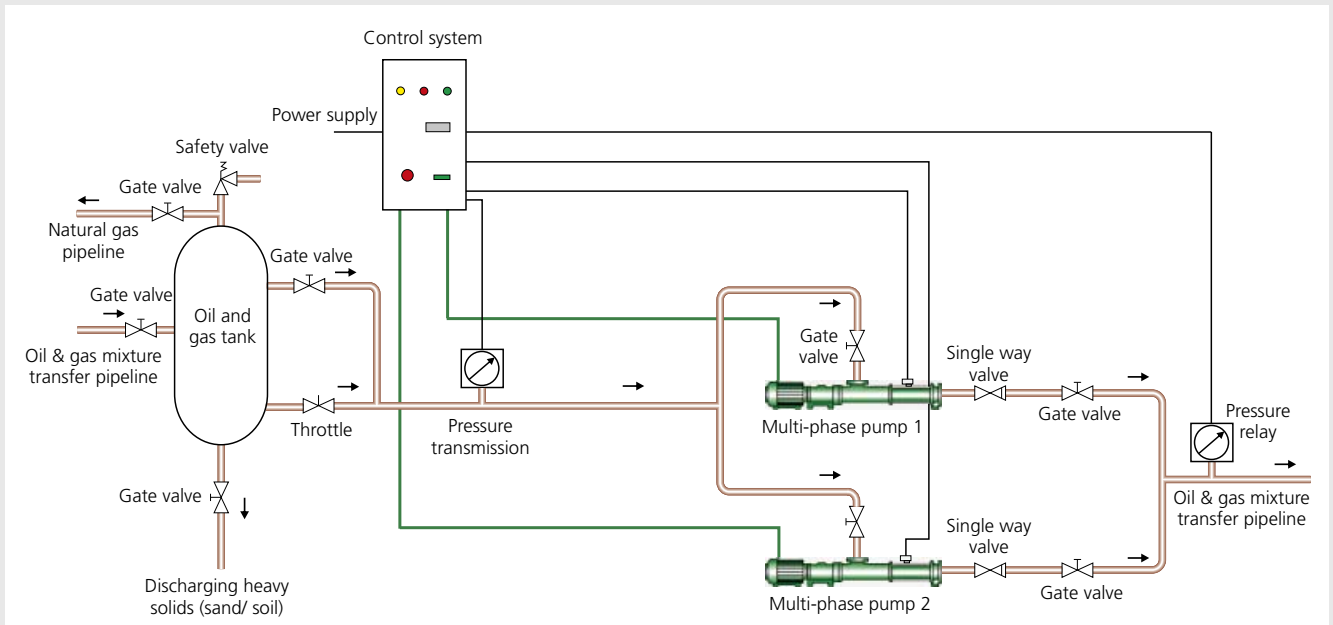
- Oil production
- Gas well deliquification
- Conveying of thermal water

Process Flowcharts

Application Process Flow Chart in Oil Field



System Chart of Pumping Separation Oil and Gases



Advantages

- Reducing investment cost for saving a pipeline for transfer gases
- Prolong the service life and raise efficiency for mitigating the operating load of oil pump and saving maintenance cost
- Realize a stable and high output of oilfields for reducing the backpressure at the mouth of the well and the leakage

Characteristics

Adopt an automatic constant pressure control system of inlet in the process of pumping blended oil and gases: a pressure transducer installed at the inlet can regulate the rate of flow of NEMO® pumps through the automatic constant pressure control system to reach a constant pressure at the inlet.

Overpressure guard installed at the outlet will alarm or stop pumping when the pressure at the outlet exceeds the pressure set.

The temperature sensor installed at the stator can avoid the damage of the stator resulted from dry running.

One of the two parallel-connected pumps is equipped with a transducer; they employ one control system and the control of the flows ranges from zero to the sum of the maximum flows of the two pumps.

Accessories

Safety Valves and Bypass System

- Safety valves and bypass system equipped between the inlet and outlet can protect the system.
- When pressure exceeds the rated pressure, safety valve is opening up and the mediums of outlet flew into pump house through bypass system.

Control Panel

- Frequency inverter
- Complete instrumentation
- Flowmeter

Diaphragm Pressure Gauge and Over Pressure Protection

- Gauge is isolated from the media by a generously dimensioned diaphragm
- Stainless steel diaphragm
- Display of operation pressure
- For highly clogging fluids
- Shutdown at the adjusted pump's maximum discharge pressure
- Pressure range of 0 ~10 / 0 ~16 / 0 ~25 / 0 ~ 40 bar

After Sales

- Commissioning on request
- Start-up on request
- Maintenance at site
- Training at site and inhouse

Heating Jacket Pump House and Dry Running Protection

When the temperature of the medium in the pump exceeds the set value or no medium passes through, the NEMO® pumps equipped with STP-2A dry running protective system will stop operation automatically. For special applications, such as the pumps are installed in cold region, we provide the pumps with a heat preservation jacket. When the hot water introduced into the jacket, the whole pump will be heated, hence the original temperature, viscosity, and fluidness of the medium will be ensured.

Data Sheet



To: NETZSCH Mohnopumpen GmbH

Fax: +49 8638 63-2333

Contact

company		country	
department		phone	
name of the oilfield		fax	
name		e-mail	
address		project name	
		project number	

Please send a quotation for units

Fluid Data

medium		water cut	<input type="text"/> [%]
fluid temperature	<input type="checkbox"/> [°C] <input type="checkbox"/> [°F]	solid content	<input type="text"/> [%]
oil gravity	<input type="checkbox"/> [°API] <input type="checkbox"/> [g/cm ³] <input type="checkbox"/> [kg/m ³]	H₂S content	<input type="checkbox"/> [%] <input type="checkbox"/> [ppm]
viscosity	<input type="checkbox"/> [cP] <input type="checkbox"/> [CST] <input type="checkbox"/> [mPas]	chloride content	<input type="checkbox"/> [%] <input type="checkbox"/> [ppm]
GOR	<input type="checkbox"/> [m ³ /m ³] <input type="checkbox"/> [m ³ /t] <input type="checkbox"/> [scft/b]	CO₂ content	<input type="checkbox"/> [%] <input type="checkbox"/> [ppm]
bubble point pressure	<input type="checkbox"/> [bar] <input type="checkbox"/> [psi]	particle size	<input type="checkbox"/> [mm] <input type="checkbox"/> [inch]

System Data

production rate	<input type="checkbox"/> [m ³ /d] <input type="checkbox"/> [m ³ /h] <input type="checkbox"/> [bpd]	discharge pressure	<input type="checkbox"/> [bar] <input type="checkbox"/> [psi]
suction pressure	<input type="checkbox"/> [bar] <input type="checkbox"/> [psi]	ambient temperature	<input type="checkbox"/> [°C] <input type="checkbox"/> [°F]

Electric Data or

Pneumativ or Gas Data or

Hydraulic Data

operating voltage	<input type="checkbox"/> V	air or gas pressure	<input type="checkbox"/> [bar] <input type="checkbox"/> [psi]	oil pressure	<input type="text"/>
cycles	<input type="checkbox"/> Hz	air or gas consumption	<input type="checkbox"/> [m ³ /min]	oil consumption	<input type="text"/>
protection		gas structure			

Options

<input type="checkbox"/> pump bare shaft	<input type="checkbox"/> base plate or moving device	<input type="checkbox"/> coupling	<input type="checkbox"/> shut off valves <input type="checkbox"/> relief valves
<input type="checkbox"/> control panel	Protection	Requirements	
<input type="checkbox"/> VSD	<input type="checkbox"/> mechanical <input type="checkbox"/> electrical <input type="checkbox"/> frequency		

Shipping Data

<input type="checkbox"/> EXW	ex works (defined location)	<input type="checkbox"/> FOB	free on board (defined port or shipment)	<input type="checkbox"/> CIF	cost insurance freight (defined port or destination)
<input type="checkbox"/> FCA	free carrier (defined location)	<input type="checkbox"/> CFR	cost and freight (defined port or destination)	<input type="checkbox"/> CIP	cost insurance paid (defined port or destination)

Signature and date

Comments