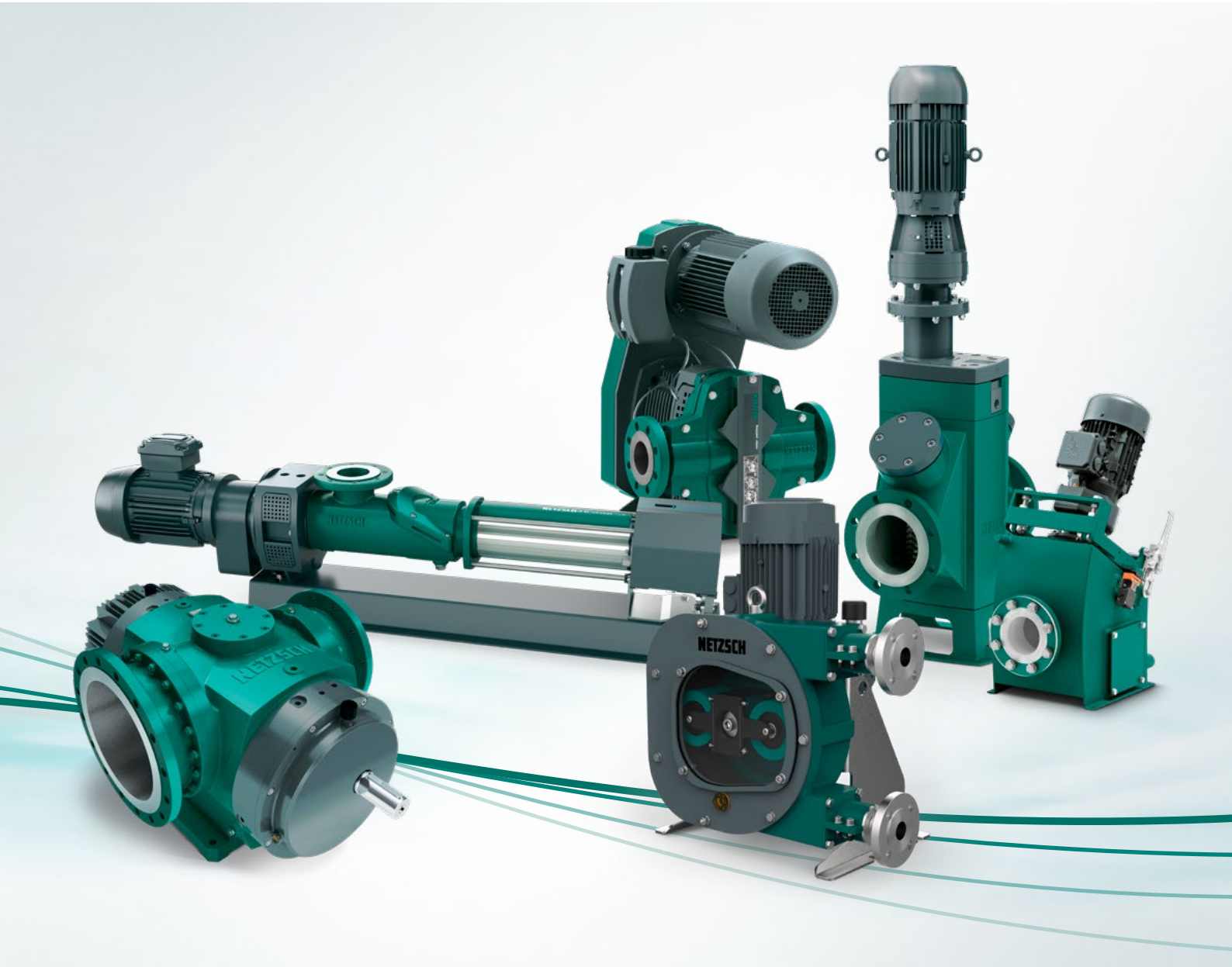


NETZSCH

Proven Excellence.



Product Range

Technology & Applications for Positive Displacement Pumps

Pumps & Systems

NETZSCH

Group



Content

NETZSCH Group	2
Business Unit Pumps & Systems	4
Technology & Product Management	8
Business Fields	10
NEMO® Progressing Cavity Pumps – Features and Design	12
NEMOLAST® – Optimised Elastomer Qualities	15
TORNADO® Rotary Lobe Pumps – Features and Design	16
NOTOS® Multi Screw Pumps	20
PERIPRO® Peristaltic Pumps	22
NETZSCH Dosing Technology	26
NETZSCH Grinders	28
Accessories & Service	30

NETZSCH Group

The Gebrüder NETZSCH Maschinenfabrik (NETZSCH Brothers Machine Works), founded in 1873, was the starting point for today's NETZSCH Group still head-quartered in Selb, Germany, which has since become an international family-owned enterprise with over 4.100 employees working at 210 locations in nearly 36 countries on five continents.

The three Business Units, Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, operate independently with the goal to offer the customers the best solution for their particular application. The result of application knowledge and engineering experience gained during this time is both technological and market leadership.

NETZSCH HOLDING

Under the umbrella of the Erich NETZSCH GmbH & Co. Holding KG, the synergies between the Business Units are ensured through worldwide communication. The NETZSCH Holding builds the bridge between the shareholder family and the Business Units and is mainly involved in the group strategy and the financial management.



Pumps and systems have been manufactured at the Waldkraiburg site for 70 years. The site is also the headquarters of the Business Unit.

Business Unit

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. The second TORNADO® generation, the T2, was introduced in 2012 and revolutionised the performance and application potential of the rotary lobe pump with its new design.

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.

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

Every NEMO® pump from NETZSCH can be configured using a modular system that allows a large selection of different materials to be combined for pump housing, stator and rotor, geometries, joints and seals.

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® multi screw pump is suitable for low to high viscosity as well as blunt and lubricant media. It provides the necessary water pressure for the impression osmosis or is used for the supply of oil in hydrostatic bearings as they are needed, for example in hydropower stations for adjusting the turbine blades.

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 the appearance of leaks during its operation. 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. 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.

Development, Production, Sales & Sites



Our product range

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

Our production

With a production of over 50,000 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 2,400 employees at five development and production sites as well as 33 sales offices, a co-operation partner (in Japan) and another 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



Central and South America

NETZSCH do Brasil Ltda. Pomerode, Brasil



USA and Canada

NETZSCH Pumps North America, LLC, USA



East Asia

NETZSCH Lanzhou Pumps Lanzhou, China



South Asia

NETZSCH Technologies India Private Ltd., India

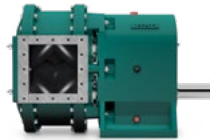


Technology & Product Management

THE PERFECT ALLIES FOR INNOVATION



NEMO CERATEC®
1997



TORNADO® rotary lobe pump
Modification of the NEMO® NM series
2002



iFD-Stator®
Manual dispenser
2007



2000
NETZSCH dosing and
barrel emptying systems



2005
M-Ovas®

Strategy

Regular innovations are the key to long-term market leadership. But only innovations relevant to the market are successful, because they meet the current needs of customers. That is why innovations are a pillar of the NETZSCH strategy that supports the ongoing growth of the company.

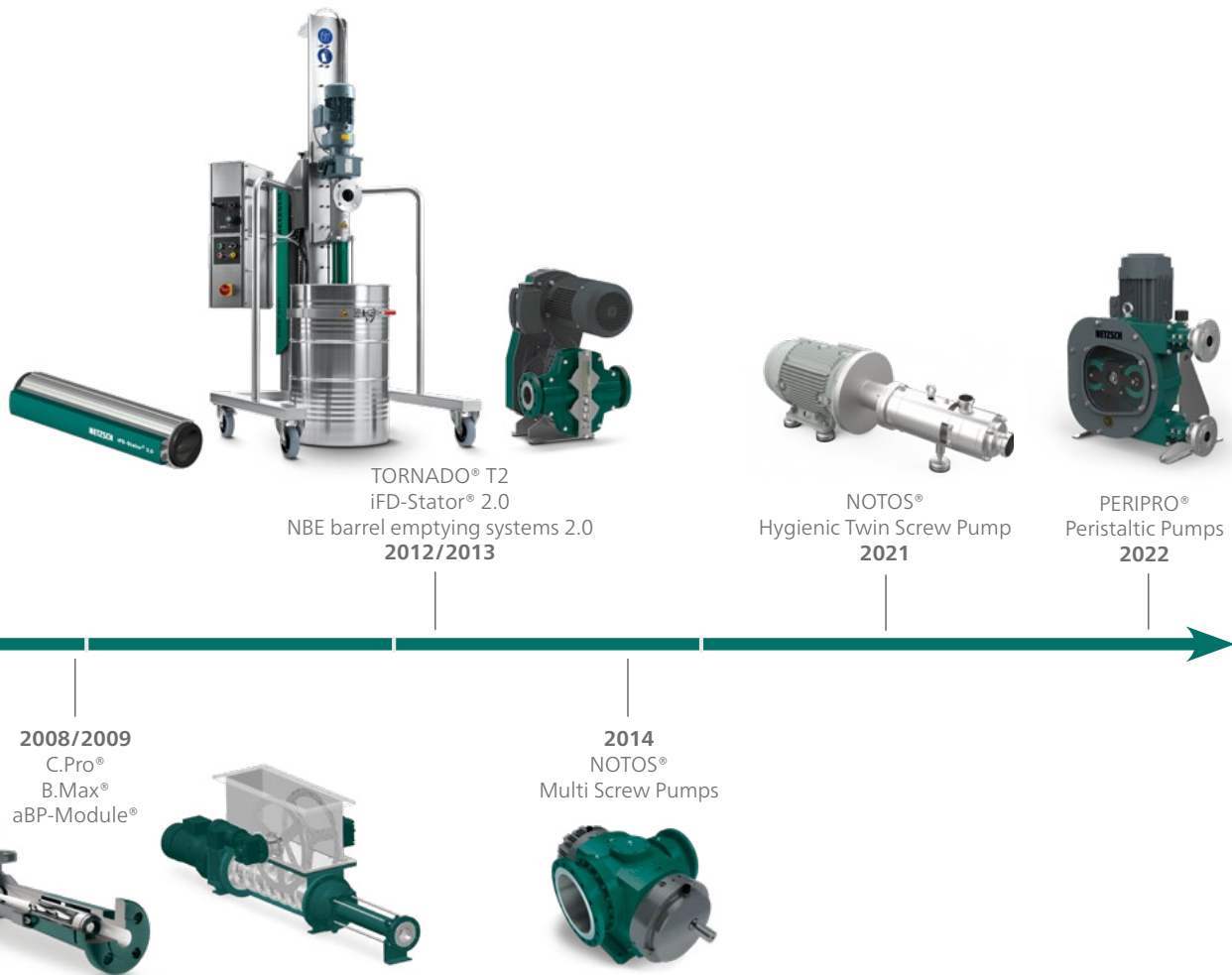
Tools

NETZSCH successfully uses scientific tools such as the WOIS method (Contradiction-Oriented Innovation Strategy), finite elements and modern computer programs such as CFD (Computational Fluid Dynamics). In addition, modern TechLabs for testing the newly developed products and components have been set up at all production sites. A total of around 120 employees worldwide are involved in the research and development of new products.

Intellectual property

Innovations have to be protected if the cost of development is going to contribute to a stronger position on the market. The financial cost is only justifiable from an economic point of view if that is the case – and it is the only way to confront copycats. The NETZSCH Group patent department therefore applies for patents every year globally and defends our trademark rights in all countries in which NETZSCH sells its products. NETZSCH has successfully established more than a dozen innovations on the market over the last 20 years.





Organisation

NETZSCH has developed an organisational structure that identifies the current needs of customers around the world by keeping an ear open to customers everywhere across a closely integrated distribution network. The Business Field Managers – experts for the industries they work with – are therefore also product managers who work with developers and designers on new products and to improve existing product series continuously. A team of developers and designers from all five continents meets up regularly, sorts through requests received from customers and decides on new products.

Successes

Decades of global market leadership for positive displacement pumps is the direct result of NETZSCH's innovative strength. Our leadership is reflected again and again in the awards the company wins around the world. For example, our NEMO® B.Max® biogas and TORNADO® rotary lobe pumps have won numerous awards,

as have components such as the CERATEC® ceramic rotor and the iFD-Stator®, which won an award for its low environmental impact and sustainability in development and production, during energy-saving operation and at disposal.



Product Range

PRODUCTS AND COMPONENTS

Faster and 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.



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

- T.Envi®, 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



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
iFD-Stator®

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 1000 m³/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

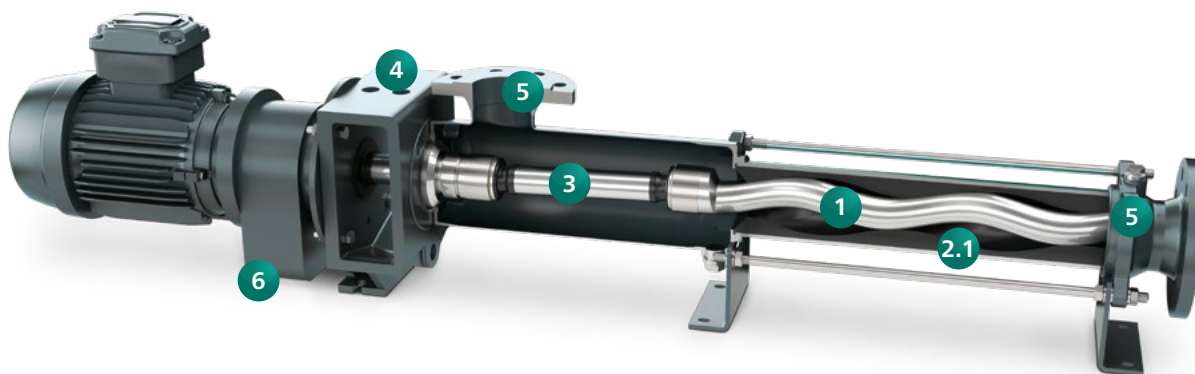
Our range of metallic materials extends from simple grey cast iron and chrome-nickel steel to highly acid-resistant materials such as Duplex, Hastelloy and titanium to suit different conveying tasks. Ceramics and plastics round off the list for aggressive and abrasive applications. Our elastomers range from highly abrasion-resistant natural rubber, to oil-, acid- and alkali-resistant elastomers and finally Aflas and Viton. 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 c mH₂O mWC
- Direction of rotation and flow can be reversed
- Can be installed in any position
- Quiet, smooth running
- Temperatures from - 20 °C to + 200 °C



NEMO® industrial block pump

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.

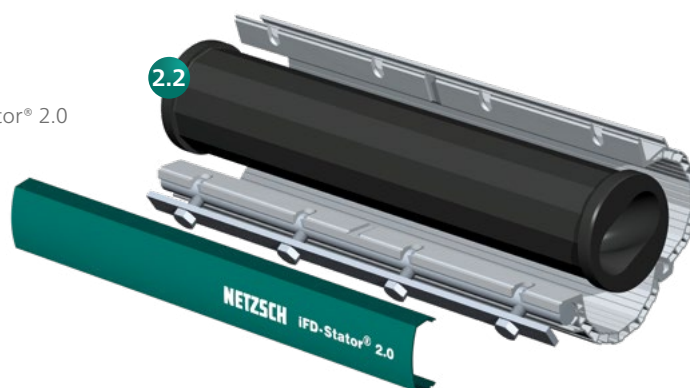
2.1 Stator with conventional technology

The stator inlet is vulcanised into the tubes with integrated seals on both ends. The inlets are available in a wide variety of NEMOLAST® elastomers, plastics and metals. 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.

optional: iFD-Stator® 2.0



The advantages of this new technology include a lower breakaway torque, higher efficiency, increased service life, simple and quick replacement, and environmentally friendly removal.

3 Drive train

The drive and connecting shaft with coupling rod and two universal joints provide the power transmission from the drive to the rotor.

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, chromium-nickel-molybdenum steel, rubber-lined or Halar®-coated cast iron and special materials as per requirements.

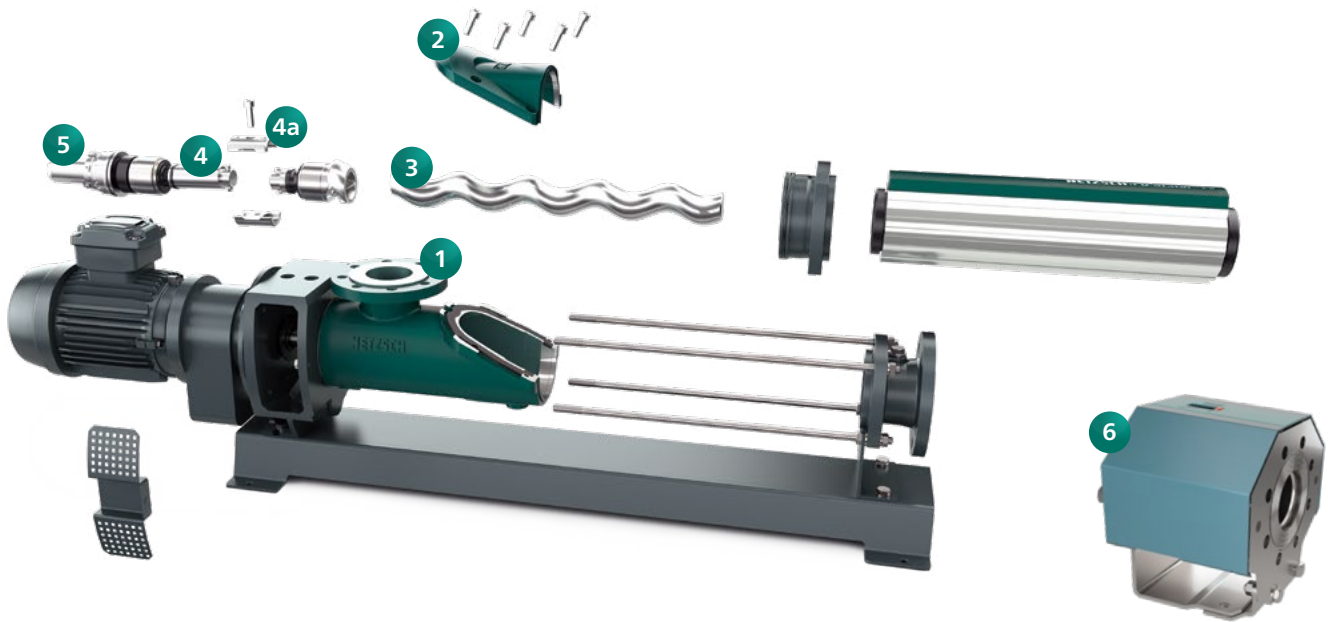
Halar® is a registered trademark of Solvay Solexis

6 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 when you look at the new large inspection cover. All installed NEMO® BY/SY pumps can be upgraded and can then be fully serviced while the pump 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 5 screws which can be easily removed without special tool.

3 Rotor

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

4 4a Drive train and sleeve coupling

A sleeve coupling joins the rotor to the coupling rod. Here only one screw has to be removed to split both elements from each other.

5 Shaft sealing

Standard for the FSIP® version is the single-acting, rotation-independent and wear-resistant mechanical seal MG 1, which can be easily replaced through the inspection opening.

6 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. The xLC® unit engages the collar of the elastomer part and allows it to be pulled or pushed. In case of wear, an axial compression of the elastomer leads to more preload and restores the reduced sealing line.

NEMOLAST®

ELASTOMER QUALITY DEVELOPED, CONTINUOUSLY TESTED AND OPTIMISED AT NETZSCH

Elastomer research & development is in-house at NETZSCH. In its in-house laboratory and in close collaboration with selected materials suppliers established over many years, NETZSCH develops and tests elastomer blends and optimises them regarding specific application requirements of customers in different branches.

NETZSCH therefore offers each customer the optimum quality of elastomer for the media to be conveyed in terms of abrasion resistance, temperature range,

dynamic load and chemical resistance – something other suppliers cannot offer. Only using original NETZSCH spare parts guarantees our pumps remain reliable.

70 years of experience in a wide range of industries and processes and 40 years of experience developing and manufacturing elastomers for NEMO® pumps led up to the development of complex bonded parts made of glass fibre, metal and elastomer for the housing inserts of our new generation of TORNADO® T2 rotary lobe pumps.

To meet the constantly growing demand for NETZSCH pumps and the associated demand for spare parts, NETZSCH invested in a new 4000 m² production hall in Waldkraiburg to produce elastomer parts using the latest production methods and the latest product standards. Alongside five extruder sets to manufacture conventional tube stators, injection moulding machines and presses were also acquired to manufacture iFD-Stators®, lobes and housing inserts for rotary lobe pumps.



Developing new blends



Manufacturing blends



Extruder with stator for conveying oil

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.

Their major benefits include minimal space requirements due to their compact design, high performance density and maximum operational reliability based on the unique spatial separation between pump chamber and gear compartment. TORNADO® rotary lobe pumps are especially easy to service and maintain; all wetted parts are immediately accessible without having to dismantle pipelines or the drive.

A broad application spectrum

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, i.e. thixotropic & dilatant, pseudoplastic, etc
- Abrasive
- Lubricating and non-lubricating

Large capacity and pressure range

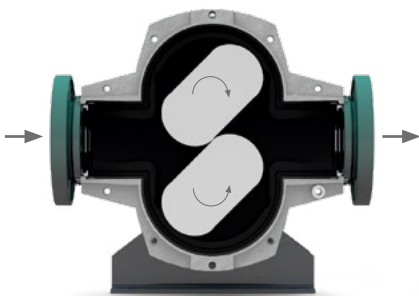
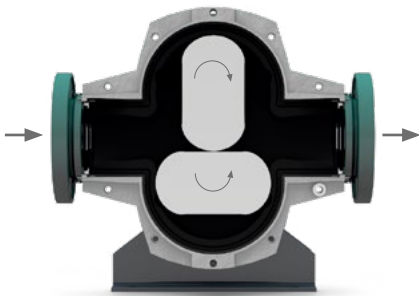
- Flow rates from 1 up to 1,000 m³/h
- Pressures up to 10 bar (standard) or up to 240 bar (high pressure)

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
- Handles shear sensitive fluids
- Conveys liquids with operating temperatures of up to 100 °C
- Reversible operation
- Can be serviced without disconnecting pipework
- Indefinite dry running

Functioning principle

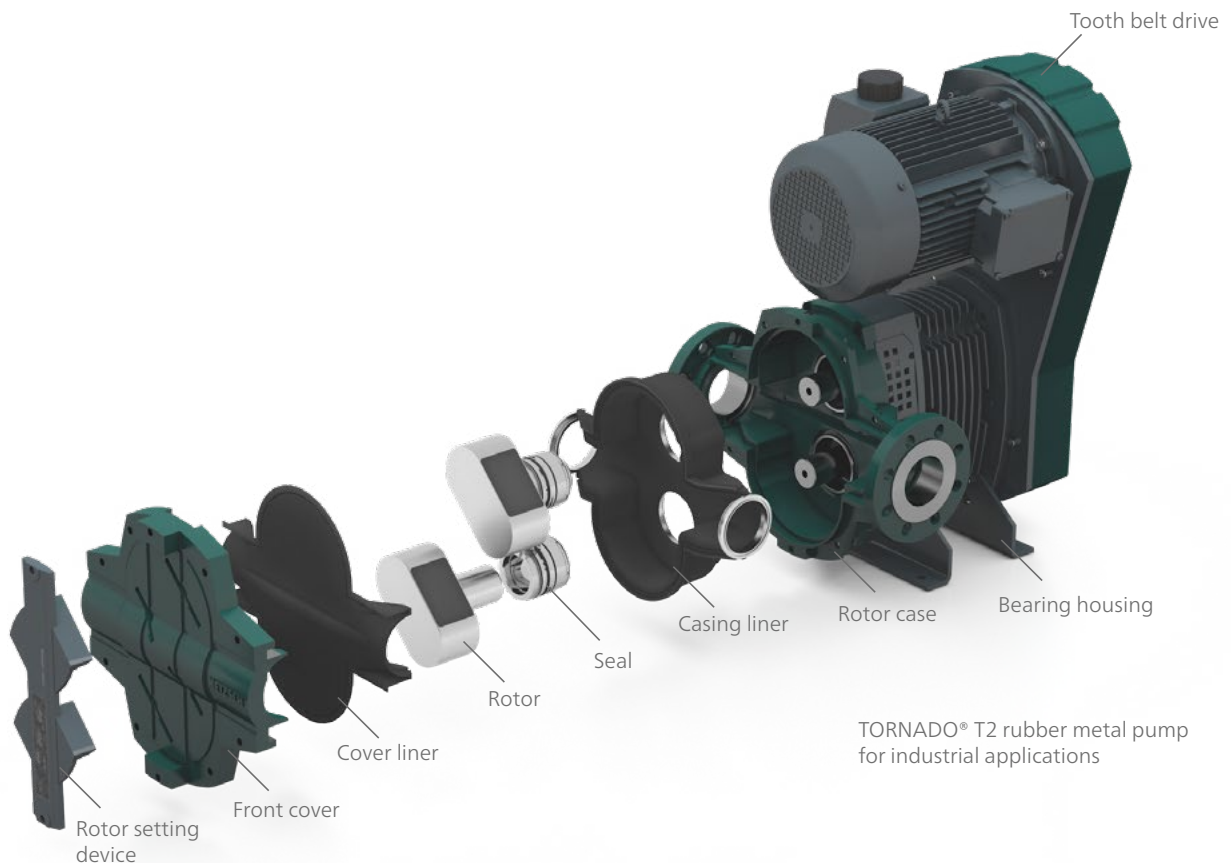
The TORNADO® rotary lobe pump is a rotating positive displacement pump. The conveying capacity is generated by the contra-rotation of two rotors within a chamber (pump housing). The pumped medium is displaced within the pump housing by the conveying elements from the suction side to the discharge side.



TORNADO® T1 and TORNADO® T2

TORNADO® T2

REVOLUTIONARY IN DESIGN AND CUSTOMER BENEFIT



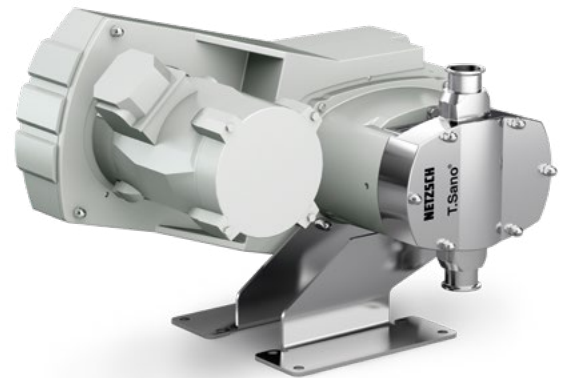
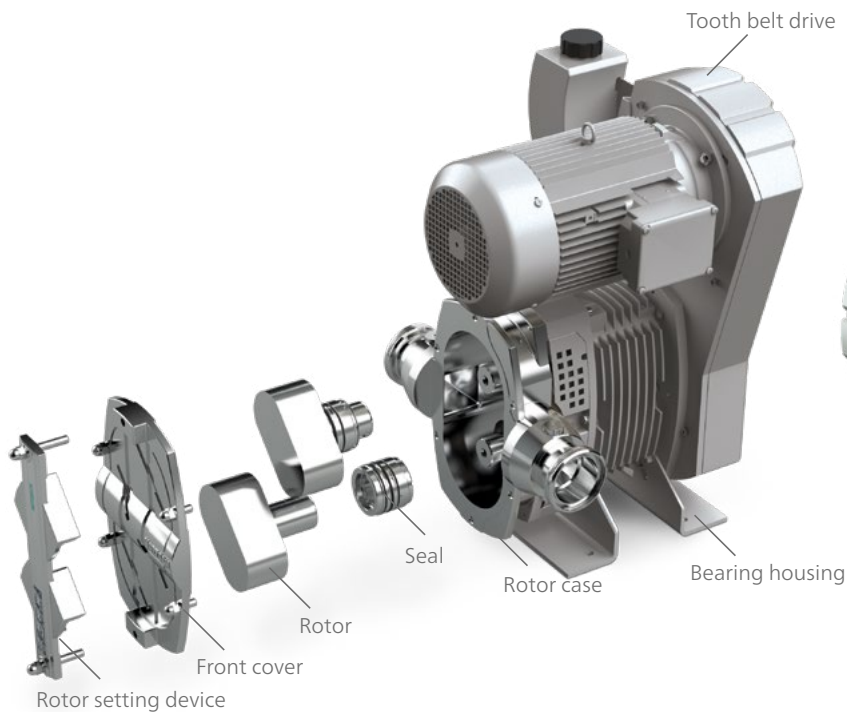
Ease of service

"Full Service in Place" (FSIP) instead of "Maintenance In Place"

Servicing is easy, no special tool is required. Compared to traditional rotary lobe pumps, the TORNADO® T2 can be serviced in less than half the time. The rotary lobes can be replaced in next to no time, because the lobes are not screwed onto the shaft, but fixed with easily accessible clamping elements. The simple geometry of

the rotary lobes means that each lobe can be fitted and removed independently. You no longer need to make sure the keys are properly seated, and there is no axial installation work needed on the rotary lobes. It is child's play to do this with the setting and installation gauge for positioning the rotary lobes, which

is integrated into the cover. The preset mechanical seals (cartridge design) are fitted onto the shaft, along with the rotary lobes. For the first time, different seal designs can be fitted without changing the mechanical seal housing.



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, thus optimising 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 with no dead space prevents product deposits and makes cleaning easier, either manually or with the CIP process for all-metal pumps.

Operational safety

From GSS¹ to BSS²

The physical separation between pump chamber and bearing housing tried and tested in the TORNADO® T1 guarantees that each TORNADO® rotary lobe pump from NETZSCH is completely dependable.

1 GSS = Gearbox Security System

2 BSS = Bearing Security System

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 1500 m³/h
- Pressure rate up to 80 bar
- Viscosities up to 200.000 cSt
- Temperature up to 300 °C

“High Efficiency Unique Design”

Due to 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

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 m³/h
- Pressure up to 16 bar
- Temperature up to 300 °C
- Viscosity up to 100,000 cSt



2 NSH –
Hygienic Twin Screw Pump

- Flow rate up to 200 m³/h
- Pressure up to 16 bar
- Temperature up to 140 °C
- Viscosity up to 500,000 cSt



3 NS –
Three Screw Pump

- Flow rate up to 400 m³/h
- Pressure up to 160 bar
- Temperature up to 300 °C
- Viscosity up to 15,000 cSt



4 NS –
Geared Twin Screw Pump

- Flow rate up to 3,000 m³/h
- Pressure up to 80 bar
- Temperature up to 400 °C
- Viscosity up to 200,000 cSt

NETZSCH PERIPRO® PUMPS

HEAVY DUTY PERISTALTIC PUMPS WITH LARGE ROLLERS FOR LONGER SERVICE LIFE



The PERIPRO® peristaltic pumps are available in three different versions: industrial, chemical, and food.

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 TEFZEL® coating, that is resistant to the attack of 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.

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

High flow rate and pressure range

- Flow rates from 200 l/h to 17,000 l/h, by the use of a double-head pump it can be expanded to up to 34,000 l/h
- For pressures up to 10 bar

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.

Advantages of PERIPRO® pumps compared with peristaltic pumps with shoe technology

- Energy savings of up to 30 %
- 90 % less lubricant required
- Easy hose replacement
- Wide range of operation
- Low starting torque



THE DESIGN OF PERIPRO®

WHY IS THIS PUMP SO LONG-LASTING

1 Latest technology of peristaltic pumps

The materials used are compatible with many media and therefore are suited for many applications. The peristaltic pump is particularly corrosion-resistant and suitable for a wide range of temperatures.

2 Saving on hose consumption and ease of installation

High quality hose with unique manufacturing process: extruded inner layer with high-density textile reinforcement and precisely machined outer layer. Thanks to controlled tolerances, the hose ensures optimal compression and fast installation.

3 Robust construction for the most demanding applications up to 10 bar

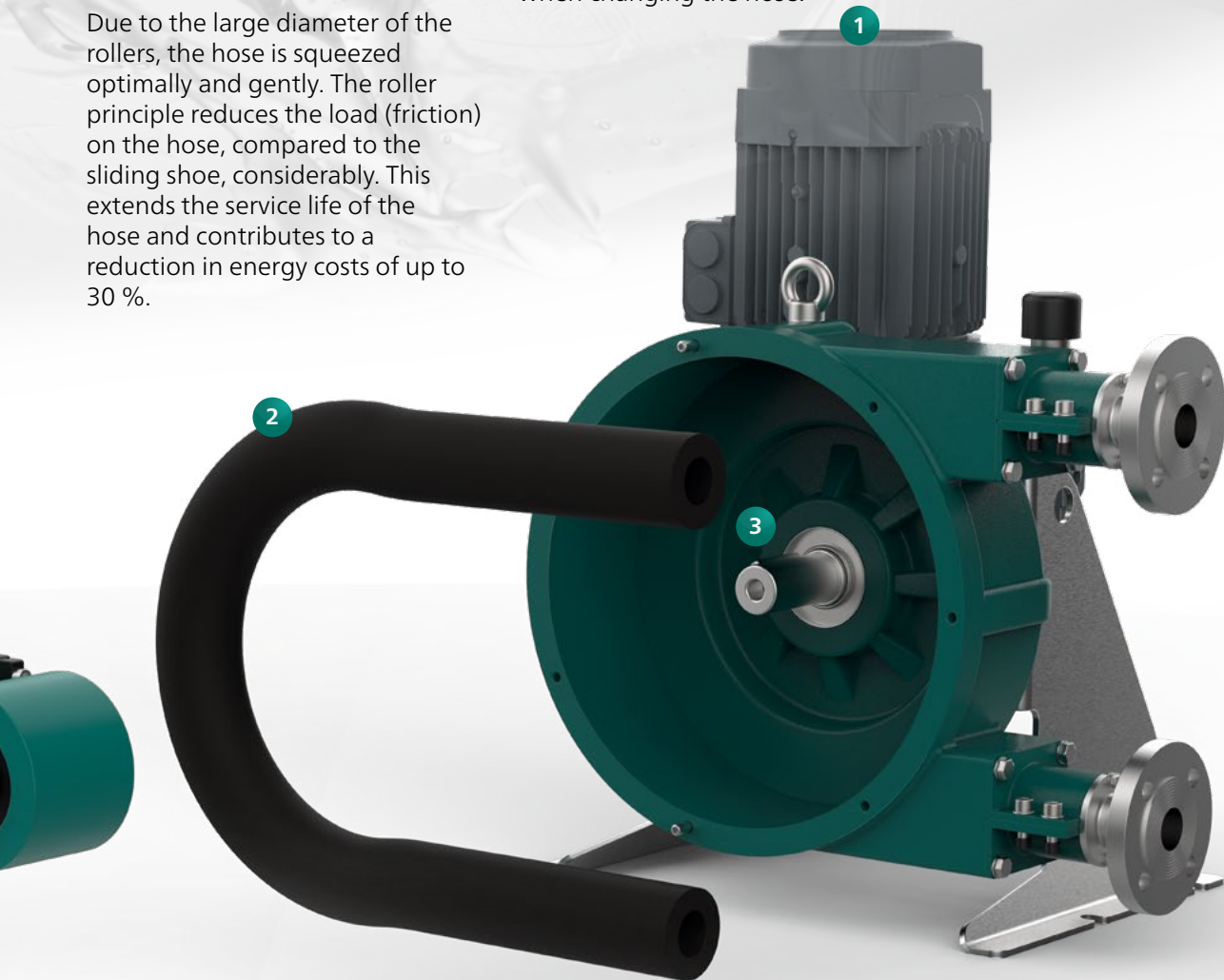
Thanks to the extra large metal rollers in conjunction with heavy-duty bearings and connections that fit the application exactly, the pump is ideally suited for demanding applications.



4 XXL roller technology for fewer energy costs and more efficiency

Due to the large diameter of the rollers, the hose is squeezed optimally and gently. The roller principle reduces the load (friction) on the hose, compared to the sliding shoe, considerably. This extends the service life of the hose and contributes to a reduction in energy costs of up to 30 %.

Added to this is the simple operation of the PERIPRO® peristaltic pumps during the use for the application, as well as when changing the hose.



NETZSCH Dosing Technology and Barrel Emptying Units

It is good to have a choice

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 Units

To empty standard barrels from 20 l to 200 l. Flow rates from approx. 6 ml - 10 m³/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.

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 barrel emptying system NBE 200
in hygienic design

NETZSCH barrel emptying system NBE 20
in industrial design



NEMO® Dispenser

NETZSCH Grinding Systems

M-Ovas® Cutting Plate Macerator

The M-Ovas® cutting plate macerator for coarse materials is ideally suited for use in biogas 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.

Broad range of applications

The NETZSCH M-Ovas® is preferably used to macerate the following media:

- Fermented, renewable raw materials
- Slurry
- Bio waste
- Slaughter waste
- Manure

High flow rates

- Throughput rates of up to 70 m³/h for substrates with up to 12 % dry solid content

Advantages

- Compact design with high throughput rate
- Simple, easy disassembly of the cutting plate
- Low energy requirement with high throughput rate
- Integrated separator vessel with separate cleaning and drainage aperture
- Effortless disposal of the sedimented materials through easy access
- Shaft sealing using mechanical seal with lubrication
- Easy maintenance in place
- Cutting plate usable on both sides
- Different perforated plates depending on the application



FSIP® – „Full Service in Place“ also true for our grinders

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. The various housing designs allow installation in sewers as well as in piping systems to prevent pipe blockage and protect downstream equipment such as pumps.

Broad range of applications

The channel twin shaft grinder is preferably used with media in the following industries:

- Biogas plants
- Agriculture
- Slaughterhouses and recycling plants
- Canning factories
- Industrial kitchens
- Sugar factories

High flow rates

Flow rates of up to 400 m³/h with a solid content of up to 10 %.

Design details

- Housing for inline or channel installations
- Twin shaft technology for reduction of solid particles
- Low power installation at 2.2 kW (and 3 kW)
- Low rotation of the cutters at high torque (1:29 reduction)
- Hexagonal shaft in hardened steel
- Standard cutter arrangement 7/7 teeth
- Optional control unit to reverse direction of rotation in case of blockage
- Optional extended shaft for channel version

Advantages

- Shock absorption system
- Mechanical seals with quench
- Modular design of cutting units
- Easy maintenance in place
- Optional clearing comb for fibrous materials
- Efficiency increasing side rails (flow and cutting)



N.Mac® in Inline and Channel version

FROM A TO Z

Accessories & Service

Accessories to increase the operational safety of both pump and plant to prevent downtimes

Process monitoring

Dry running protectors safeguard elastomer parts of the pump against thermal damage and protect the pump.

- Dry running protection (STP2A, STP2D)
- Flow sensors for solid stators
- Speed monitoring device

Overpressure and underpressure protectors safeguard the pump and protect downstream machinery and units against overpressure and underpressure.

- Contact manometer with pressure sensor
- Contact manometer with flanged pressure sensor
- Multifunction pressure monitoring unit
- By-pass line

Seal Support Systems

Additional flushing, quench or pressurised flushing systems that flush or close the seals with clean conveyed medium are often required to ensure shaft seals function correctly and reliably.

- Quench pot
- Permanent lubricator
- Pressurised flushing system or thermosiphon systems for double-acting mechanical seal

Tools and additional equipment

A large number of useful equipment is available to correctly maintain and smoothly operate your pumps.

- Filling device for K and Z joints
- Ring dosing nozzle
- Adhesive dowel for fastening the base plate to the floor
- Stator removal tool

Protection Units and Trolleys

In all areas of production within the food, pharmaceutical and cosmetic industries, a range of optional parts are available to ensure uncompromising hygiene and to enable mobile use.

- Covers for drives
- Transport devices
- Machine feet – flexible, rigid
- Lifetime extension with xLC® stator adjustment unit



NETZSCH Service

The benefit to you

Advice, service and quality are our strengths. Strict quality standards, test procedures and certification in accordance with DIN EN ISO 9001 guarantee that you receive the very highest quality without exception. To maintain the performance and quality of your pump, we continue to provide support after delivery in all aspects of your pump to ensure it operates reliably in your system. We have over 70 years of experience with more than 500,000 installed pumps behind us.

Spare Parts and Service

In your area well-trained service partners are available for quick and economic service of the pumps at your premises. You will find your personal service partner on our homepage:
www.pumps-systems.netzsch.com/en/consulting-technical-service/spare-parts-service

NETZSCH Original Spare Parts

Only the usage of original spare parts from NETZSCH ensures reliable operation of your pumps.

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. 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, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

Proven Excellence.■

NETZSCH Pumpen
& Systeme GmbH
Geretsrieder Straße 1
84478 Waldkraiburg
Deutschland
Tel.: +49 8638 63-0
info.nps@netzsch.com

NETZSCH Asia Pacific Pte. Ltd.
Singapore
Tel.: +65 6863 4453
info.nap@netzsch.com

PT. NETZSCH Indonesia
Jakarta, Indonesia
Tel.: +62 21 296 75 385
info.nij@netzsch.com

NETZSCH Thailand Ltd.
Bangkok, Thailand
Tel.: +66 2 152 7325
info.ntb@netzsch.com

NETZSCH (Malaysia) Sdn Bhd
Shah Alam, Malaysia
Tel.: +60 3 5885 9201
info.nmk@netzsch.com

NETZSCH Vietnam Limited
Ho Chi Minh City, Vietnam
Tel.: +84 28 6281 1042
info.nvh@netzsch.com

NETZSCH Australia Pty Ltd
Head Office Brisbane
Tel.: +61 7 3488 8183
Regional Office Sydney
Tel.: +61 2 9641 2840
nas@netzsch.com



NETZSCH®
www.netzsch.com