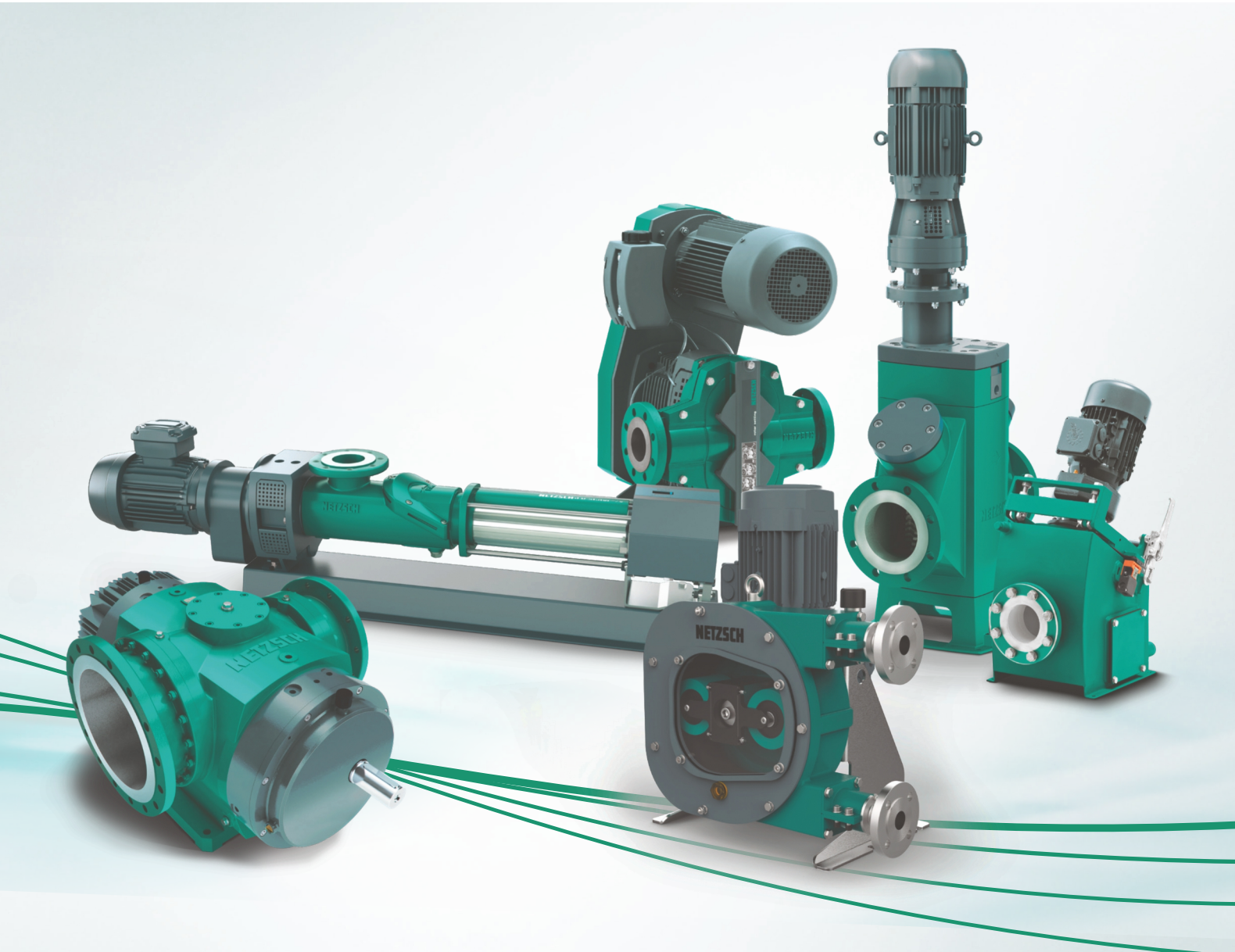


NETZSCH

Proven Excellence.



Product Range

Technology & Applications for Positive Displacement Pumps

Pumps & Systems

NETZSCH Pumps & Systems

Experts in Pump Solutions for 70 years

Who We are

For more than 70 years we've been supplying worldwide NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO peristaltic pumps, macerators/grinders, dosing systems and equipment for custom built and challenging solutions for your applications.

In the Region for the Region

With more than 2,000 employees at five development and production sites as well as 30 sales offices, a co-operation partner (in Japan) and another 200 NETZSCH representatives we are close to you wherever you are.

Our quality

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

Our core expertise

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

Our strategy

Our development and sales activities are focused on trendsetting 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.

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 the many years.



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



The NETZSCH pump product range has four product lines:

NEMO® progressing cavity pumps

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.

TORNADO® Rotary Lobe Pumps

Our experience developing and manufacturing 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.

With our positive displacement pumps you can be assured of:

- the medium is conveyed with low shearing rates
- the medium is dosed with low pulsation, accurately and reliably
- no blockages occur thanks to the valve-free design
- the pumps are self-priming
- non-vapor and air locking operation
- 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
- low noise levels
- flexible operation and mounting options

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
- Paints and lacquers
- Paper industry
- Pharmaceuticals and cosmetics
- Food and drink
- Marine industry
- Mining
- Oil & gas production and transfer
- Renewable energies
- Water and waste water treatment

NOTOS® Multi Screw Pumps

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.

PERIPRO Peristaltic Pumps

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.



NEMO® Progressing Cavity Pumps



TORNADO® Rotary Lobe Pumps



NOTOS® Multi Screw Pumps



PERIPRO Peristaltic Pumps

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.

Product Range

For every application we offer you the optimum pump or the best system from our comprehensive product range. To find your competent contact partner, please see the details by industry on the opposite page.

NEMO®

Progressing Cavity Pumps

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

TORNADO® Rotary Lobe Pumps

- T.Envi®, T.Proc®, T.Sano®
- Mobile pumps
- Custom built pumps

NOTOS® Multi Screw Pumps

- 2 Screw Pump: 2 NS
- 3 Screw Pump: 3 NS
- 4 Screw Pump: 4 NS

PERIPRO Peristaltic Pumps

Variants for industry, the chemical and mining sectors and for food production

NETZSCH Dosing and Barrel Emptying Systems

- Barrel emptying systems
- 1K dosing systems
- Dispenser

NETZSCH Grinder

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

NETZSCH Accessories

- Protection devices
- Flushing/pressurised flushing devices
- Control units
- Transport devices
- Tools and much more

Business Fields



Environmental & Energy

Agriculture, construction industry, drinking water purification, electroplating, renewable energies, marine industry, water and waste water treatment and similar



Chemical, Pulp & Paper

Biofuel, building material, ceramics and glass, chemical and biochemical, explosives, leather/tanneries, mining and smelting, paint and varnish, paper and pulp/ cellulose, textile, wood processing and similar



Food & Pharmaceutical

Bakery products, beverages, breweries, dairies, fish and meat processing, fruit processing, pharmaceutical and cosmetic products, sugar and starch, wine and similar



Oil & Gas

Upstream

Oil extraction

Mid-/downstream

Oil transfer, petrochemicals, refineries, re-injection and similar



Customer Care

Original NETZSCH Spare parts, Technical training, Retrofit, Global service network, maintenance, Commissioning

NEMO® Progressing Cavity Pumps

Features And Design

NEMO® progressing cavity pumps are used in all sectors of industries to convey almost all types of media continuously, smoothly, with low pulsation and dosing 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

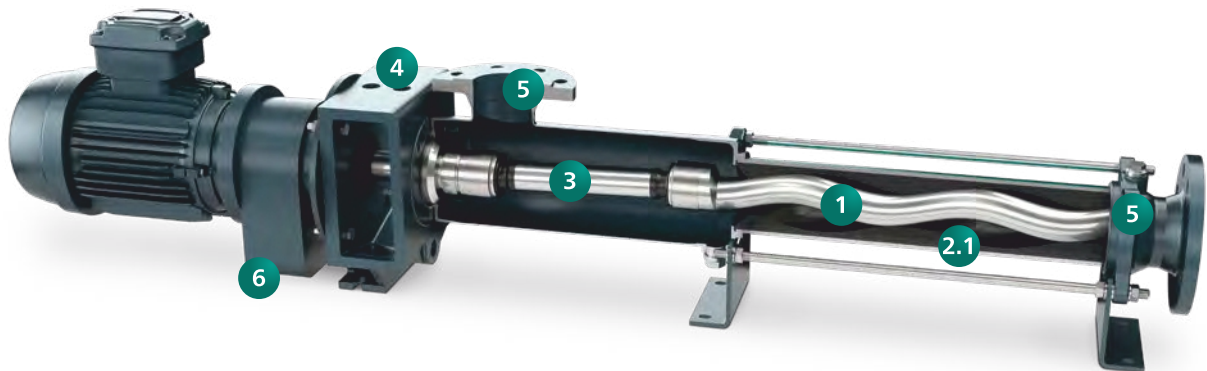
Our range of metallic materials extends from simple grey cast iron and chrome-nickel steel to highly acid-resistant materials such as Duplex, Hastelloy and titanium to suit different conveying tasks. Ceramics and plastics round off the list for aggressive and abrasive applications. Our elastomers range 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 solid-based stators made from plastics or metallic materials is available.

Large variety of shaft seals

The range of mechanical shaft seals includes simple seals with or without quench, double-acting 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 mH₂O
- 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 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.

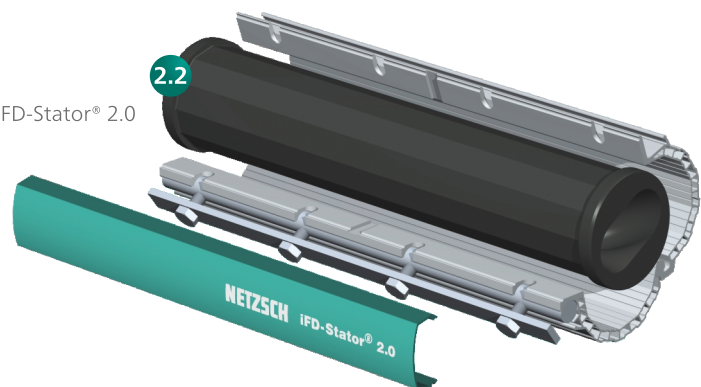
2.1 Stator with conventional technology

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

optional: iFD-Stator® 2.0



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

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.

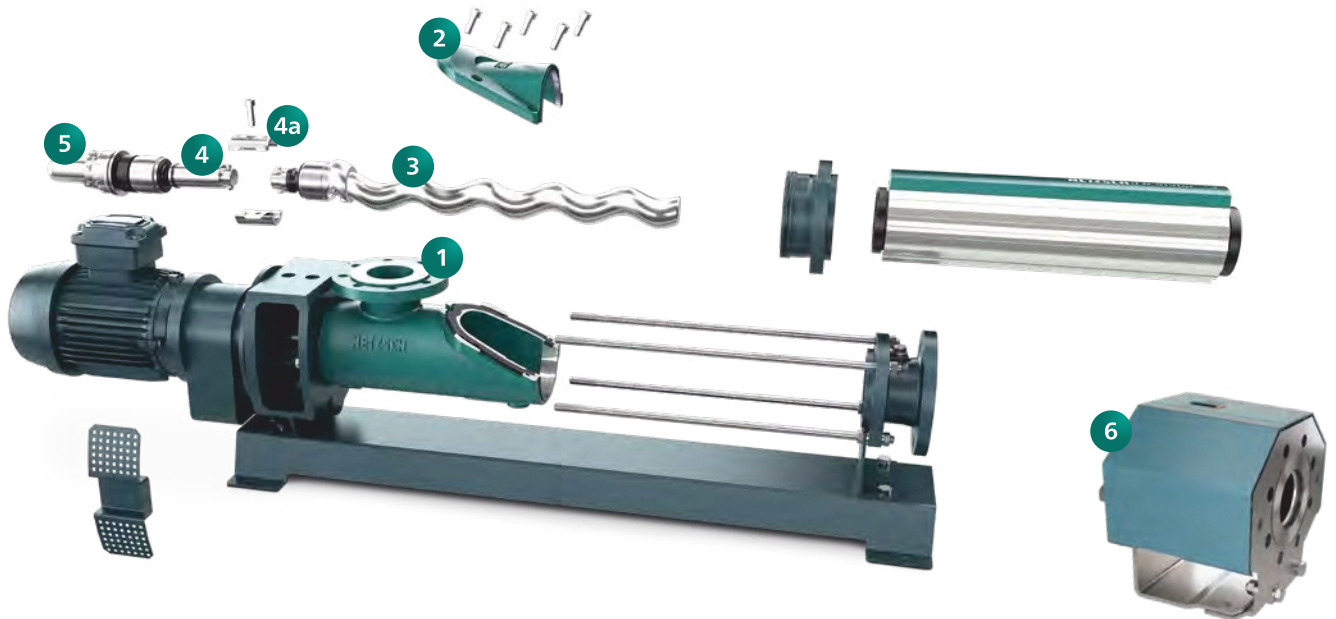
Halar® is a registered trademark of Solvay Solexis

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 maintenance, 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® concept is a MG 1 single acting mechanical seal in cartridge design, which can be easily removed through the large inspection opening. Other options upon request.

6 xLC® stator adjustment unit

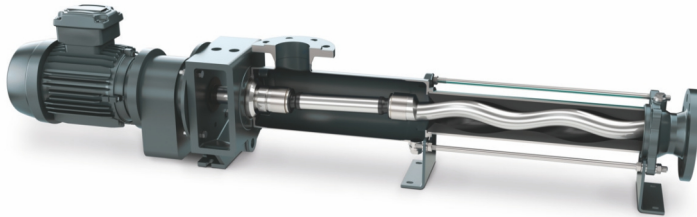
The xLC® unit is attached to the flange of the elastomer part of the stator and can compress or stretch it. In the case of wear the elastomer part of the stator can be compressed to restore the pretension between the rotor and stator ensuring an efficient sealing line.

NEMO® Progressing Cavity Pumps

Performance and Product range

NEMO® BY

in block construction design



Description and Performance

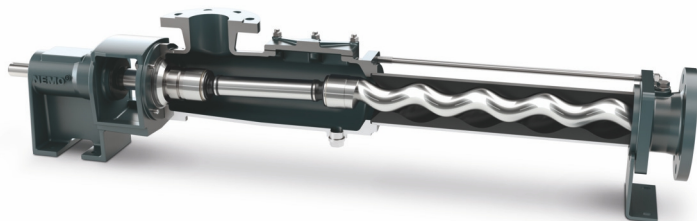
Compact design with flanged drive; low investment, operating and maintenance costs. Four rotor / stator geometries for optimised performance.

Pump performance

- Capacities up to 400m³/h (1,800 gpm)
- Pressures up to 24 bar (340 psi)

NEMO® SY

with bearing housing and drive shaft



Description and Performance

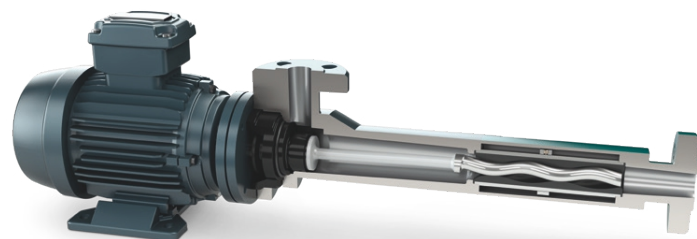
Design with bearing housing and drive shaft allows for universal use of all types of drives. four rotor/stator geometries for optimised performance.

Pump performance

- Capacities up to 500m³/h (4,400 gpm)
- Pressures up to 48 bar high pressures up to 240 bar

NEMO® C.Pro®

plastic dosing pump



Description and Performance

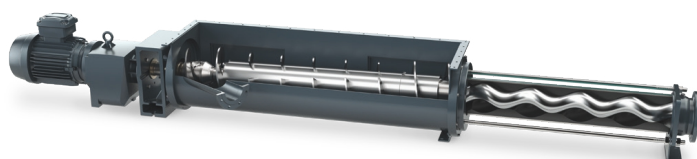
High dosing accuracy (deviation < 1%). compact design with directly flanged drive.

Pump performance

- Capacities from 0.5 up to 1500l/h (0.025 up to 260 gph)
- Pressures up to 10 bar (520 psi)

NEMO® B.Max

in block construction design with directly flanged drive or with bearing housing and drive shaft



Description and Performance

The NEMO® B.Max® mixing pump sets new standards through optimum mixing and conveyance of your substrates. It is a perfectly tailored feeding technology for your biogas application.

Pump performance

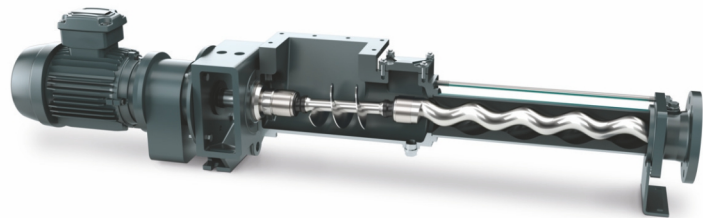
- Capacities up to 70m³/h (310 gpm)
- Pressures up to 48 bar (696 psi)

NEMO® Progressing Cavity Pumps

Performance and Product range

NEMO® BO/BS

in block construction design with directly flanged drive

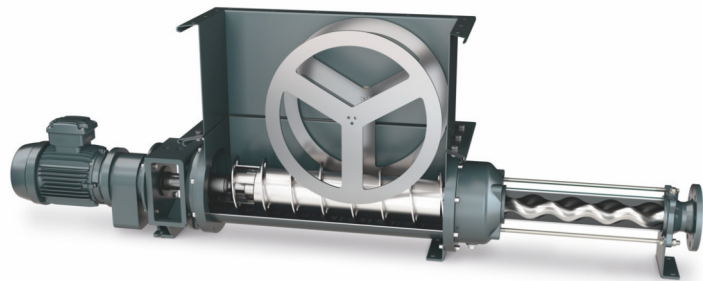


NEMO® SO/SS

with bearing housing and drive shaft

NEMO® BF

optional with aBP-Module™ in block construction design with directly flanged drive



NEMO® SF

optional with aBP-Module™ with bearing housing and drive shaft

NEMO® BP

in block construction design with directly flanged drive

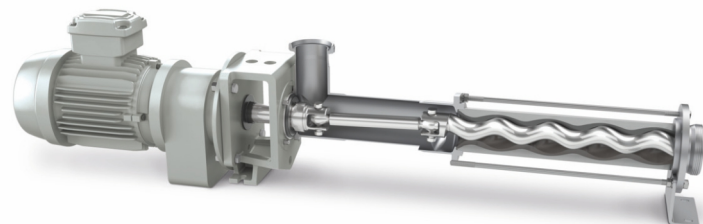


NEMO® SP

with bearing housing and drive shaft

NEMO® BH

Hygienic Pump



Description and Performance

Housing with removable rectangular / square hopper and coupling rod with feeding screw with or without force feed chamber for easier entry of the fluid into rotor and stator.

Pump performance

- Capacities up to 200m³/h (880 gpm)
- Pressures up to 24 bar (348 psi)

Description and Performance

Housing with removable, enlarged rectangular hopper and tapered force feed chamber as well as coupling rod with patented, positioned feeding screw for optimal transfer of the medium to the rotor and stator.

Pump performance

- Capacities up to 200m³/h (880 gpm)
- Pressures up to 48 bar (696 psi)

Description and Performance

Housing with integrated bridge breaker, mixing additives, enlarged rectangular hopper and tapered force feed chamber as well as coupling rod with patented, positioned feeding screw for optimal transfer of the medium to the rotor and stator

Pump performance

- Capacities up to 200m³/h (880 gpm)
- Pressures up to 48 bar (696 psi)

Description and Performance

Compact design with directly flanged drive resulting in low initial investment and economical operation and maintenance.

Pump performance

- Capacities up to 140m³/h (880 gpm)
- Pressures up to 24 bar (348 psi)

NEMO® Immersible Pumps

Applications, Performance and Product Range

NEMO® Immersible Pump BT with Suspension Bracket

This pump is used for emptying open barrels and containers. It is equipped with a suspension bow for crane suspension. Immersion depth up to 3m.

NEMO® Immersible Pump BT with Integral Mounting Plate

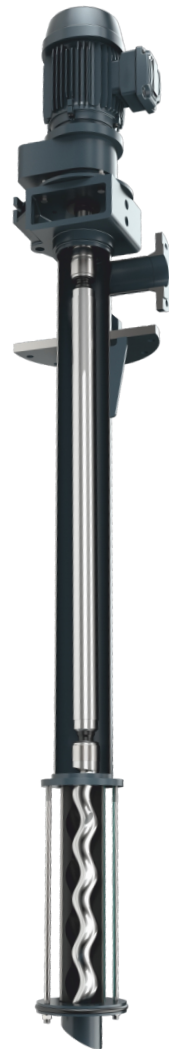
This pump is used in closed pits, tanks and containers where there is the possibility to vertically flange mount the pump to the tank lid. Depending on pump size, speed and immersion depth up to 10m.

Pump performance

- Capacities up to 140m³/h (620 gpm)
- Pressures up to 24 bar (340 psi)



NEMO® Immersible Pump BT with Suspension Bracket



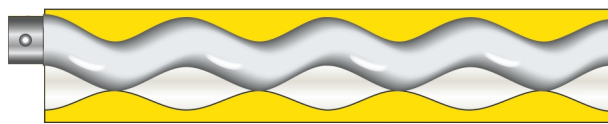
NEMO® Immersible Pump BT with Integral Mounting Plate and horizontal discharge connection

NEMO® Pumps in Different Geometries & joints

Modular system

NEMO® Pumps belong to the group of rotary positive displacement pumps. The conveying element consists of the rotor which rotates within the fixed stator.

As all four pump geometries have the same outer dimensions. We have a modular design where – apart from rotor and stator – all other components are identical. When a change in flow rate or pressure is required, installed NEMO® Pumps can be adapted to the new operating conditions by simply changing rotor and stator.



- 1/2 lobe
- Double stage
- Flow rate: 100%
- Differential pressure: 12 bar (170 psi)

S Geometry

- Very smooth conveyance
- Compact dimensions despite high number of stages
- Large cross-sections of rotor inlet
- Low flow velocity/NPSH
- conveyance of compacted products possible
- conveyance of large solid particles



- 1/2 lobe
- Single stage
- Flow rate: 200%
- Differential pressure: 6 bar (85 psi)

L Geometry

- Greater volumetric efficiency/long service life due to long seal line between rotor and stator
- Compact dimensions together with high flow rates



- 2/3 lobe
- Double stage
- Flow rate: 150%
- Differential pressure: 12 bar (170 psi)

D Geometry

- Extremely compact dimensions despite high pressures and flow rates capabilities
- Almost pulsation-free conveyance
- High dosing accuracy



- 2/3 lobe
- Single stage
- Flow rate: 300%
- Differential pressure: 6 bar (85 psi)

P Geometry

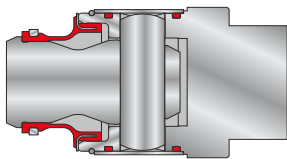
- Compact dimensions in conjunction with very high flow rates
- Almost pulsation-free conveyance
- High dosing accuracy
- Good volumetric efficiency/long service life due to long seal lines between rotor and stator

The correct joint design in a NEMO® pump has a decisive influence on the operational reliability and life cycle cost. The optimal joint for the respective pump series is selected depending upon application, operational conditions as well as the flow rates.

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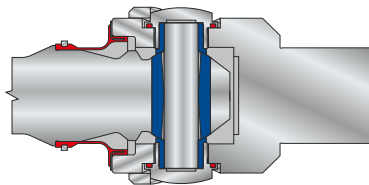
B Universal Pin Joint

The NEMO® universal pin joint is the standard joint for NEMO® industrial pumps thanks to its simple design and outstanding reliability. To achieve a long service life, the joint is oil filled and sealed using a NEMO® Sm®seal. The joint can also be used without seal in case of extremely high temperatures and products where elastomers are not suitable. The joint consists of a minimum number of parts that enables simple dismantling for maintenance.



V Pin Joint

The operational characteristics of the NEMO® V pin joint are similar to those of the B pin joint. For longer service life in difficult applications they are strengthened by hardened bushings fitted into boreholes in the coupling rod and the rotor/drive shaft head. The V pin joints with hardened bushes are easy to remove for maintenance purposes. standard on the 125 pump size.



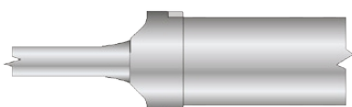
H Hygienic Pin Joint

This open, patented pin joint was designed specifically for use in hygienic pumps. It is crevice and dead space free, polished and therefore, easy to clean. The joints is made in accordance with US 3-A Sanitary Standards.



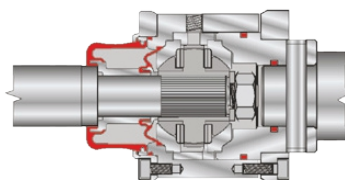
F NEMO® Flexible Rod

This flexible rod is wear- and maintenance free because there are no components moving against each other as in other joint types. Neither lubrication nor seals are required. Therefore, the flexible rod is suitable for high pressures and temperatures. The flexible rod is also free from crevices and dead spaces which allows it to be used for pumping highly sensitive products in aseptic conditions. It is designed in accordance with US 3-A sanitary standards.



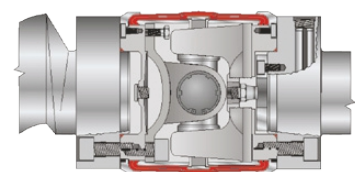
K Joint

The patented, K joint was designed for extremely arduous industrial applications, involving constant pump running, frequent stop/starts of shock loads, It is kinematically designed so that the torque and axial loads are borne by separate elements within the joint. The joint is oil filled and hermetically sealed by two seals which are resistant (Compatible) against the lubricant and the pumped product. Filling the space between the two seals with oil allows the use of the joints at pressures up to 12 bar (170 psi).



Z Double Seal Pivot Joint

For the largest flows and pressures possible with NEMO® pumps where the torques and axial loads are at their highest (in bearing housing size NM 125Y and above) the pumps are fitted as standard with a cartridge type precision pivot joint. The joint is oil filled, hermetically sealed by two seals which are resistant (compatible) against the lubricant and the pumped product. It is suitable for continuous operation.



Elastomer Quality Developed, Continuously Tested And Optimised At Netzsch

Elastomer research & development is in-house at NETZSCH. At 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 for the specific requirements of customers.

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-Stator®, lobes and housing inserts for rotary lobe pumps.

Stator Materials Elastomers

- Natural rubber / butadiene rubber (NR/BR)
- Chlorinated polyethylene (CM)
- Ethylene propylene diene rubber (EPDM)
- Hydrogenated acrylonitrile butadiene rubber (HNBR)
- Acrylonitrile butadiene rubber (NBR)
- Silicone rubber (SI)
- Fluororubber (FKM FPM)
- polytetrafluoroethylene
- Grey cast iron



Developing new blends



Manufacturing blends



Extruder with conventional stator

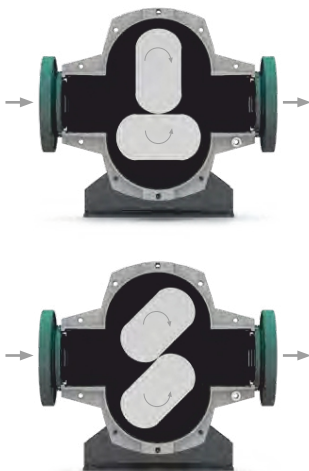
TORNADO® Rotary Lobe Pumps

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.

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 parts that come into contact with the product are immediately accessible without having to dismantle pipelines or drive.

Functioning principle

The TORNADO® rotary lobe pump is a positive displacement pump. The pumping action is generated by the contra-rotation of two rotors within the pump chamber which are synchronised externally. The media enters the pump chamber through the inlet port and is carried around the chamber by the rotors to the outlet port where it is discharged.



A broad application spectrum

NETZSCH TORNADO® pumps are suitable for a wide range of applications but are particularly good for liquids which:

- contain large solids, solids up to 70 mm in diameter can be pumped
- have a wide range of viscosities, from 1 mPas up to 1 million mPas
- are shear sensitive, i.e. thixotropic, dilatent, pseudoplastic, etc
- are fibrous and/or abrasive
- are lubricative or non lubricative

Technical Specifications:

- Flow rates up to 1000m³/hr
- Differential Pressures of up to 10 bar

Materials:

- Housing: Cast Iron, Stainless steel, and Special materials on request
- Lobes: NBR, EPDM and Viton

Additional Options:

- Special lobe puller tool
- Dry run protection device
- Seal plan provision
- Flexible hose for end connections
- ANSI Flanges

Characteristics:

- Valve free construction
- Self priming
- Suitable for any kind of liquid including media containing gas, solids or fibrous matter
- Suitable for non- lubricating and lubricating media
- Pumping media with high or low viscosity
- Handling shear sensitive fluids
- High resistance to wear
- Negative/high suction lift capability upto 8m
- Compact construction
- Reversible operation
- Tolerance of dry running
- Can be serviced without disconnecting pipework
- Easy maintenance with improved design
- Suitable for Mobile Applications



TORNADO® T1 and TORNADO® T2

The F-GENERATION TORNADO® T1

WITH ITS PROVEN QUALITY

The pump performance, size and material of the TORNADO® T1 rotary lobe pumps are matching precisely the properties of the pumped medium and the place of use. Three series with a total of eighteen sizes cover a flow rate range from 1-1,000 m³/h.

Your Benefits

- GSS1 technology for lasting reliability
- Maintenance without removing the pump from the pipeline
- Easy and quick access to the lobes and shaft seal
- Insensitivity to dry running
- Fast availability through stockpiling of the pumps and required components
- ATEX and CE certifiable

Minimal service time

The pump has been designed in such a way that it requires few components to be maintained. The patented sealing sleeves never come into contact with medium, thus guarantee faster removal, and thus contribute to reduction of maintenance and plant downtime.

High Energy efficiency

Thanks to the new bearing concept, less drive power is required. This reduces energy costs and thus also the TCO.

High resistance to wear

Again thanks to new bearing concept, it contributes in extending service life of the pump, despite the higher pressures, the wear of the rotary pistons has been reduced. Also, due to the flow-optimised inlet and outlet of the pump chamber, pulsation and vibration have been reduced.

Pressures of up to 10 bar are standard

The pumps are in the standard version for pressures of up to 10 bar in continuous operation designed. For higher pressures, we offer customised solutions.

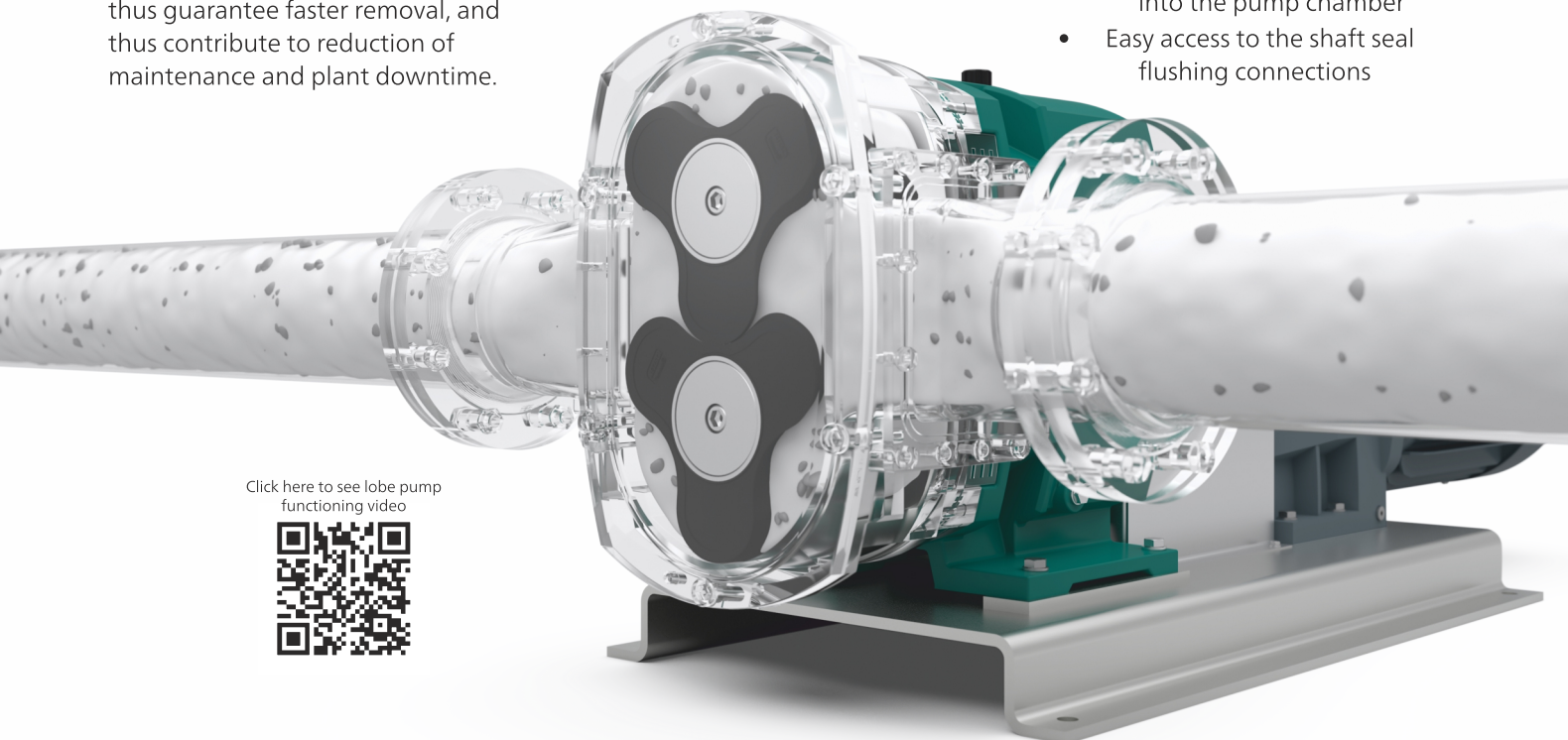
Applications

- Crude oil, Oily water with sand & sludge
- Bowser unloading
- Pit dewatering
- MBR sludge, oily sludge, thickened sludge, ETP sludge
- Sanitary sewage, Wastewater
- Cement slurry water
- Coal slurry, Iron Ore Slurry, Tio2 slurry
- Paper pulp, Kaolin slurry, Latex dispersion, binders
- Fruit juice concentrates, purees
- Edible Oils
- And so on..

The NETZSCH GSS technology (Synchronous Gear Protection System) guarantees you the highest level of operating safety. The pump chamber and the gearbox are physically separated ensures:

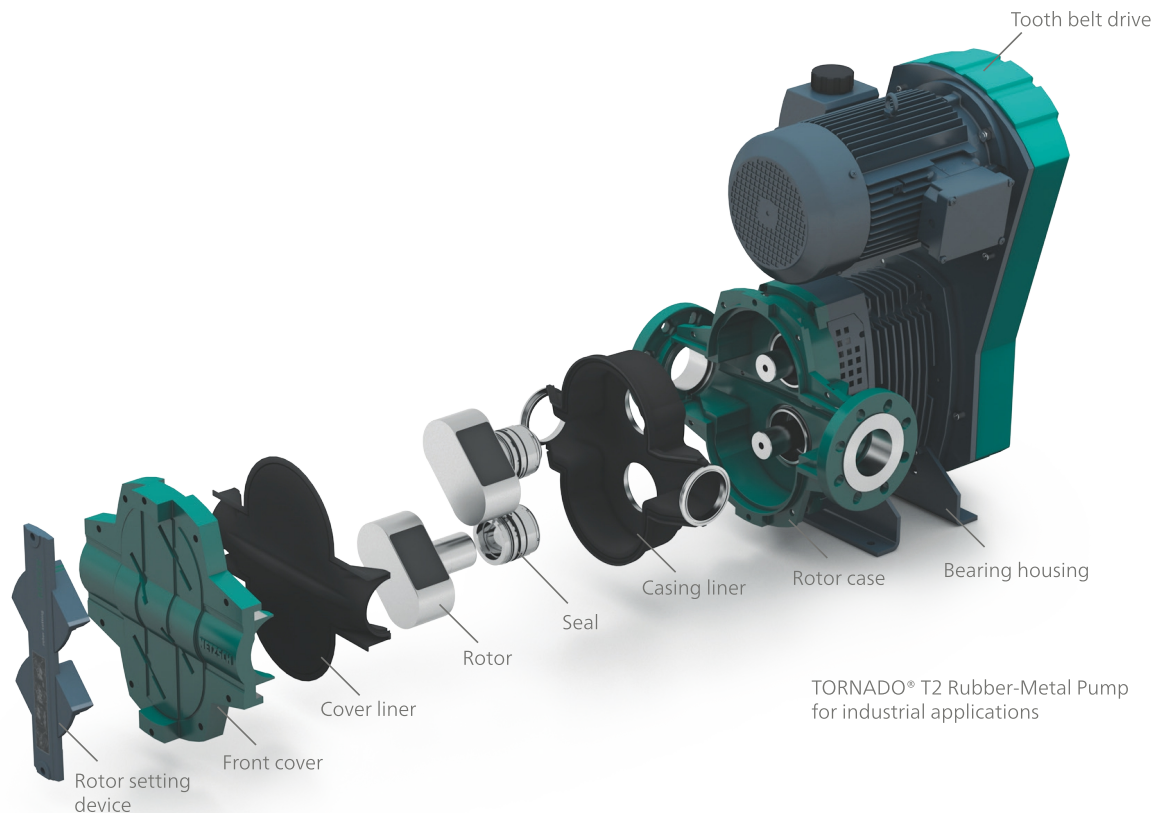
- Extended operational reliability
- No ingress of the pumped media into the pump gearbox in the event of a product leaking
- No ingress of pump gearbox oil into the pump chamber
- Easy access to the shaft seal flushing connections

[Click here to see lobe pump functioning video](#)



The newly developed TORNADO® T2

Revolutionary in Design and Customer Benefit



Ease of service

“Full Service In Place” 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 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 taper lock ringsets. 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.

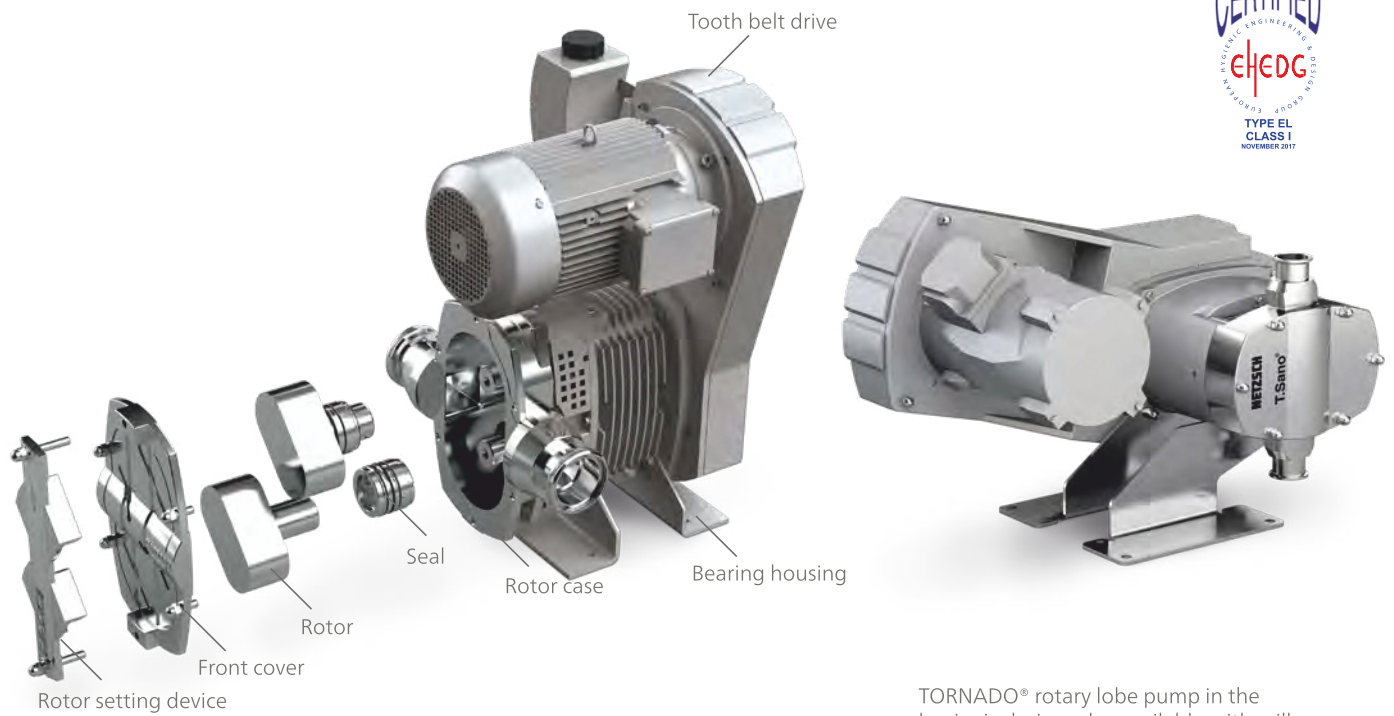
Advantages

- Maximum operational reliability
The NETZSCH BSS-Technology (Bearing Security System)
- Efficiency in smallest space
- Ease of service (Can be serviced without disconnecting pipework)
- Dry running capability
- Reversible operation
- Installation Flexibility
- Environmental friendly
- Reduced life cycle costs

Pump Performance

Capacity	up to 300 m ³ /h
Pressure	up to 12 bar
Viscosity	50,000 CP
Solid content	up to 70 mm diameter
Temperature	up to 140° C

TORNADO® T.Sano



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 process for fully metal pumps.

Operational safety

From GSS¹ to BSS²

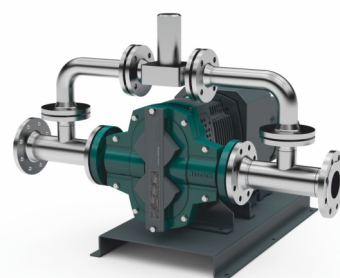
The physical separation between pump chamber and bearing housing tried and tested in the TORNADO® T1 guarantees that each TORNADO® rotary lobe pump from NETZSCH is completely dependable.

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

TORNADO® - Installation Flexibility

TORNADO® pumps are able to transfer media containing solids and fibrous matter. Waste water and sludge can be moved quickly and efficiently whenever the process the TORNADO® range of sizes, specifications and materials allows

a customised solution for all application. TORNADO® pumps can be mounted on baseplates, trolleys or trailers and the range of drives available include electric motors, diesel engines and hydraulic motors.



Used in a wastewater treatment plant, the TORNADO® T2 pumps sludge with 2% solid content at a capacity up to 18 m³/h against a pressure up to 2 bar



Filling of abrasive and chemically aggressive adhesive agent. Flowrate appr. 5 to 15m³/h against a discharge pressure of 3 bar



Concentrated fruit juice flowrate appr. 20m³/h at 2 bar. Temperature appr. 8°C pump is in run batch operation and periodically deaired

NOTOS® - MULTI SCREW PUMPS

3 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

Multi Screw Pumps are known as pumps for low to high flows and low to high pressures

- Flow rate up to 2500 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 pumped media

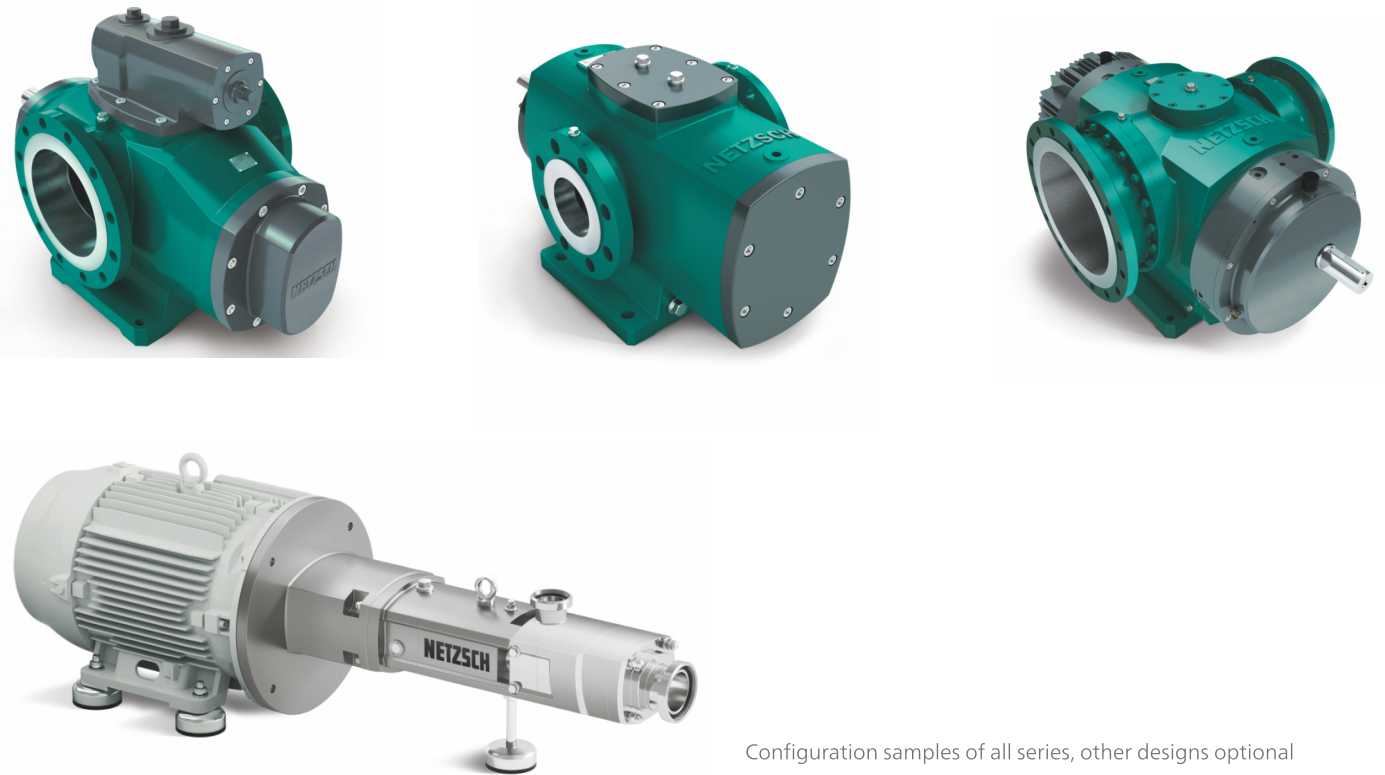
Characteristics

- 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
- Quiet operation
- Several mechanical seal options
- Magnetic drive optional
- Extremely low noise and vibrations

NOTOS® - MULTI SCREW PUMPS

The NOTOS® multi screw pump family comprises several series in multi arrangements which serve a wide range of industries and applications. The superior quality standard meets the highest level of requirements from our customers.

Different pump series to meet your individual demands:



Configuration samples of all series, other designs optional

2 NS –

Two Screw Pump, in industry and hygienic version

Fluid properties:

- From non to light abrasive
- Corrosive and non corrosive
- Low to medium viscosities
- Low to well lubricant fluids

3 NS – Three Screw Pump

Fluid properties:

- Non abrasive
- Non corrosive
- Low to medium viscosities
- Lubricant

4 NS – Geared Twin Screw Pump

Fluid properties:

- From non to medium abrasive
- Corrosive and non corrosive
- Low to high viscosities
- Non lubricant and lubricant

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 peristaltic pump 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

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
- Ease of hose replacement
- Wide range of operation
- Low starting torque

Wide 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



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 getting blocked or damage to downstream equipment.

Broad range of applications

The NETZSCH M-Ovas® should preferably be 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 of 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



M-Ovas® Cutting Plate Macerator

FSIP®- Full Service in Place holds aslo true for our Grinders

N.Mac® Double Shaft Macerator

Capable of fragmenting large and solid particles, the N.Mac® Double Shaft Grinder is the ideal equipment to suit different applications such as wastewater treatment, biomass substrate handling, food and fruit scraps. Its various housing designs in channel and inline version allow installation into effluent channels or flange assembly to prevent pipe clogging and to protect downstream equipment, such as pumps.

Broad range of applications

The double shaft macerators should preferably be 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 up to 400 m³/h with a solid content of up to 10 %.

Design Details

- Housing for inline or channel installations
- Double 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 Channelversion

NETZSCH Dosing Technology and Barrel/Drum Emptying Units

Product Range of Dosing Technology

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 pumping and dosing of high viscosity, highly abrasive and filled products.
- Product remaining in barrel after emptying < 1-2 % of the total volume
- Low system working pressures
- No pressure or flow hiatus in the system
- Barrel changes without interrupting the production process
- Valve-less dosing system ideal for filled products
- 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
- With suck-back, no dripping or stringing by dosing
- Low life cycle costs
- Complete heating possible



NETZSCH barrel emptying system NBE 200 with hygienic design

NETZSCH barrel emptying system NBE 20 with industrial design



NEMO® Dispenser

NETZSCH Original Spare Parts, 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

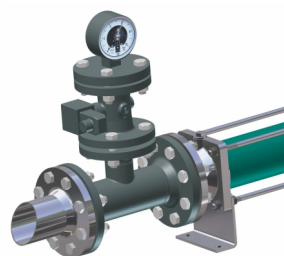
Overpressure and underpressure protectors safeguard the pump and protect downstream machinery and valves against overpressure and underpressure.

- Diaphragm Pressure Gauge
- Pressure control device DTSL 3
- Multi-function pressure instrument
- By-pass line

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

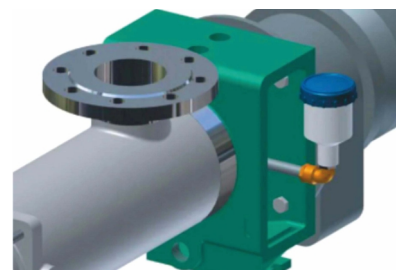


Pressure Gauge

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 flush for double mechanical seals



Quench Pot

NETZSCH after-sales is built on 3 pillars:

Maintenance and Repairs

when commissioning, maintaining, retrofitting & repairing, and with service contract from NETZSCH you are on the safe side.

Technical Training

by NETZSCH experts at our customer's site or at our locations

Original Spare Parts

with NETZSCH manufacturing quality

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.

For NETZSCH Original spare parts & technical service. Scan the QR code



Mail us at info.nti@netzsch.com
or Call us at **+91 44 4296 5100**



The NETZSCH Group is a mid-sized, family-owned German company engaging in the manufacture of machinery and instrumentation with worldwide production, sales, and service branches.

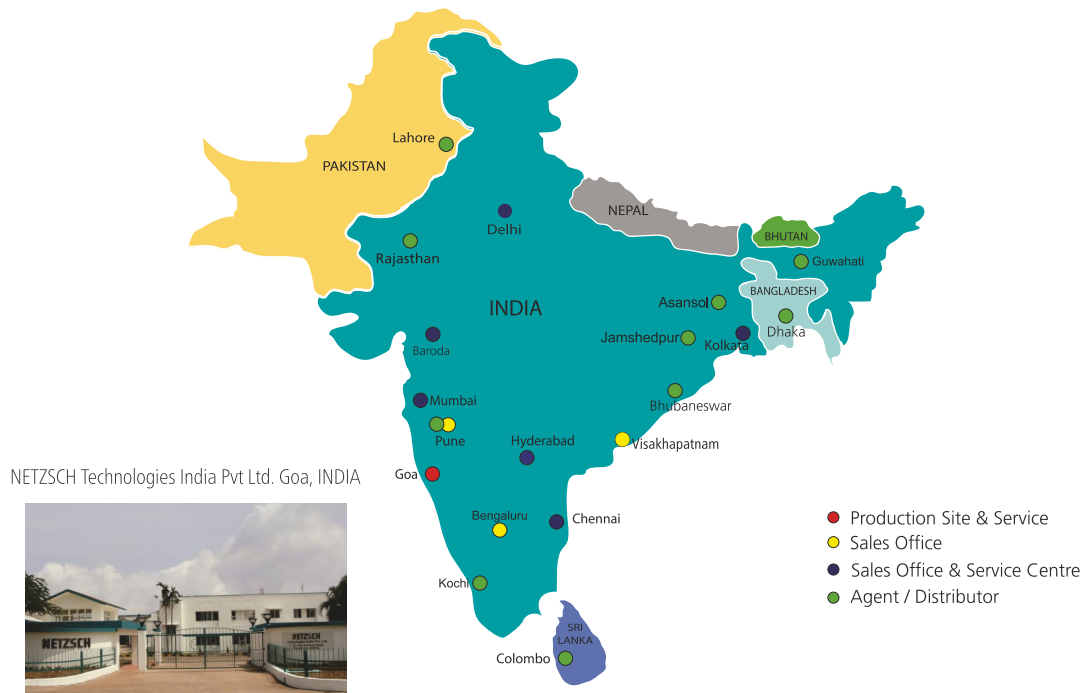
The three Business Units – Pumps & Systems, Grinding & Dispersing and Analysing & Testing – provide tailored solutions for highest-level needs. Over 4,000 employees at 210 sales and production centres in 36 countries across the globe guarantee that expert service is never far from our customers.

NETZSCH Pumps & Systems has its manufacturing unit since 2005, the state of art of manufacturing plant in Goa. Services customers in India, Srilanka, Bangladesh, Pakistan and Nepal through Regional Offices and Distribution Network.

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

Business Unit Pumps & Systems
NETZSCH South Asia

NETZSCH
Proven Excellence.



Proven Excellence.

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