

# NETZSCH

Proven Excellence.



## NETZSCH Pumps compliant to API 676 3<sup>rd</sup> edition

Individual Solutions for Mid- and Downstream

Pumps & Systems

# NETZSCH API Compliant Pumps 676 3<sup>rd</sup> Edition

The highest standards for equipment and safety are a basic requirement for oil field work to ensure that processes remain safe and reliable.

NETZSCH offers pump systems consisting of a pump, drive, base plate and various accessories, which are meeting the requirements of API 676 3<sup>rd</sup> edition, NACE MR0175, MR0103, NORSOK and many more. The sophisticated and reliable design meets the particular pump job requirements and contributes to efficient process control.

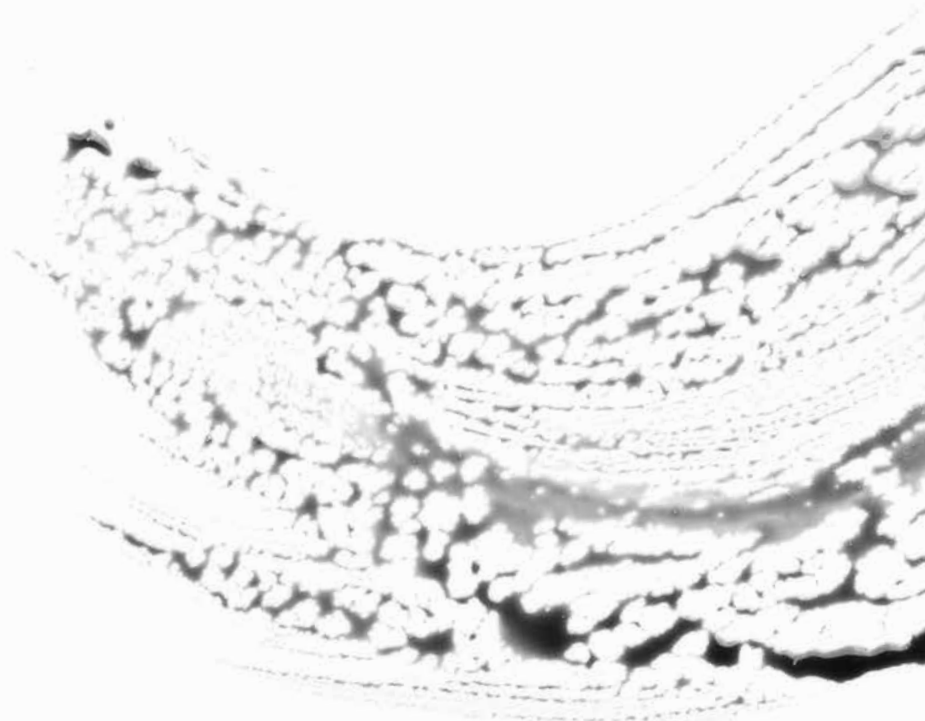
These systems are available with NEMO<sup>®</sup> Progressing Cavity Pumps, TORNADO<sup>®</sup> Rotary Lobe Pumps and NOTOS<sup>®</sup> Multi Screw Pumps. They contribute to improved safety and reliability due to their robust construction and intelligent system integration.

## Fluid Properties, pumped by NEMO<sup>®</sup> and TORNADO<sup>®</sup>

- Shear-sensitive
- Low to high viscosity
- With or without solids
- Dilatant or thixotropic
- Low to highly abrasive
- Adhesive
- Multiphase liquids

## Fluid Properties, pumped by NOTOS<sup>®</sup>

- Shear-sensitive
- Lubricating and non lubricating
- Low to high viscosity
- With low solid content
- Dilatant or thixotropic
- Low to medium abrasive
- Adhesive



# We face unique challenges

## with our pump solutions

### Wide Range of Applications

#### Enhanced oil recovery

- Water injection pumps
- EOR polymer transfer
- Surfactant transfer

#### Produced water management

- Produced water transfer and boosting
- Skimmed oil transfer

#### Well services

- Well Testing: Crude Oil Transfer
- Drilling mud: Decanter centrifuge feeding

#### Oil & Gas processing

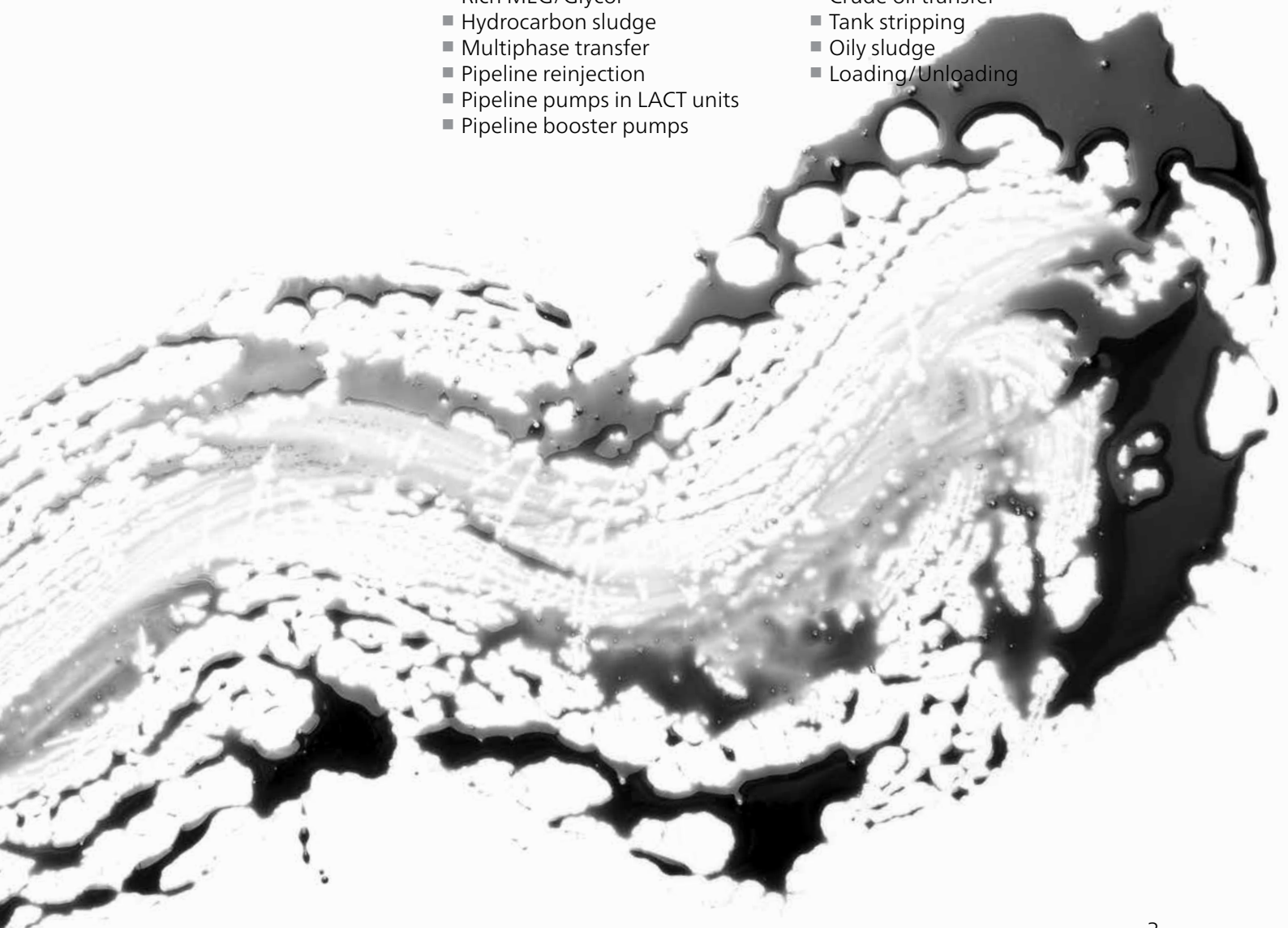
- Open & closed drains transfer
- Flare KO drum pumps
- Crude oil transfer
- Hydrocarbon condensate transfer
- Rich MEG/Glycol
- Hydrocarbon sludge
- Multiphase transfer
- Pipeline reinjection
- Pipeline pumps in LACT units
- Pipeline booster pumps

#### Refinery

- Asphalt, bitumen tower bottoms
- Fuel oils
- Kerosine, diesel
- Catalyst slurry
- Lubricant oil
- Oily water treatment
- Sludge transfer

#### Storage & Distribution

- Crude oil transfer
- Tank stripping
- Oily sludge
- Loading/Unloading



# Our Multi Screw Pump Family

The NOTOS® multiple screw pump family consists of three series in various arrangements which serve a wide range of industries and applications. The superior quality standard meets the highest level of requirements for our customers.

## 2NS – Two Screw Pump

- Flow up to 2,860 gpm / 650 m<sup>3</sup>/h
- Pressure up to 230 psi / 16 bar
- Temperature up to 570°F / 300°C
- Viscosity up to 100,000 cSt
- From non to light abrasive
- Corrosive
- Low to medium viscosities
- Lubricant fluids



## 3NS – Three Screw Pump

- Flow up to 1,760 gpm / 400 m<sup>3</sup>/h
- Pressures up to 1,450 psi / 100 bar
- Temperature up to 570°F / 300°C
- Viscosity up to 15,000 cSt
- Non abrasive
- Non corrosive
- Low to medium viscosities
- Lubricant fluids

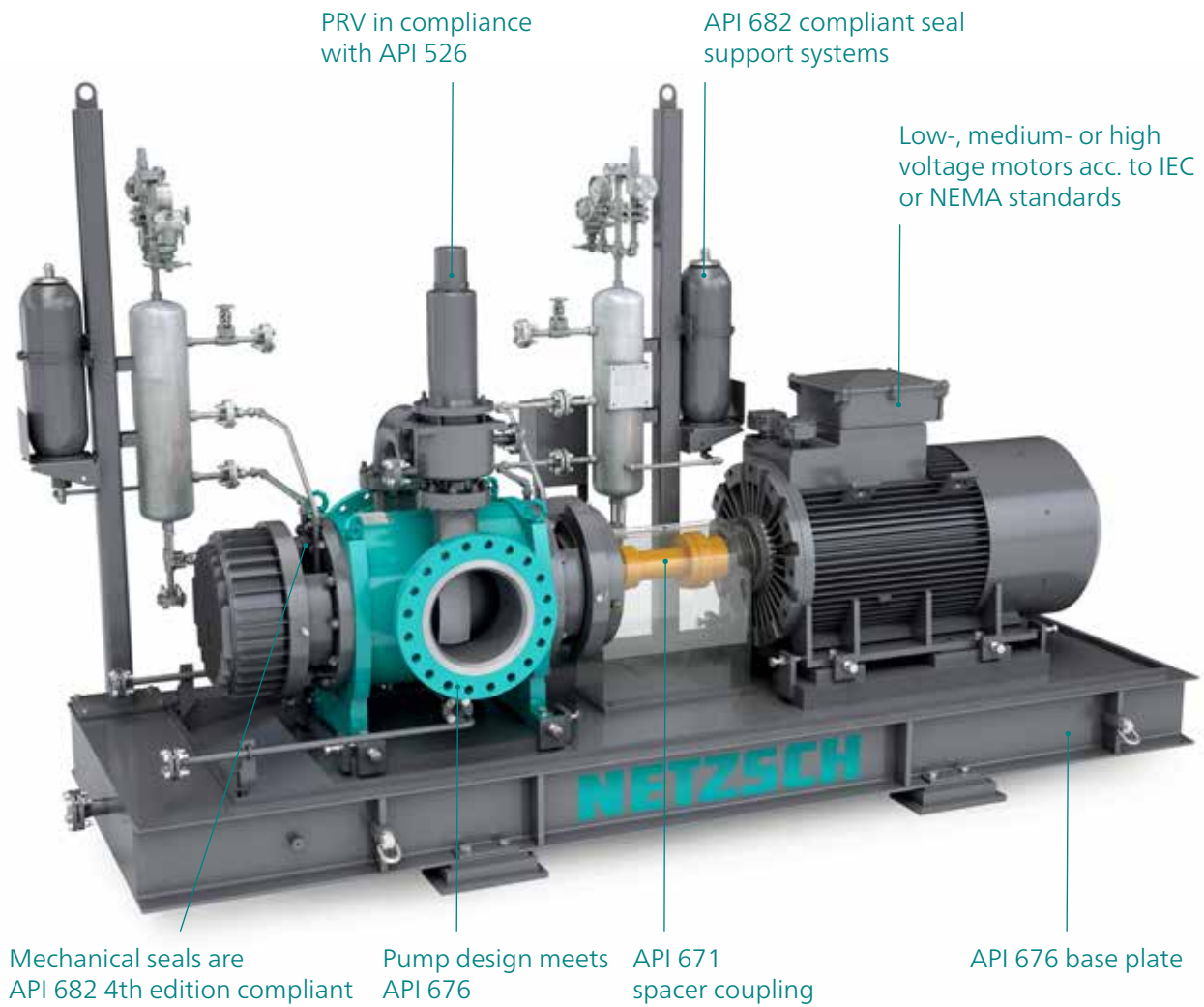


## 4NS – Geared Twin Screw Pump

- Flow up to 11,000 gpm / 2,500 m<sup>3</sup>/h
- Pressures up to 1,160 psi / 80 bar
- Temperature up to 570°F / 300°C
- Viscosity up to 200,000 cSt
- From non to medium abrasive
- Corrosive
- Low to high viscosities
- Non lubricant and lubricant fluids



# NOTOS® in API-Compliant Design



## Pump Data

- Pump type: 4NS – Geared Twin Screw Pump
- Capacity: up to 11,000 gpm / 2,500 m<sup>3</sup>/h
- Pressure: up to 1,160 psi / 80 bar
- Medium: Asphalt, bitumen, diesel, crude oil, polymer, produced water with or without traces of solid
- Medium temperature: up to 570°F / 300°C
- Ambient temperature: -49°F to +136°F / -45°C to +58°C

## Customer Benefits

- High performance with small footprint
- HEUD highest efficiency due to optimized screw profile
- One-piece screw design for maximum stiffness
- Customized design to fit individual needs
- Able to handle a wide range of temperatures and viscosities

## Safety Accessories

- Seal support system
- Pressure relief valve
- Leakage, temperature and vibration sensors
- Noise enclosure

# API Compliant Pump: TORNADO®

## Pump Data

- Pump type: TORNADO® T.Proc Rotary Lobe Pump
- Capacity: up to 4,400 gpm / 1,000 m<sup>3</sup>/h
- Pressure: up to 145 psi / 10 bar
- Medium: Oil, oily water, produced water, slurries and mixtures with gas
- Medium temperature: up to 302°F / 150°C
- Ambient temperature: -49°F to +136°F / -45°C to +58°C

## Customer Benefits

- Maximum wear resistance
- Available as rubber/metal or metal/metal construction to best fit individual requirements
- FSIP® Full Service-In-Place. Can be serviced in the oilfield.
- Oil free design

## Safety Accessories

- Dry running protection
- Pressure relief valves
- Seal system
- API base plate

API Seal System:  
We offer all relevant API seal plans

Component mechanical seal or cartridge type:  
Compliant to API 682

Pump head: Easy to access for maintenance

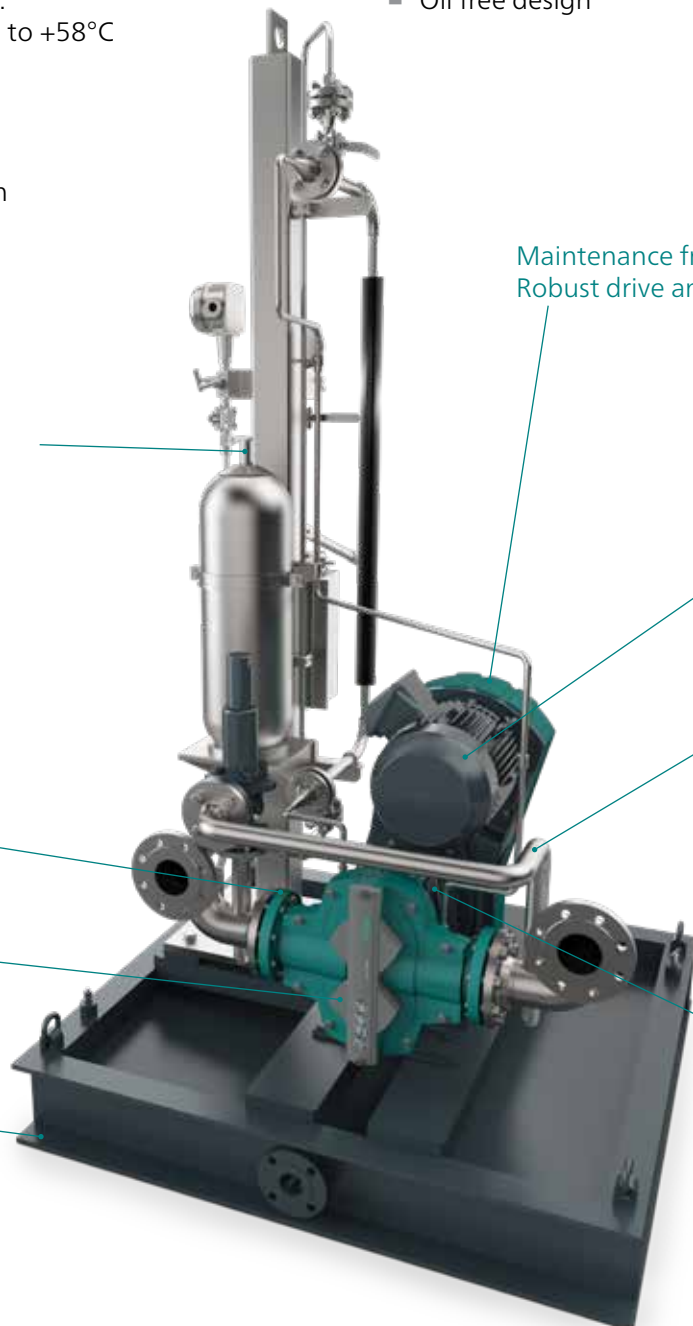
API Baseplate

Maintenance free:  
Robust drive and timing belt

Motor acc. to IEC or NEMA standard

By-pass with pressure relief valve

Life time lubricated bearing housing, oil free



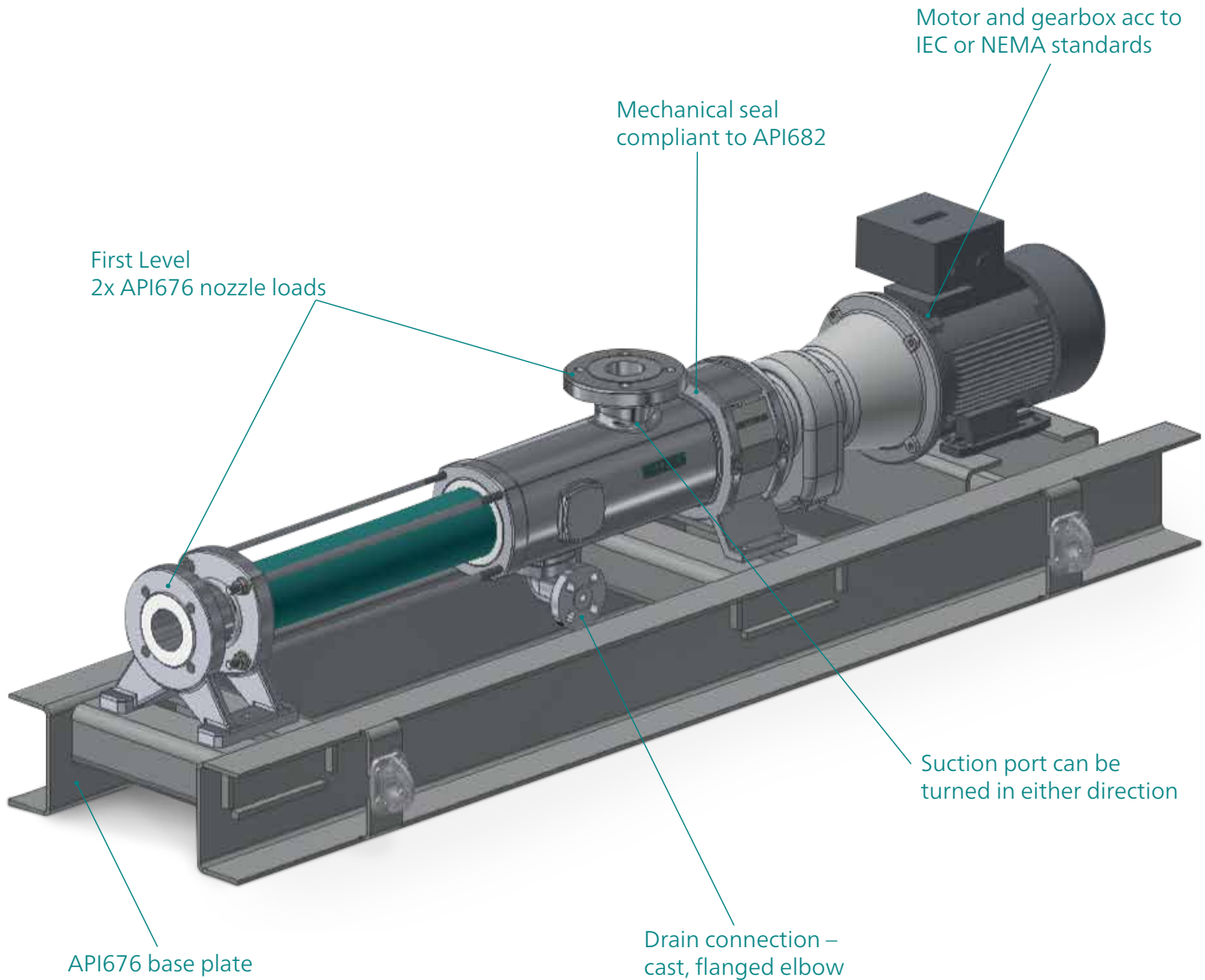
# API Compliant Pump: NEMO®

## Pump Data

- Pump type: NEMO® Progressing Cavity Pump
- Capacity: up to 485 gpm / 110 m<sup>3</sup>/h
- Maximum allowable working pressure (MAWP): up to 720 psi / 48 bar
- Medium: Produced water, slurries, polymer, MEG, crude oil with or without solid
- Casing design pressure: 725 psi / 50 bar
- Special feature: NORSOK/NACE MR0175/MR0103 on request

## Customer Benefits

- All pressurized parts cast – no welding documentation
- Less documentation, inspections and less risk in manufacturing
- More robust – 2xAPI 676 nozzle loads standard
- Reduced lead times

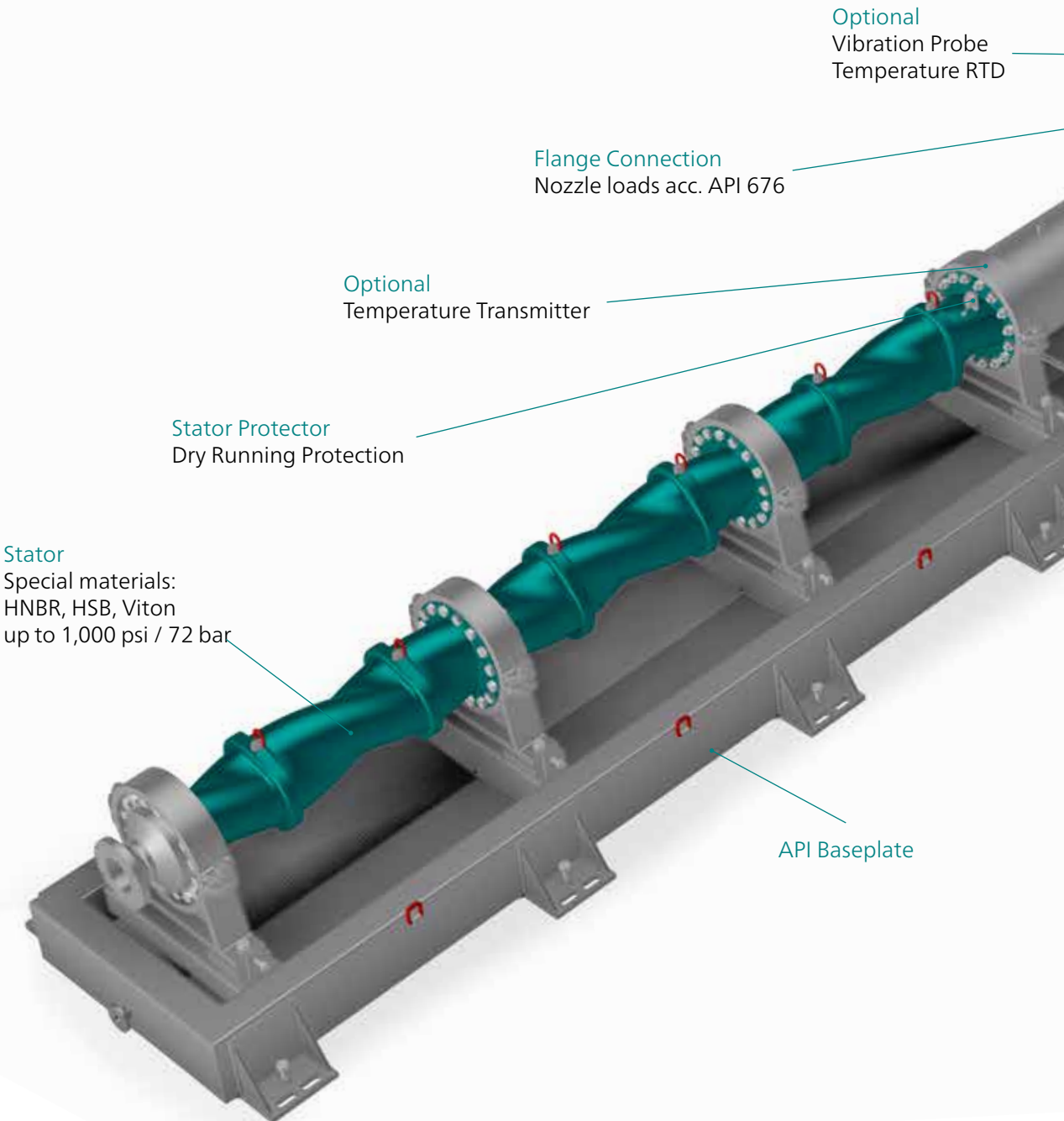


# NETZSCH API Compliant Pump 676 3<sup>rd</sup> Edition

As an example of the fulfillment of the API requirements please see the NEMO® L.Cap® pump, detailed below: the biggest progressing cavity pump in the world.

## Safety Accessories

- Pressure relief valves according API
- Pressure monitoring
- Overpressure protection and many more



Optional  
Vibration Probe  
Temperature RTD

Flange Connection  
Nozzle loads acc. API 676

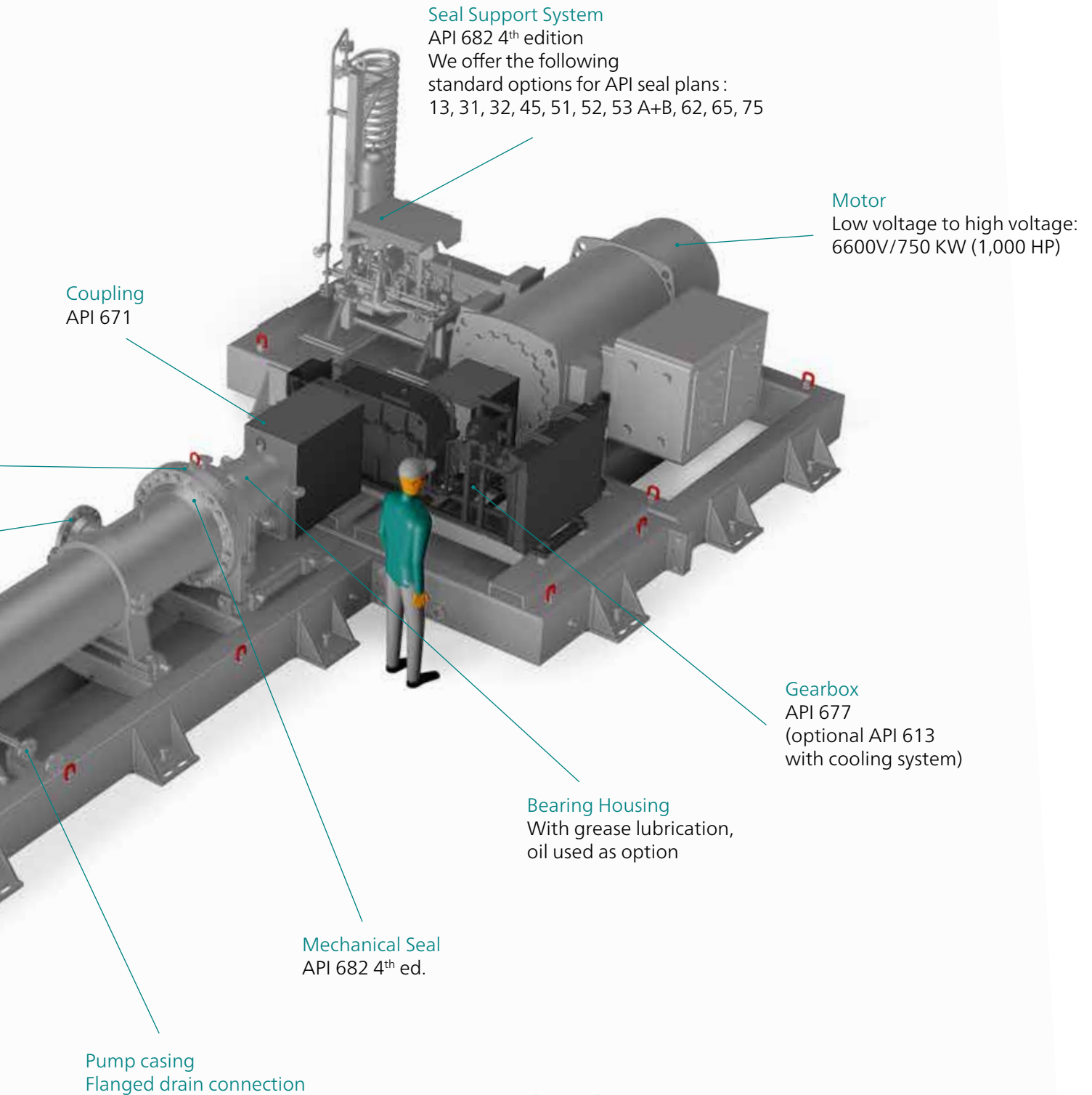
Optional  
Temperature Transmitter

Stator Protector  
Dry Running Protection

Stator  
Special materials:  
HNBR, HSB, Viton  
up to 1,000 psi / 72 bar

API Baseplate





### Pump Data

- Pump type: NEMO® L.Cap® Progressing Cavity Pump
- Capacity: Up to 4,400 gpm / 1,000 m<sup>3</sup>/h
- Pressure: Up to 1,000 psi / 72 bar
- Medium: Oil, gas or water mixtures with solids
- Medium temperature: Up to 302°F / 150°C
- Ambient temperature: -49°F to +136°F / -45°C to +58°C

# Applications

## NEMO®

### progressing cavity pump

- Application: Multiphase Transfer
- Pump: NM148
- Multiphase: Crude Oil with water, sand and gas
- Flow: 660 gpm / 150 m<sup>3</sup>/h
- Pressure: 375 psi / 26 bar
- GVF: 70%



## TORNADO® T2

### rotary lobe pump

- Application: Oily water with H<sub>2</sub>S
- Pump: TORNADO® T2 rotary lobe pump
- Media: Oily water
- Flow: 150 gpm / 35 m<sup>3</sup>/h
- Pressure: 70 psi / 4.8 bar
- Temperature: 68°F to 104°F / 20 to 40°C
- Viscosity: 0.5 to 200 cSt



## NOTOS®

### multi screw pump


- Application: Fuel Oil Transfer
- Pump: NOTOS® 4NS
- Geared twin screw pumps
- Media: Fuel oil 1A
- Flow: 570 gpm / 130 m<sup>3</sup>/h
- Pressure: 220 psi / 15.1 bar
- Temperature: 140°F / 60°C
- Viscosity: 605 cSt



# NETZSCH Seal Support Systems

According to API 682 4<sup>th</sup> edition the pump supplier is responsible for the complete unit including the sealing system. With the design of the NETZSCH system we achieve the integration between seal and the respective support systems. As a result, your process will become more reliable and efficient.





The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. More than 4,000 employees in 36 countries and a worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence - exceptional performance in everything we do, proven time and again since 1873.

The NETZSCH Business Unit Pumps & Systems offers NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO™ peristaltic pumps, macerators/grinders, metering technology and equipment custom built for challenging solutions for different applications globally.

## Proven Excellence.■

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