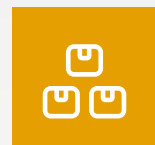


# NETZSCH

Proven Excellence.



Products & accessories

## Product Range

Technology & Applications for Positive Displacement Pumps & Grinding Systems

Pumps & Systems

# NETZSCH Pumps & Systems

YOUR GLOBAL PARTNER FOR CONVEYING COMPLEX MEDIA

For more than 70 years, NETZSCH has manufactured and sold positive displacement pumps worldwide. Designed specifically for difficult pumping situations, NETZSCH pumps range in size from the industry's smallest metering pumps to high volume pumps for applications in the oil and gas or mining industries.


In 1951, the NETZSCH Group acquired the license to manufacture and distribute progressing cavity pumps according to the Moineau principle. These progressing cavity pumps are distributed under the name NEMO®, composed of the inventor and the company name: NETZSCH + MOINEAU = NEMO®.

Since 2002, NETZSCH has also successfully developed and marketed rotary lobe pumps for a constantly growing number of applications under the TORNADO® brand name.

Since 2014, NETZSCH sells the NOTOS® multi screw pumps, developed in Brazil, on a global basis. The product range comprises 4 design series with 2, 3 and 4 screws as well as an hygienic design 2NSH for various applications.

This product portfolio is complemented by the robust PERIPRO® peristaltic pump. The PERIPRO® is also available in versions for the industrial, chemical and food sectors.

Our M-Ovas® cutting plate macerator, the N.Mac® twin shaft grinder and dosing technology products round off the range of our products as well as accessories and our competent service network worldwide.



Pumps and systems have been manufactured at the Waldkraiburg site for 70 years.

**The NETZSCH pump product range has four product lines: NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps and PERIPRO® peristaltic pumps.**

**Each type of our rotating positive displacement pumps ensures the following:**

- the medium is conveyed with low shearing rates
- the medium is dosed with low pulsation, accurately and reliably
- the volumetric flow is conveyed irrespective of solid content
- the volumetric flow is conveyed proportionally to the speed
- highly viscous and solid-containing media are conveyed
- the pumps are self-priming
- non-vapor and air locking operation
- low noise levels
- flexible operation and mounting options
- no blockages occur thanks to the valve-free design

Thanks to their modular design, NEMO® pumps can be tailored precisely to the specific application. Different materials, geometries and sealing systems can be combined to suit individual requirements.

Our experience in developing and manufacturing positive displacement pumps is also reflected in the TORNADO® rotary lobe pump. The pump is the ideal complement to our NEMO® product line and is perfect in particular for space-saving installation, as a mobile pump and for applications with moderate to high flow rates at moderate pressures. It has a compact design and is a very efficient pump.

The NOTOS® screw pump is suitable for low- to high-viscosity fluids, as well as for fluids with low and high levels of lubrication. It provides the necessary water pressure for reverse osmosis or is used, for example, to supply oil to hydrostatic bearings or to adjust turbine blades, as is required, for instance, in hydroelectric power stations.

Sludges, slurries and products with a high solids content or that are very abrasive such as lime milk are not a problem for the PERIPRO® pump. Its robustness is achieved with the use of very strong materials, integrated bearings, large-size rollers and a system of reliable and very secure connections that prevent leakages. This pump is also available in a particularly resistant chemical version and in a hygienic food version.

**All NETZSCH pumps can be used in a wide range of applications. The following are a few examples:**

- Bonding and sealing
- Chemical
- Dosing
- Environmental technology
- Food and beverages
- Marine industry
- Mining
- Oil & gas production and transfer
- Paints and coatings
- Paper industry
- Pharmaceuticals and cosmetics
- Renewable energies
- Water and waste water treatment

NETZSCH pumps are produced both at our headquarters in Germany and also at our production sites in Brazil, China, India and the USA. Sales offices in many European countries, Africa and the United Arab Emirates, as well as on the Asian continent, in Australia and the Americas are selling the pumps close to the customer.

# Development, Production, Sales & Sites

## Our product range

For more than 70 years, we have been providing tailor-made, high-performance solutions for your applications on a global scale with our NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO® peristaltic pumps, grinding systems, dosing technology and accessories.

## Our production

With a production of over 75,000 pumps per year we underline our technology and market leadership, which we have gained thanks to the quality of our pumps and spare parts. It is guaranteed by the core competence and a high level of vertical manufacturing which we have built up over many years.

## Our core expertise

Elastomer research & development and production is in-house at NETZSCH. The elastomers sold under the NEMOLAST® brand for stators, rotary lobes and housing inserts are optimised for each specific application. NETZSCH also develops and manufactures rotors in numerous geometries, made of various metallic and ceramic materials for optimum performance and service life.

## Our quality

With the worldwide implementation of common standards in accordance with DIN EN ISO 9001 in development and production we guarantee the highest quality at each production site.

## Our sites

With more than 3,000 employees at five development and production sites as well as 30 sales offices, a co-operation partner (in Japan) and over 200 NETZSCH representatives we are close to you wherever you are.

## Our strategy

Our development and sales activities are focused on trend-setting technologies and applications, to expand our market and technology leadership for the benefit of our customers. Hereby we don't see ourselves only as a developer and manufacturer, but more as your partner from project planning through case management to complete service concepts.

## Europe, Middle East, Africa

NETZSCH Pumpen & Systeme GmbH  
Waldkraiburg, Germany



## USA and Canada

NETZSCH Pumps North America, LLC, USA



## South Asia

NETZSCH Technologies India Private Ltd., India



## Central and South America

NETZSCH do Brasil Ltda.  
Pomerode, Brasil



## East Asia

NETZSCH Lanzhou Pumps  
Lanzhou, China



# Product Range

## PRODUCTS AND COMPONENTS

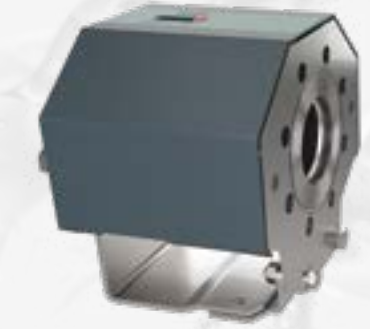
Faster development cycles coupled with constantly increasing process requirements call for ambitious and uncompromising solutions in all industries. We understand and meet the requirements of our customers thanks to our global business field structure employing experienced and competent specialists.

For every application we offer you the optimum pump or the best system from our comprehensive product range.



**PERIPRO®**  
Peristaltic Pumps

- Variants for industry, chemistry and food production



**NETZSCH**  
Accessories

- Protection devices
- Flushing/ counter-pressure devices
- Control units
- Transport devices
- Tools and much more
- xLC® stator adjustment system
- iFD-Stator®



**NEMO®**  
Progressing Cavity Pumps

- Standard pumps
- Hopper pumps
- Hygienic and aseptic pumps
- Immersible pumps
- Downhole pumps
- Multiphase pumps
- Highpressure pumps
- Custom built pumps



**NETZSCH Dosing and Barrel Emptying Systems**

- Barrel emptying systems
- 1K dosing systems
- Dispenser



**TORNADO®**  
Rotary Lobe Pumps

- T1-F, T.Proc®, T.Sano®
- Mobile pumps
- Custom built pumps



**NETZSCH**  
Grinders

- M-Ovas® Cutting plate macerator
- N.Mac® Double shaft grinder



**NOTOS®**  
Multi Screw Pumps

- 2 Screw Pump in the hygienic design: 2 NSH
- 2 Screw Pump: 2 NS
- 3 Screw Pump: 3 NS
- 4 Screw Pump: 4 NS

# NEMO® Progressing Cavity Pumps

## FEATURES AND DESIGN

NEMO® progressing cavity pumps are used in all industry sectors to convey almost all types of media continuously, pressure resistant, with low pulsation and in proportion to speed.

### **Broad range of applications**

The pumps are primarily used with media that have the following features

- Containing solids (max. solid size up to 150 mm) and free of solids
- Low to high viscosity (1 mPas – 3 million mPas)
- Thixotropic and dilatant
- Shear sensitive
- Abrasive
- Non-lubricating and lubricating
- Aggressive (pH 0 – 14)
- Adhesive
- Toxic

### **Large capacity and pressure range**

- Flow rates from just a few ml/h up to 400 m<sup>3</sup>/h
- Number of stages ranging from 1 to 8 for pressures from 6 to 48 bar (standard) or up to 240 bar (high pressure)

### **A range of different conveying elements**

Four different rotor/stator geometries are available to ensure the design is optimally adapted to the specific task.

### **Wide range of materials**

Our range of metallic materials extends from simple grey cast iron and chrome-nickel steel to highly acid-resistant materials such as Duplex, Hastelloy and titanium to suit different conveying tasks. Ceramics and plastics round off the list for aggressive and abrasive applications. The range of elastomers extends from those with high abrasion resistance to those resistant to oil, acids and alkalis. For products in which elastomers cannot be used because of high temperatures or for reasons of durability, a large number of solidbased stators made from plastics or metallic materials is available.

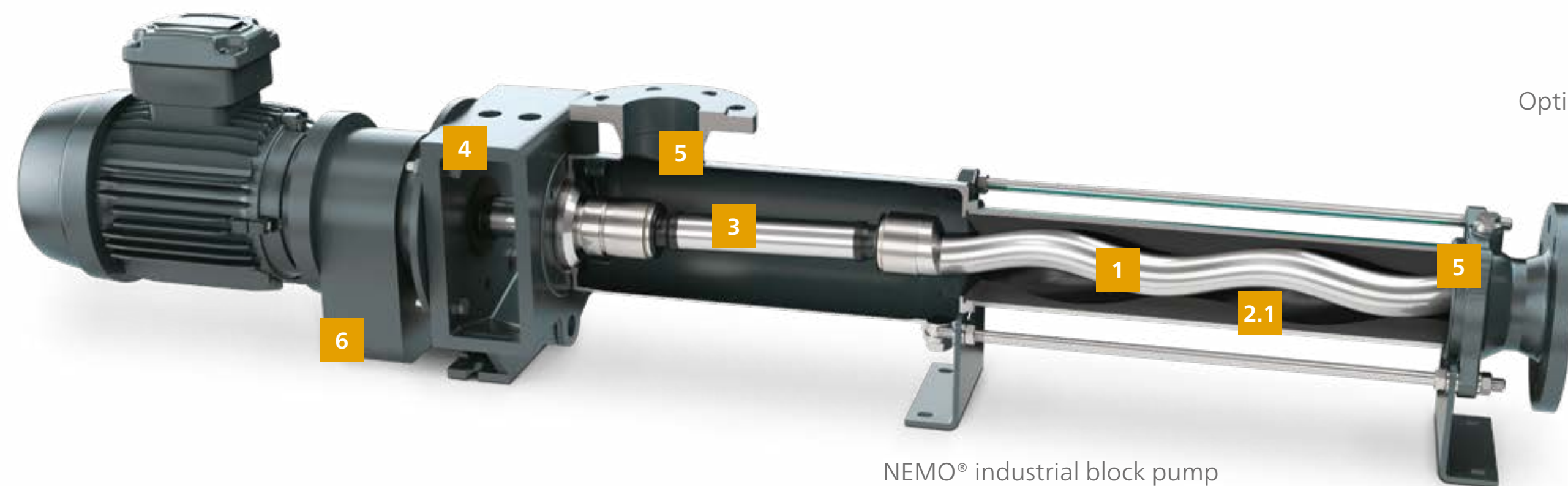
### **Large variety of shaft seals**

The range of mechanical shaft seals includes simple mechanical seals with or without quench, double-acting mechanical seals arranged back to back or in tandem, and cartridge seals. For specific applications, stuffing-box packing, lip seals and special seals are available. A pump with magnetic coupling is available for use with toxic media – to guarantee 100 % that there are no leaks.

### **Additional features**

- High suction capacity – up to 9 mWC
- Direction of rotation and flow can be reversed
- Can be installed in any position
- Quiet, smooth running
- Temperatures from -20 °C to + 160 °C

**Technical details**



NEMO® industrial block pump

Optional: iFD-Stator® 2.0



1

### Rotor

From wear- and corrosion-resistant metal designs to the wear-free ceramic rotor NEMO CERATEC®.

2

### Stator

We manufacture stators according to the latest standards. Minimised tolerance ranges thereby optimise the performance of the pump. Our unique, fully networked production and process data monitoring system, developed

in-house, is backed up by consistent quality testing.

2.1

### Stator with conventional technology

The stator inlet is vulcanised into the tubes with integrated seals on both ends. Stators made of plastic or metal are also available. Stator inlet with cone-shaped opening to improve product feeding into the conveying chamber.

2.2

### Stator with iFD-Technology

The iFD-Stator® consists of a two-part reusable housing with a polygonal profile and the NEMOLAST® elastomer housed within. The advantages of this new technology include a lower breakaway torque, higher efficiency, increased service life, simple and quick replacement, and environmentally friendly disposal.

3

### Drive train

The drive and connecting shaft with coupling rod and two gimbal joints provide the power transmission from the drive to the rotor. Alternatively, also available with a flexible coupling rod without joint.

4

### Shaft sealing

Standard design with single-acting, wear-resistant, bi-directional mechanical seals. On request, single-/double-acting mechanical seals from a range of manufacturers, as well as cartridge and special seals and stuffing-box packing.

5

### Suction and pressure housing

Hydrodynamic design with flange or thread connections in accordance with DIN and international standards. Grey cast iron, stainless steel, rubber-lined or Halar®-coated, and special materials as per requirements.

Halar® is a registered trademark of Solvay Solexis

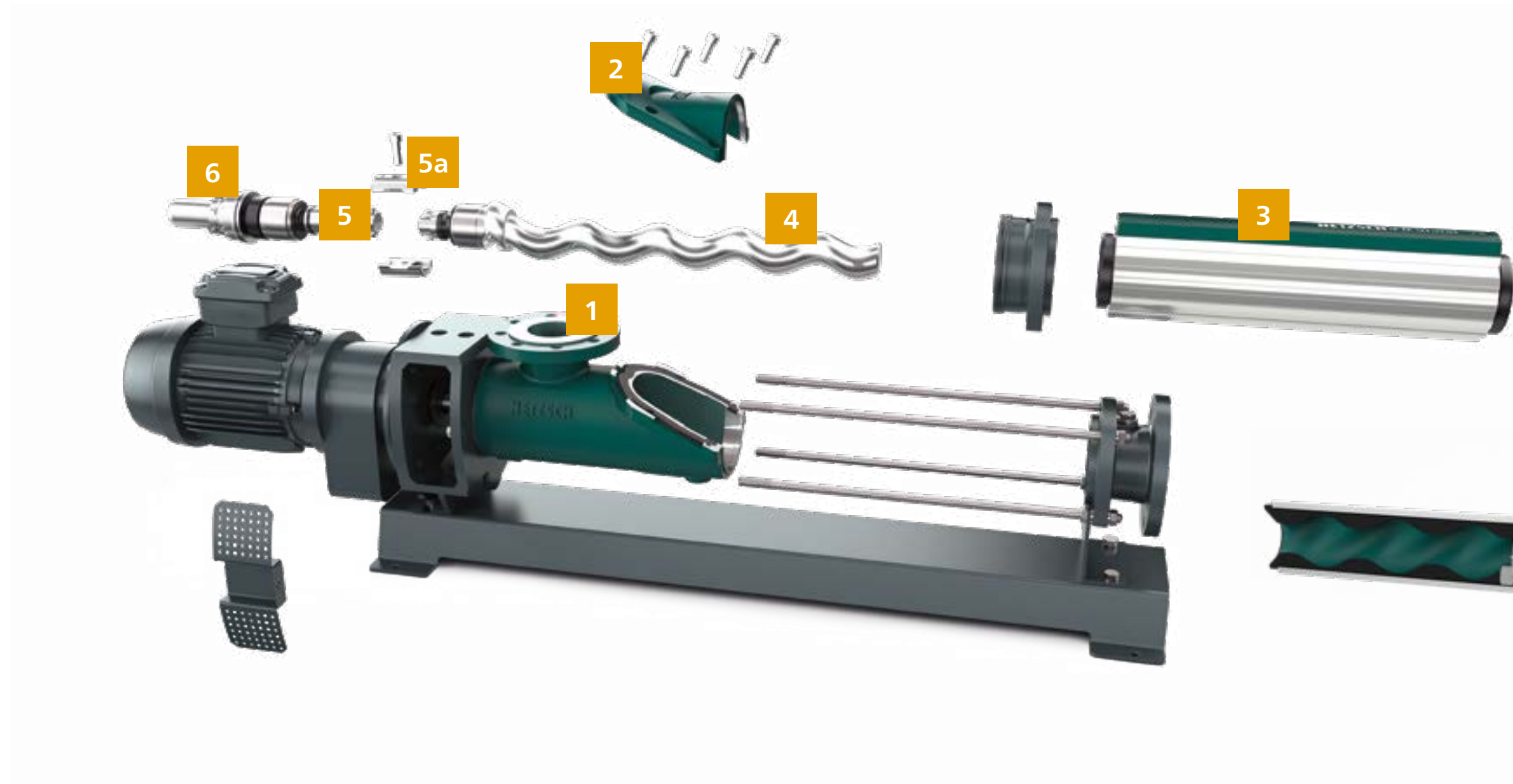
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### Block design

As the drive is directly flanged onto the pump's lantern, the dimensions are compact, the overall weight is low, the shaft heights are constant irrespective of the design and size of the drive – the pump requires low service, is easy to maintain and economical.

# „Full Service in Place“

Pump service without removing the pump from the system



## 1 Housing in FSIP® design with inspection cover

The FSIP® design of the suction housing mainly differs from the standard design due to the large inspection cover, but the dimensions remain unchanged. All installed NEMO® BY/SY pumps can be upgraded without any problem. After this upgrade you can fully service the pump while it is installed. All wetted parts are

immediately accessible. All wearing parts can be replaced in less than half the time.

## 2 Inspection cover

The inspection cover is fixed by only a few screws which can be easily removed without special tool.

## 3 Stator with iFD® technology

The stator consists of a reusable

stator housing and an exchangeable elastomer part. The benefits of the technology are a reduced starting torques, higher degree of efficiency, prolonged lifetime, easier and faster change of the wear part and environmentally friendly disposal. In combination with the housing in FSIP® design there is the additional benefit that the rotor/stator can be changed simply and quickly outside the pump and without pre-tensioning, once the stator housing has been

opened. The rotating unit can simply be lifted out and leaves the pump open from flange to flange. The previously mandatory stator expansion length is no longer required, which significantly reduces the installation space needed.

## 4 Rotor

In wear- and corrosion-resistant designs, various materials on request.

## 5 5a Drive train and sleeve coupling

Removing the inspection cover from the FSIP® pump you gain access to a sleeve coupling which joins the rotor to the coupling rod. Here only one screw has to be removed to split both elements from each other.

## 6 Shaft sealing

Standard for the FSIP® concept is a single-acting, non-directional and wear-resistant mechanical seal, which can be easily removed through the large inspection opening. Other options upon request.

## 7 xLC® stator adjustment unit

The xLC® unit is attached to the flange of the elastomer part of the stator and can compress or stretch it. In the event of wear, axial compression of the elastomer increases the preload between the rotor and stator, thereby compensating for the wear.

# NEMOLAST® & NEMOSOL®

ELASTOMER AND THERMOPLASTICS DEVELOPED, CONTINUOUSLY TESTED AND OPTIMISED AT NETZSCH

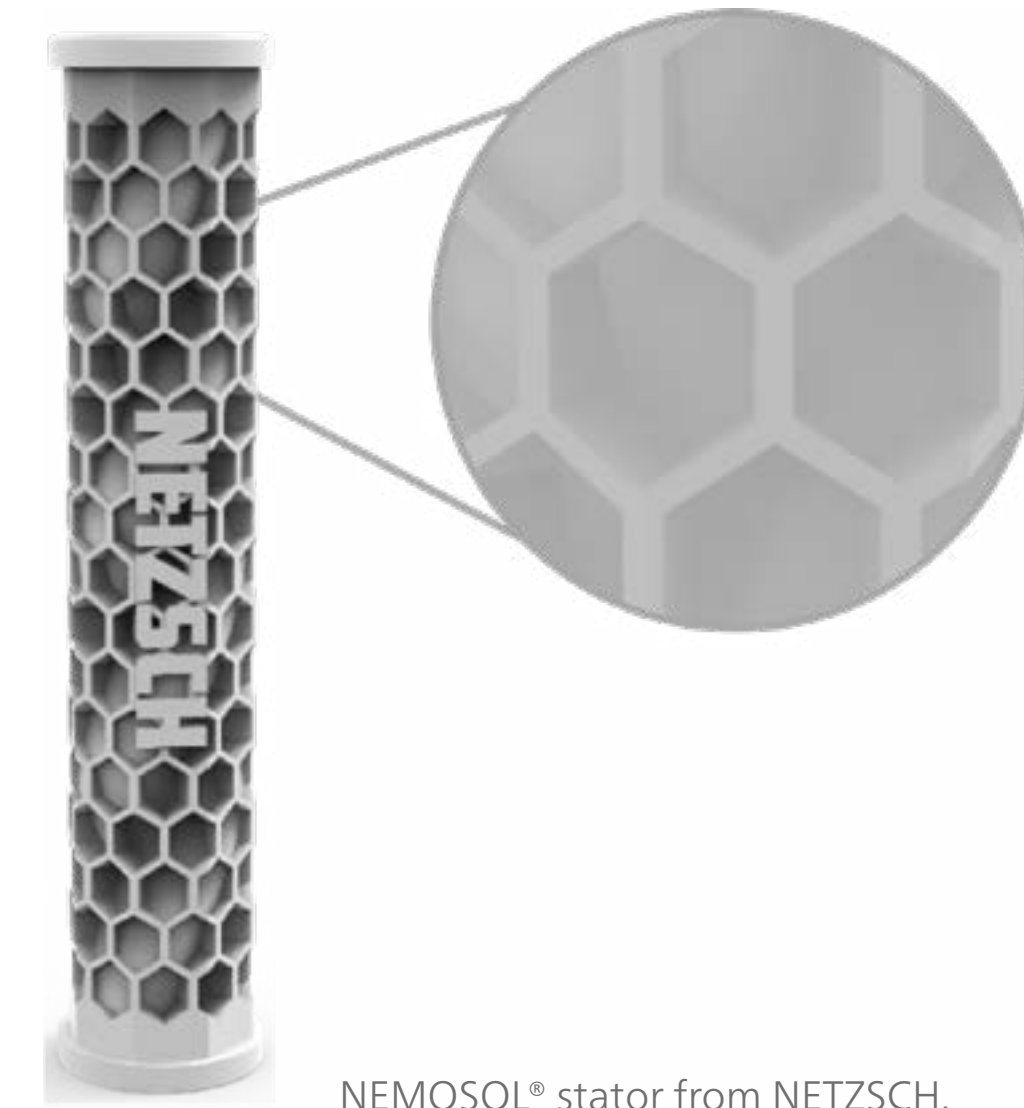
NETZSCH has decades of experience in the development and manufacture of elastomers and is constantly expanding its materials expertise to include innovative thermoplastic solutions. Working closely with raw material suppliers, the company develops custom materials in its own laboratory that are optimally tailored to the requirements of a wide variety of applications. NEMOLAST® elastomers offer high abrasion resistance, temperature resistance and resistance to chemically aggressive media. This portfolio is complemented by the NEMOSOL® range of materials based on modern thermoplastics, which can be processed precisely and flexibly using methods such as 3D printing. This enables even complex components to be manufactured efficiently.

A particular focus is placed on the development of environmentally friendly alternatives, especially for the reduction of PFAS, as well as on the continuous improvement of the performance and service life of the components.

With modern manufacturing technologies and expanded production capacities, NETZSCH ensures a reliable and rapid supply of high-quality components. The combination of innovative materials and many years of expertise guarantees efficient, durable and application-specific optimised pump solutions – even under demanding conditions.



3D printer for NEMOSOL® thermoplastics.



NEMOSOL® stator from NETZSCH.

# TORNADO® Rotary Lobe Pumps

The 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 continuous and gentle conveying as well as dosing in proportion to speed of nearly all media.

## Broad range of applications

The pumps are preferably used for media with the following properties:

- Contain solids (up to 70mm) and without solids
- Low to high viscosity (1 mPas up to 1 million mPas)
- Shear sensitive
- Tixotropic and dilatant
- Abrasive
- Lubricating and non-lubricating

## Large capacity and pressure range

- Flow rates from 1 up to 1,400 m<sup>3</sup>/h
- Pressures up to 12 bar

## Functioning principle

The TORNADO® rotary lobe pump is a rotating positive displacement pump. The conveying capacity is generated by the contra-rotation of two rotors within a chamber (pump housing). The pumped medium is displaced within the pump housing by the conveying elements from the suction side to the discharge side.



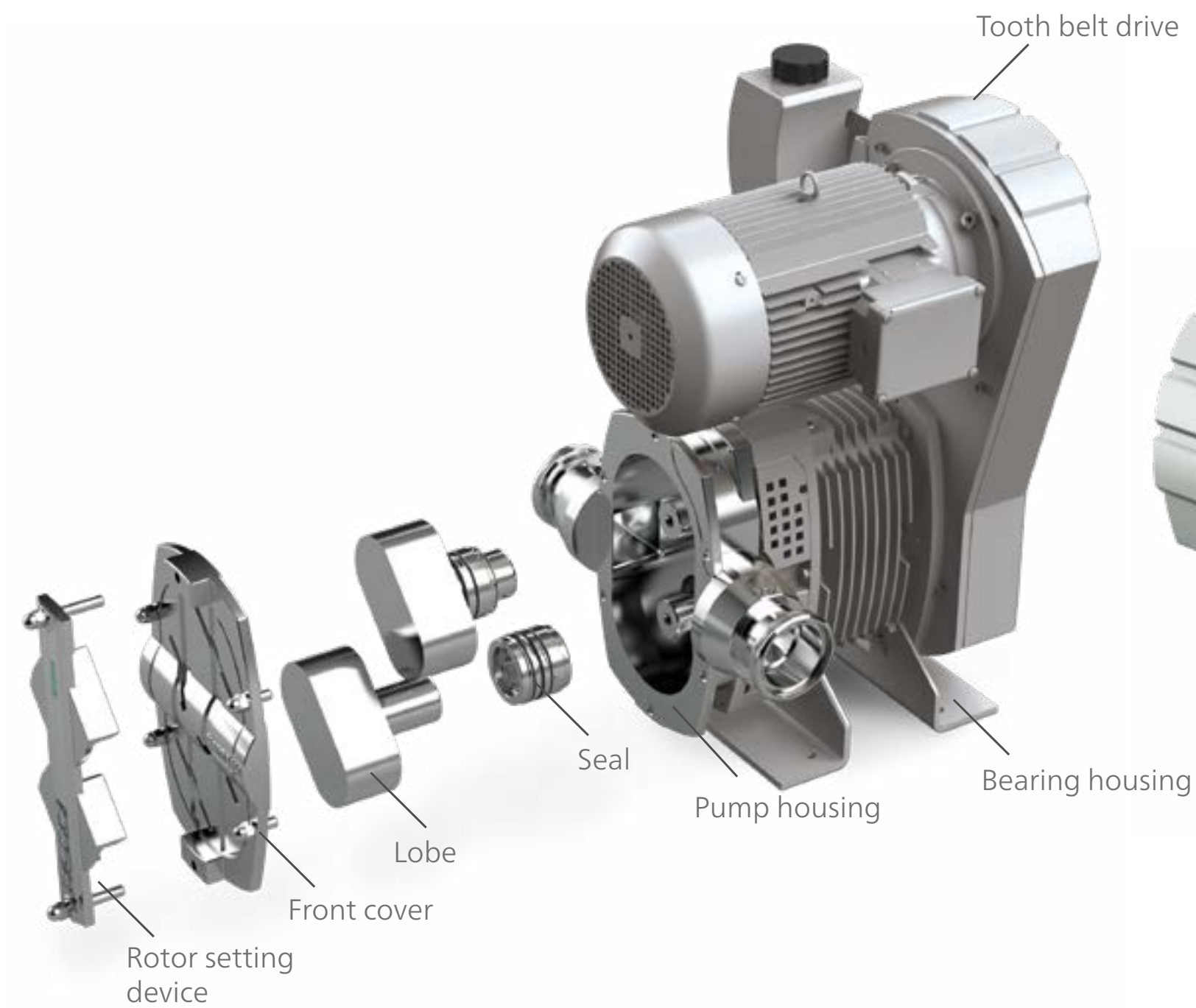
Technical details

## Characteristics

- Valve free construction
- Self priming
- Can convey any type of inhomogeneous, gaseous and abrasive media with solids and/or fibers
- Suitable for lubricating and non lubricating media
- Pumps media with high or low viscosity
- Compact design
- Conveys liquids with operating temperatures of up to 100 °C
- Reversible operation
- Can be serviced without disconnecting pipework
- Indefinite dry running

## Service-friendliness „Full Service in Place“ (FSIP®) instead of „Maintenance in Place“

Thanks to its compact inline design, the pump can be easily integrated into your system. FSIP® maintenance allows quick and easy access to the pump chamber without removing the pump from the pipework, thereby providing more space for inspection, cleaning and maintenance of components.



TORNADO® rotary lobe pump in the hygienic design, also available with milk thread connection or even in the smooth design for more demanding applications.

## Process optimisation

### Maximum reliability through design, material and choice of seal

The NETZSCH PRS (Pulsation Reduction System) guarantees almost pulsation-free operation to benefit your process. Even when using bi-lobe rotors that handle solids more effectively and are easier to replace, we reduce pulsation to the level characteristic of multilobe conveying elements.

The pump chamber design, mechanical seal design and position have no dead space, preventing product deposits and making cleaning easier, either manually or with the CIP.

## Operational safety

### From GSS to BSS

The proven spatial separation between the pump chamber and the gearbox chamber in the TORNADO® T1 ensures absolute operational reliability in every TORNADO® rotary lobe pump from NETZSCH.

- 1 GSS = Gearbox Security System
- 2 BSS = Bearing Security System

## Technical details

# NOTOS® MULTI SCREW PUMPS

## 4 Product ranges for all applications

Since 1979 NETZSCH has been manufacturing multi screw pumps to serve a wide range of industries and applications. The most advanced technology is utilized to produce these pumps. Reliability, durability and experience are some reasons why you should choose NETZSCH.

### Range of applications

NOTOS® pumps are designed to convey low to well lubricating fluids, low to high viscosity, shear sensitive or chemically aggressive media. The markets covered are:

- Oil & Gas
- Marine Industry
- Power Generation
- Process Industry
- Tank Storage
- Food Production

### Broad range of materials

Our range of metallic materials extends from grey cast iron and chrome-nickel steel to duplex, super

duplex or Hastelloy steel. Further metal material options on request.

- No dynamically loaded rubber parts
- Static seals from NBR to FFKM

### Capacity and pressure ranges

NOTOS® pumps are known as pumps for low to high flow rates and low to high pressures

- Flow rate up to 2,500 m<sup>3</sup>/h
- Pressure rate up to 160 bar
- Viscosities up to 1,000,000 cSt
- Temperature up to 320 °C

### “High Efficiency Unique Design”

With the “High Efficiency Unique Design” (HEUD), the pumps are optimized in order to increase their performance. Characteristics of this design are:

- Extremely small tolerances due to the state-of-the-art technology
- Optimized spindle profile
- Optimized pump chamber

### The hygienic NOTOS® 2NSH

NOTOS® 2NSH meets the high requirements of food, beverage, chemical, pharmaceutical and cosmetic industries:

- Metal parts made of stainless steel
- No contact between the rotating parts
- Low pulsation
- No dead spaces
- Smooth feeding of the media to the conveying elements

### Characteristics

- Self-priming
- Good suction capability
- Continuous flow with low pulsation
- Flow with minimal turbulences
- Gentle product handling
- Low maintenance
- Low lifecycle cost
- Long service life
- Several mechanical seal options
- Magnetic drive optional
- Extremely low noise and vibrations

# NOTOS® MULTI SCREW PUMPS

The NOTOS® multi screw pump family comprises four product series in different versions, with the two-spindle pump also being developed in hygienic versions. The superior quality standard meets the highest requirements of our customers in all industries as well as in food production.

**Our different pump series to meet your individual demands:**



**2 NS –  
Two Screw Pump**

- Flow rate up to 650 m<sup>3</sup>/h
- Pressure up to 16 bar
- Temperature up to 300 °C
- Viscosity up to 100,000 cSt

**Technical details**



**2 NSH –  
Hygienic Twin Screw Pump**

- Flow rate up to 230 m<sup>3</sup>/h
- Pressure up to 20 bar
- Temperature up to 165 °C
- Viscosity up to 1,000,000 cSt

**Technical details**



**3 NS –  
Three Screw Pump**

- Flow rate up to 400 m<sup>3</sup>/h
- Pressure up to 160 bar
- Temperature up to 300 °C
- Viscosity up to 15,000 cSt

**Technical details**



**4 NS –  
Geared Twin Screw Pump**

- Flow rate up to 2,500 m<sup>3</sup>/h
- Pressure up to 80 bar
- Temperature up to 320 °C
- Viscosity up to 200,000 cSt

**Technical details**

# PERIPRO® Peristaltic Pumps

HEAVY DUTY PERISTALTIC PUMPS WITH LARGE ROLLERS FOR LONGER SERVICE LIFE

The PERIPRO® peristaltic pumps are available in four different versions: industrial, chemical, food and as a tube pump.

The PERIPRO® product lines are highly efficient and heavy-duty machines. The hose compression system offers the highest accuracy, effectiveness and durability. The absence of valves and mechanical seals means that the PERIPRO® is completely leak-free. In addition, the PERIPRO® peristaltic pump withstands dry running completely undamaged, even over a longer period of time.

This makes PERIPRO® pumps ideal for dosing or pumping highly abrasive, shear-sensitive, viscous and corrosive media.

The chemical version of the PERIPRO® pump is a fully protected unit with a ETFE coating, that is resistant to highly corrosive acids and all kinds of difficult chemicals.

The PERIPRO® peristaltic pump for applications in hygienic areas is optimised for pumping food and beverages as well as cosmetic products and complies with all current specifications and regulations. Hygienic connections according to DIN 11851 or Tri-Clamp and a design that facilitates CIP cleaning through simple disassembly complete this construction.

### Ideal for difficult media

- Abrasive products: Lime milk, activated carbon, sludges and slurries, among others
- Corrosive products: Sodium hypochlorite, ferric chloride, hydrochloric acid, etc.
- Viscous products: Water-based glues, greases, creams, resins, etc.
- Delicate products: Latex, polymers and flocculants, food products, etc.

### NETZSCH technology for peristaltic pumps

- Excellent resistance to abrasion
- Extremely high suction capability
- Indefinite dry running
- No valves or mechanical seals
- Low shear and reversible pumping
- Full dosing control
- Industrial, corrosion resistant and food versions
- Dosing accuracy of  $\pm 1\%$
- Up to 70 % solids in conveyed media



### Industrial Tube Pump

Precise dosing of small volumes

#### Typical applications

- Sodium hypochlorite
- Polymer
- Lime milk
- Active carbon
- Calcium hydroxide
- Acids (Hydrochloric, Ferric-chloride, sulphuric acid, etc.)
- Additives in food industry

#### Advantages of the PERIPRO® Tube Pump

- High suction applications up to 8 m.w.c and indefinite dry running
- Easy conveying of products containing solids or in multiphase state
- Highly viscous products up to 10.000 cPs
- Pressure variations do not affect pump performance
- Simple tube replacement
- Sensor to detect tube rupture



# NETZSCH Dosing Technology and Barrel Emptying Units

NETZSCH is a trend-setting problem solver thanks to consistent implementation and constant development of existing expertise.

You benefit from our continuous optimisation of positive displacement pump technology. We also pay particular attention to further developing the dosing components in use by customers to meet the constantly growing statutory requirements and expectations in our markets.

## PRODUCT RANGE OF DOSING TECHNOLOGY

The product range of dosing technology contains:

### NETZSCH Barrel Emptying Systems

To empty standard barrels from 20 l to 200 l. Flow rates from approx. 6 ml - 10 m<sup>3</sup>/h. Clean emptying, residue without inliner < 1 %.

### NETZSCH Dosing Technology

Barrel emptying units, control unit, buffer vessel and dispenser are offered in combination for optimally tuned emptying and dosing.

### NEMO® Dispenser

Flow rates from approx. 0.2 to 4.0 ml per revolution, dosing accuracy +/- 1 %.

### NETZSCH Dosing Control Units

Start/stop control unit  
1K control unit

### NETZSCH Buffer Vessel

Buffer capacity approx. 1.0 l; delivers constant supply pressure to the dispenser, even with long pipework. This ensures high dosing accuracy and minimises the wear to rotor and stator. Barrels can be changed without stopping the system.



NETZSCH barrel emptying system  
NBE 200 in hygienic design

NETZSCH barrel emptying system  
NBE 20 in industrial design

NEMO® Dispenser

## Advantages

- Low shear conveying and dosing of high viscosity, highly abrasive and highly filled products
- Product remaining in barrel after emptying < 1-2 % of the total volume
- Low system working pressures
- No pressure reversal points or no pressure drop in the pipe or in the system
- Barrel changes without interrupting the production process
- Valve-less dosing system
- Speed proportional dosing
- Volumetric dosing accuracy >99 %, independent of the viscosity
- Simple integration of the dispenser with robots
- Servo drives available for high loads
- Continuous, gentle, and pulsation free dosing
- No dripping or stringing due to retraction at the end of the dosing process
- Low life cycle costs
- Complete heating possible

# NETZSCH Grinding Systems

M-OVAS® CUTTING PLATE MACERATOR

The M-Ovas® cutting plate macerator for coarse materials is ideally suited for use in wastewater and biogas treatment plants where impurities in the medium reduce process reliability. The solids in the medium are reliably macerated or separated from the medium (e.g. stones), to prevent pipes from getting blocked or damage to downstream equipment.

## Wide range of applications

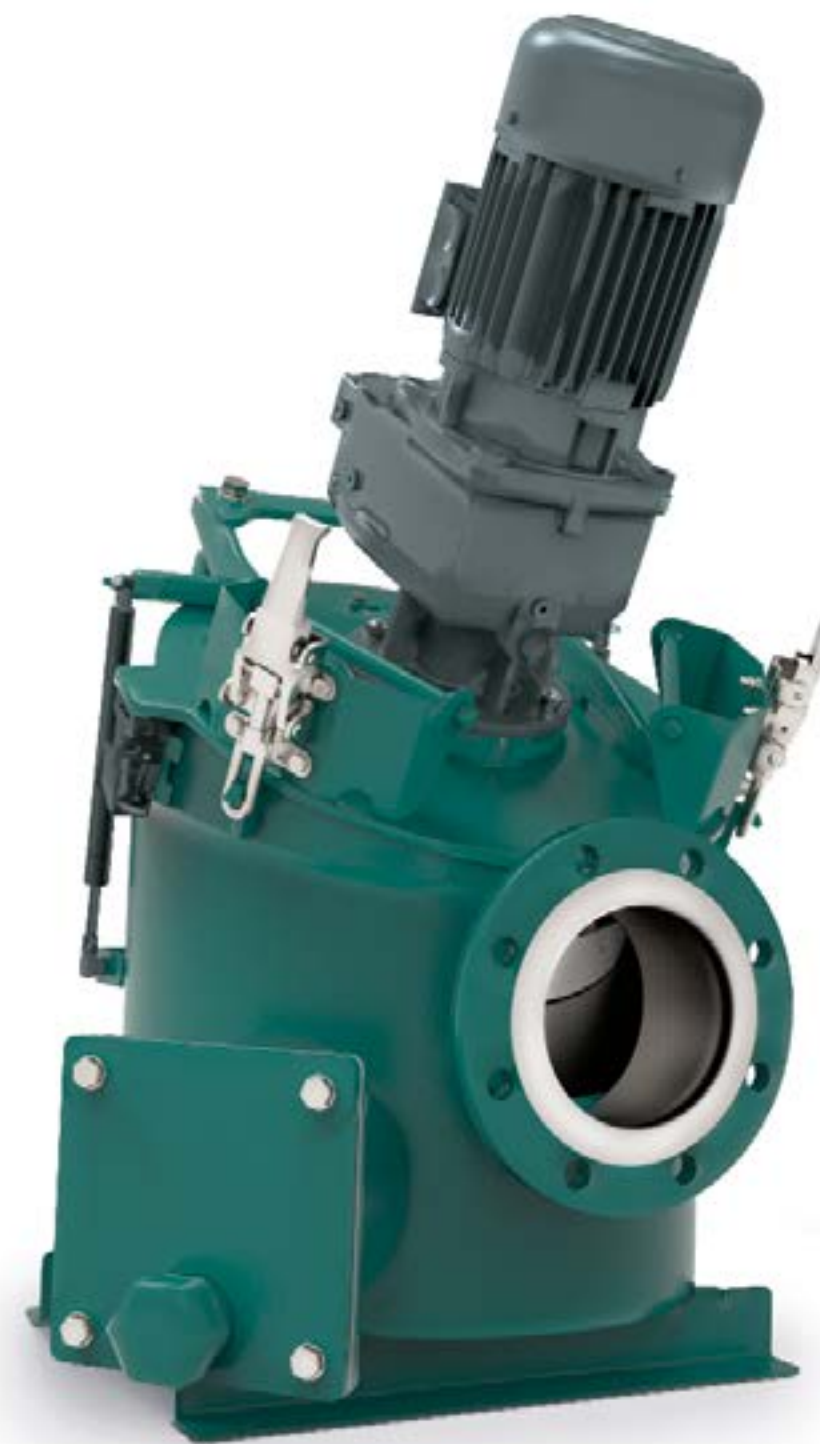
- Fermented, renewable raw materials
- Slurry
- Organic waste
- Slaughterhouse waste
- Liquid manure
- Wastewater and sludge

## High flow rates

- Throughput rates up to 300 m<sup>3</sup>/h
- Substrates with a dry residue content of 10-12%

## Design

- Compact design with high throughput capacity
- Integrated separator tank with separate cleaning and drain opening
- Mechanical seal with grease lubrication
- Optionally with reversing control



## Advantages:

- Simple, easy disassembly of the cutting plate
- Low energy requirement with high throughput rate
- Effortless disposal of the sedimented materials through easy access
- Easy maintenance in place
- Cutting plate usable on both sides
- Different perforated plates depending on the application

Technical details

# NETZSCH Grinding Systems

N.MAC® CHANNEL TWIN SHAFT GRINDER

The N.Mac® channel twin shaft grinder macerates coarse and solid contaminants in liquid media. It is ideal for a wide range of applications from wastewater treatment, substrates for biogas plants to food and fruit residues. It prevents pipes from becoming blocked and protects downstream appliances such as pumps.

## Wide range of applications

- Biogas plants
- Agriculture
- Slaughterhouses and recycling centers
- Commercial kitchens
- Sugar factories
- Wastewater and sludges

## High flow rates

- Throughput rates up to 350 m<sup>3</sup>/h in inline design and up to 400 m<sup>3</sup>/h in channel design
- Substrates with a dry residue content of 10-12%

## Design

- Housing for pipework and sewer installation
- Twin shaft technology for grinding solids
- Low blade speed with high torque (reduction ratio 1:29)
- Hexagonal shafts made from hardened steel
- Various blade configurations available
- Optional control with direction of rotation reversal for protection in the event of blockages
- Optional extended shaft for channel versions
- Cleaning combs
- Optionally with reversing control



Channel

Inline

## Advantages:

- Shock absorption technology
- Mechanical seal with quench
- Modular design of the knife blocks
- Easy maintenance on site
- Optional cleaning comb for fibrous materials
- Side rails for increased efficiency (flow and cutting performance)

# Service and Support

FOR US, PARTNERSHIP DOES NOT END WITH THE PURCHASE

**We know no limits when it comes to offering our customers first rate service. Our promise is to deliver Proven Excellence – outstanding performance in all areas.**



## **Unlimited personal support**

Our experienced employees provide support and advice worldwide and around the clock, always tailored to your specific requirements. With our global network of service locations and warehouses, we guarantee prompt and efficient support, including on site and in person, so your pumps can always run smoothly.



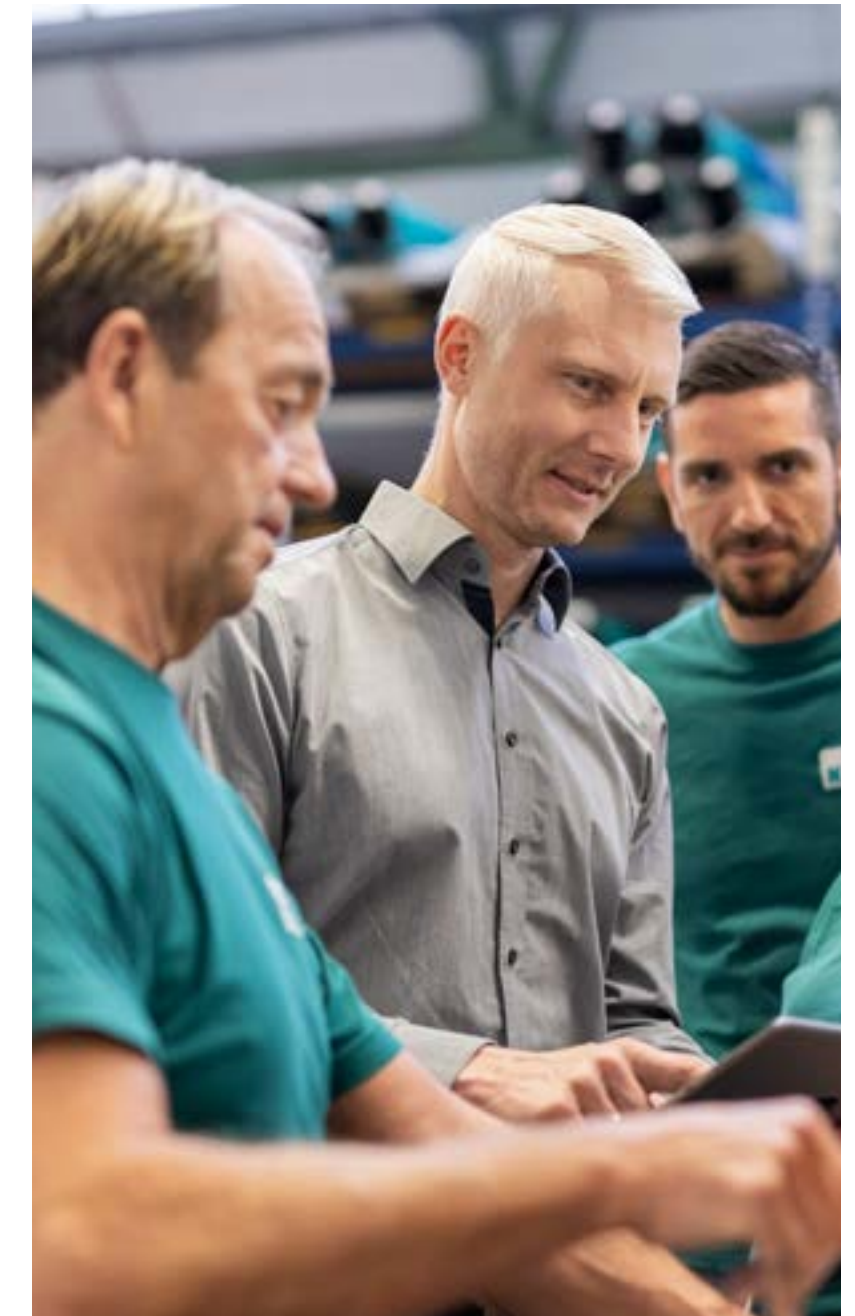
## **Spare parts**

NETZSCH original spare parts stand for the highest manufacturing quality. We ensure reliable quality through worldwide implementation of uniform standards as per DIN EN ISO 9001. This enables reliable operation of your pumps with little downtime and low maintenance costs, and therefore continued optimum performance.



## **Technical training**

The specialists from our Technical Service provide practical training for your employees at the NETZSCH training centres, online or at your facility. This allows you to benefit from cost savings and increased pump efficiency and to avoid mistakes during commissioning, maintenance or repairs.



**More information on  
our service and support  
can be found here:**

The owner-managed NETZSCH Group is a leading global technology company specializing in mechanical, plant and instrument engineering.

Under the management of Erich NETZSCH B.V. & Co. Holding KG, the company consists of the three business units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, which are geared towards specific industries and products. A worldwide sales and service network has guaranteed customer proximity and competent service 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, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

# Proven Excellence. ■

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