

NETZSCH

Proven Excellence.



Food & Pharmaceutical

Technology, Markets and Applications

Pumps & Systems

You've got the application, WE'VE GOT THE SOLUTION

Within the Business Unit Pumps & Systems, Food & Pharmaceutical holds a crucial position all over the world with regard to uncompromising hygiene and most demanding process requirements in all manufacturing areas.

We have our finger on the pulse

Products should keep fresh for a longer period of time but still maintain their original quality standard. Our pumps as the "driving force" in your production process are a key ingredient of your product quality. We develop, manufacture and sell positive displacement pumps which ensure in all process stages a hygienic and smooth conveyance of high quality and shear-sensitive media.

Driving forces

Four different types of pumps are available for various process requirements: NEMO® hygienic and aseptic progressing cavity pumps, TORNADO® hygienic rotary lobe pumps, NOTOS® hygiene multi screw pumps and PERIPRO peristaltic pumps. For each application your pump is individually laid out in flange & hopper design.

Engineering partnerships

With our customers from all over the world we are able to incorporate the latest market trends and requirements into the development and improvement of our products. Therefore new possibilities for your manufacturing process continually arise.

Product range

NEMO®

Progressing Cavity Pumps

Hygienic pumps
Hygienic mini pumps
Aseptic pumps

PERIPRO Peristaltic Pumps

Hygienic version for food, pharmaceutical and cosmetics industry

TORNADO®

Rotary Lobe Pumps

Hygienic rotary lobe pumps
T.Sano®

NETZSCH

Barrel Emptying Systems

For emptying standard containers from 20 l to 200 l and totes of 1000 l or more.
Flow rates approximately 6 ml - 10 m³/h, clean drain,
Residue without liner <1%

NOTOS®

Multiscrew pumps

Hygienic twin screw pumps
NOTOS® 2NSH

NETZSCH Accessories

Protection devices
Flushing/sealing pressure devices
Control systems
Trolley assemblies
Tools

We pump following media for you:

- Beverages
- Biotechnical products
- Breweries
- Butter
- Chocolate
- Cosmetics
- Fermented dough
- Fish
- Fruits & vegetables
- Fruit juice, concentrated and/or heated
- Meat
- Mustard powder
- Pharmaceuticals
- Pomace
- Potatos
- Soapstock
- Starch
- Sugar
- Syrup
- Tomato Sauce
- Wine
- Yeast
- and many more

NEMO® Progressing Cavity Pumps

FOR HYGIENIC AND ASEPTIC APPLICATIONS

Characteristics and typical components

The hygienic design of components and machinery as well as the cleanability of process plants are defined in a multitude of rules and regulations.

NEMO® hygienic and aseptic progressing cavity pumps are constructed, manufactured and tested according to various regulations, like QHD regulations (Qualified Hygienic Design), the 3-A Sanitary Standards of the US or GOST-R (Russian Certificate of Conformity).

The materials used are certified in accordance with FDA (Food and Drug Administration) and comply with REGULATION (EC) No 1935/2004 (EC Regulation on food contact materials).

Large range of capacities and pressures

- Flow rates from a few ml/h up to 140 m³/h
- Pressures up to 24 bar

Wide range of applications

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

- Shear-sensitive
- Low to high viscosity
- Lubricating and non lubricating
- With or without solids
- Dilatant or thixotropic
- Abrasive
- Adhesive

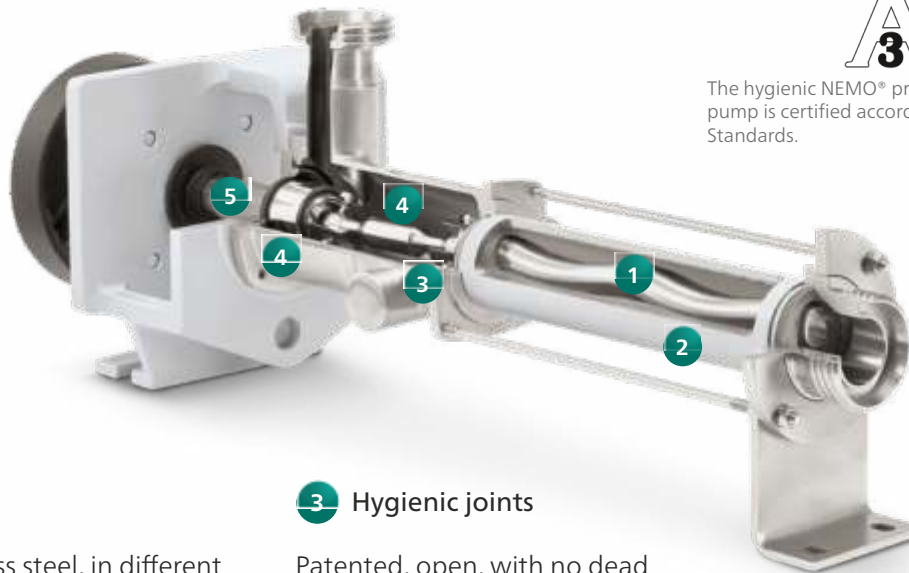
Advantages

- Smooth, almost pulsation-free conveyance
- Long process cycles due to contamination proof design
- Flow rate independent of variances in pressure or viscosity
- Product intake possible in vacuum conditions up to almost total vacuum
- The housing is designed with no dead space to improve flow and avoid settling of solids
- All contact surfaces in polished finish to avoid caking of the fluid and to facilitate cleaning
- For lubricating open, patented, hygienic joints
- Flow rate in proportion to speed with high dosing accuracy over a wide speed range
- Version with flexible rod for uncompromising hygiene and long serviceable life
- Elastomers according to FDA and REGULATION (EC) No 1935/2004
- Horizontal or vertical installation
- Service friendly

NEMO® for the Hygiene

IN BLOCK CONSTRUCTION AND WITH BEARING HOUSING

NEMO® BH Hygienic pump in standard version



The hygienic NEMO® progressing cavity pump is certified according to 3-A Sanitary Standards.

1 Rotor

Made of stainless steel, in different geometries.

2 Stator with reduced wall thickness

For changing product temperatures a patented stator with reduced elastomer wall thickness is available. In addition, a thermal stator protector (STP-2 or STP-D) for overheating and dry running protection may be used.

3 Hygienic joints

Patented, open, with no dead space, hygienic joints for optimal cleaning.

4 Drive train

Drive and connection shaft with coupling rod and two hygienic joints for drive transmission to the rotor.

5 Sealing housing

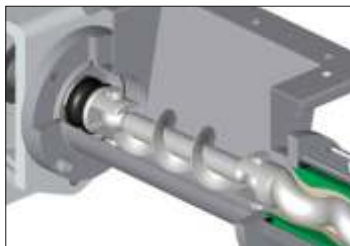
Various shaft sealings are available.



Hygienic joint

The specially developed joints are continuously lubricated by the medium without the risk of medium being caught in any dead space.

Characteristics and typical components



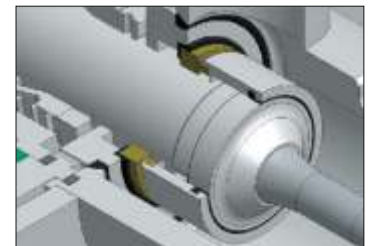
Feeding screw hopper

For highly viscous and pasty products, the pump is optionally equipped with a feeding screw and a hopper to allow for an optimal filling of the conveying chambers.



Mechanical seal with elastomer bellows (standard)

Single-acting seal, unbalanced, independent of direction of rotation, elastomere bellows with or without knife edge. Seals in SIC. On request elastomere in compliance with FDA standards.



Mechanical seal with spring (optional)

Single-acting seal, balanced, independent of direction of rotation, with product protected spring. Smooth surface. Seals in SIC. Elastomere in compliance with FDA standards.

NEMO® BH tempered hygienic pump

This pump has open hygienic pin joints, open housing seals, mixing elements on the coupling rod and a heating jacket over the whole stator and pump housing area. All surface areas are polished to avoid caking of the fluid and to improve cleanability.

This pump is suitable for all hygienic applications, especially for viscous media which have to be heated or cooled:

- Specially designed mechanical seals assure perfectly crevice-free pumping space
- Housing and stator are heated
- Products are conveyed smoothly
- Cleanable according to the requirements



Rotation without joint

THE EASY TO CLEAN FLEXIBLE ROD

In order to meet the high hygiene requirements, it is a flexible rod, rather than open joints or joints filled with oil, that connects the drive to the shaft. This is heat-shrunk with the rotor and connection point, so that the transition is hermetically sealed. Because there is no friction between components at the connection, there is hardly any wear on the flexible rod and it needs no lubrication or seal, which means maintenance costs are very low. The materials used for the application in the dairy were stainless steel – in a polished version for the wetted parts – and a stator made of FDA-compliant elastomer is installed, as shaft seal a single-acting seal can be used, optionally also a double-acting seal.

NEMO® SH Hygienic Plus Pump



Performance

Flow rates up to 140 m³/h at pressures up to 24 bar.

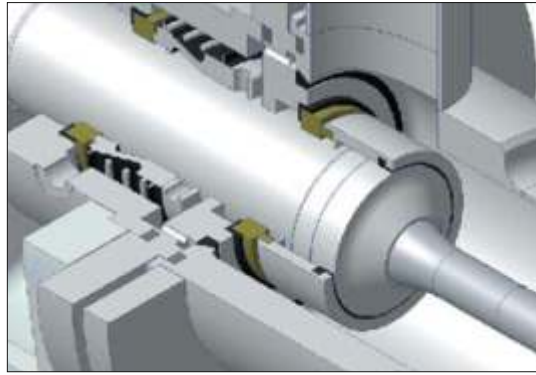
Features

The flexible rod is free of dead space and is wear- and maintenance-free so that it can be used even with highly sensitive and abrasive products. The design with bearing housing and drive shaft means it can be used with all types of drives.



The hygienic NEMO® progressing cavity pump with flexible rod is certified according to 3-A Sanitary Standards.

Characteristics and typical components



Flexible rod

The flexible rod for universal use in the NEMO® Hygienic Plus series is corrosion-proof, with no dead space, wear and maintenance free because there are no components moving against each other as in other joint types. Neither lubrication nor seals are required so that the lubricity of the fluid does not have to be taken into consideration. Ideal for pumping highly sensitive products with or without solids and for uncompromising hygienic applications. Also available as a 3-A flexible rod.

Optional double-acting mechanical seal in tandem arrangement

Double-acting mechanical seal in tandem arrangement with unpressurized, static or dynamic quench. Mechanical seals in SIC. Elastomer in compliance with FDA standards. The design of the rotating unit guarantees the seal integrity at changing temperatures and pressures. The seal meets the highest hygienic requirements.

NEMO® BH Hygienic Mini Plus Pump



Performance

Flow rates from 0.1 up to 500 l/h
at pressures up to 36 bar.

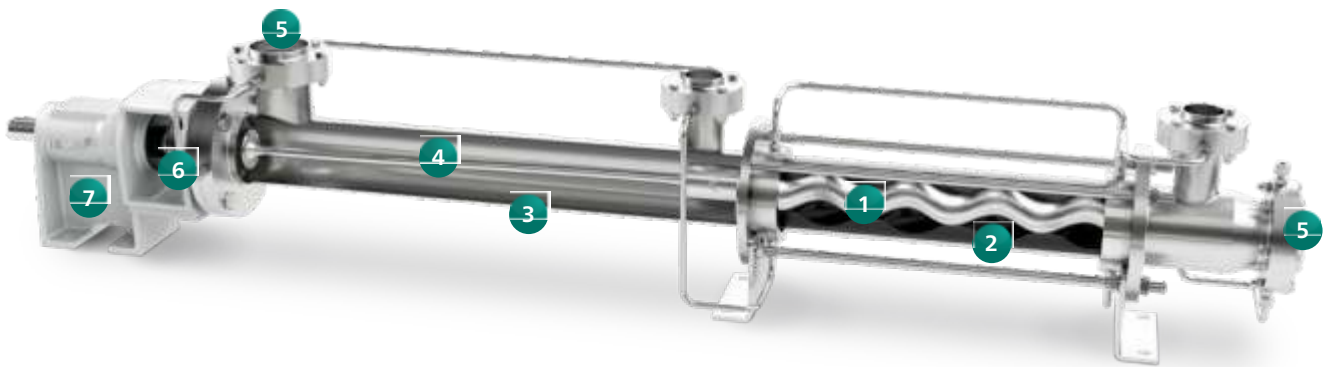
Features

The flexible rod is free of dead space and is wear- and maintenance-free so that it can be used even with highly sensitive and abrasive products. High dosing accuracy (deviation of < 1%). High dosing accuracy (deviation of < 1%). Compact design with directly flanged drive gives you low investment, operating and maintenance costs.

NEMO[®] in the Aseptic Fields

WITH BEARING HOUSING

NEMO[®] SA Aseptic Pump



1 Rotor

Made of stainless steel, in different geometries.

2 Stator with reduced wall thickness

For changing product temperatures a patented stator with reduced elastomer wall thickness is used. In addition, a thermal stator protector (STP-2 or STP-D) for overheating and dry running protection is available.

3 Flexible rod

Free of dead spaces, requires no maintenance.

4 Housing/discharge flange

The pump housing has a reduced diameter for optimal flow velocity and minimized pump volume. The body flange is located directly above the shaft seal avoiding any dead space. Therefore the deposit of fluid in the housing during the manufacturing cycle is eliminated.

5 Double buffered static seals

All static seals to the atmosphere are double sealed chambers. Sterile condensate, vapour and/or detector fluid is continuously supplied to the chambers. Through the contamination proof design the process cycle is extended. Consequently output

capacity increases as the number of cleaning cycles decreases.

6 Sealing housing

Double-acting mechanical seal in tandem arrangement with unpressurized, static or dynamic quench.

7 Bearing housing

Widely spaced, heavy duty bearings ensure optimum concentricity of the drive shaft and are able to withstand large axial loads. The free shaft end allows for the use of all types of drive.

Characteristics and typical components

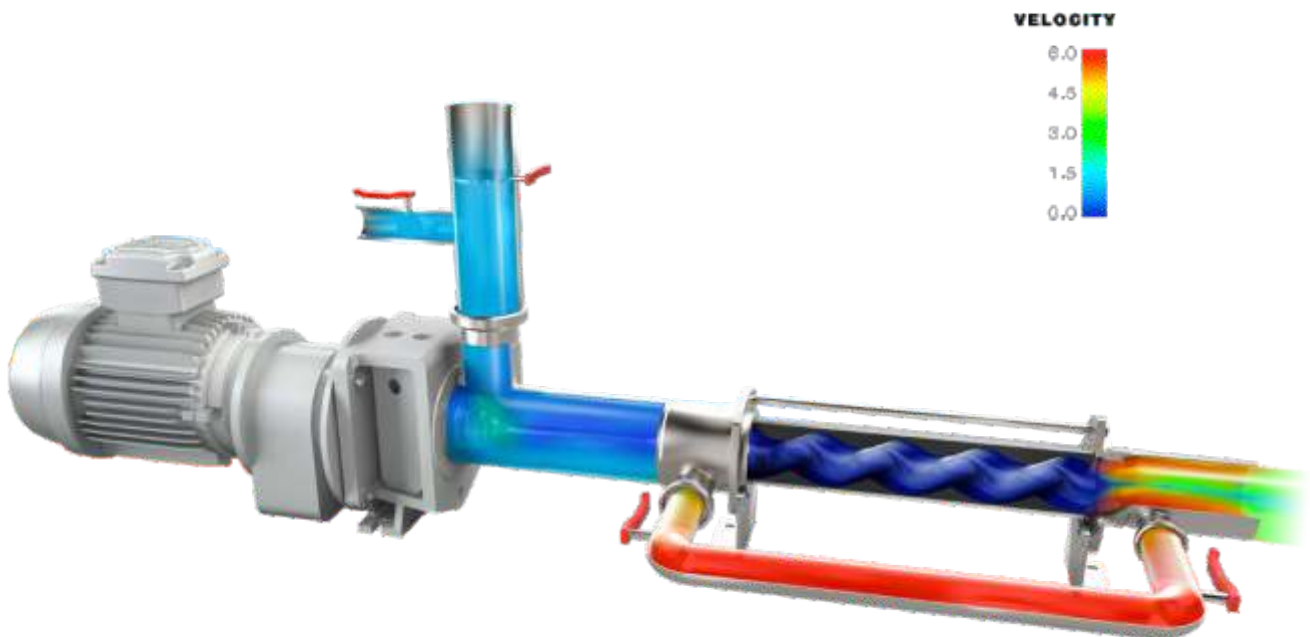
Pipework (optional)

The pipework circulates sterile condensate, vapour and/or detector fluid to the double-acting, closed seal lines.



CIP/SIP Process

For the CIP process, the entire system requires a cleaning fluid velocity of at least 1.5 m/s and to facilitate this the NEMO® hygienic and aseptic progressing cavity pumps are equipped with additional cleaning ports. The position of these ports can be determined to suit the application, they require a bypass pipe. The bypass is also required for the SIP process. In both the CIP and SIP processes the NEMO® pumps are operated intermittently. Tangential cleaning ports guarantee complete emptying of the NEMO® pump. All pump materials used are suitable for CIP and SIP processes.



Combined conveying and cutting

THE NEMO® BO/SO HOPPER PUMP WITH CUTTING DEVICE

Two process steps in one mean more process reliability,
saving of time and less machinery equipment



The NEMO® BO/SO progressing cavity pump with hopper and coupling rod with feeding screw and force-feed chamber is employed in almost all branches of industry to provide continuous, pressure-stable, gentle and low-pulsation conveyance. This special version of a NEMO® BO/SO hopper pump with cutting device has been designed for applications in the food industry.

It guarantees optimum feed into the conveying elements and immediate cutting of larger fruits and vegetables passing the cutting unit which is placed inside the compression chamber. This unit consists of a rotating knife with three blades and a variable number of stationary knives adjustable to the size and consistency of the particles. Optionally the pump can be equipped with an additional cutting unit at the discharge flange of the pump.

With its perforated disc and rotating knife it allows for further fine definition of the particle size.



As any other NEMO® Progressing Cavity Pump also the BO/SO pump has the ability to dose the conveyed media in proportion to rotation speed. In block construction with a flanged drive, this pump is particularly compact and economical but it also available with bearing housing for a wider range of drives.

Features of the pump

- Hopper housing with rectangular inlet flange and feeding screw with force-feed chamber to provide optimal feed for your slowly flowing and pasty media into the conveying elements
- continuous low-pulsation conveyance unaffected by fluctuations in pressure and viscosity
- conveyance volume in proportion to rotation speed with high dosing precision over a broad rotational-speed range
- high pressure capability without valves

Features of the cutting units

- cutting unit inside compression chamber consisting of a rotating knife with three blades and a variable number of stationary knives adjustable to the size and consistency of the particles
- cutting unit at the discharge flange with perforated disc and rotating knife allowing for further fine definition of the particle size

Advantages

- variable modular system for optimum conveyance and cutting
- robust and compact construction
- replacing additional machinery
- constant flow
- easy serviceability



TORNADO® Rotary Lobe Pumps

POWERFUL, ROBUST AND COMPACT

The oil-free design makes the hygienic T.Sano® ideal for food and pharmaceutical media



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

The hygienic TORNADO® rotary lobe pump in the smooth design is certified according to EHEDG and 3-A Sanitary Standards.

NETZSCH TORNADO® self-priming, valveless, positive displacement pumps can be optimally customised to meet specific process and application requirements. They can be used for almost any media on intermittent, continuous or dosing applications.

CIP-/SIP-Process

For the CIP process, the entire system requires a cleaning fluid velocity of at least 1.5 m/s. As the pump reaches the required flow speed, it can also be used as a cleaning pump, i.e. the conveying and cleaning can be done by the same pump. All materials are in line with CIP and SIP processes.

Large range of capacities and pressures

- Flow rates up to 120 m³/h
- Pressures up to 10 bar
- In 8 different sizes

Wide range of applications

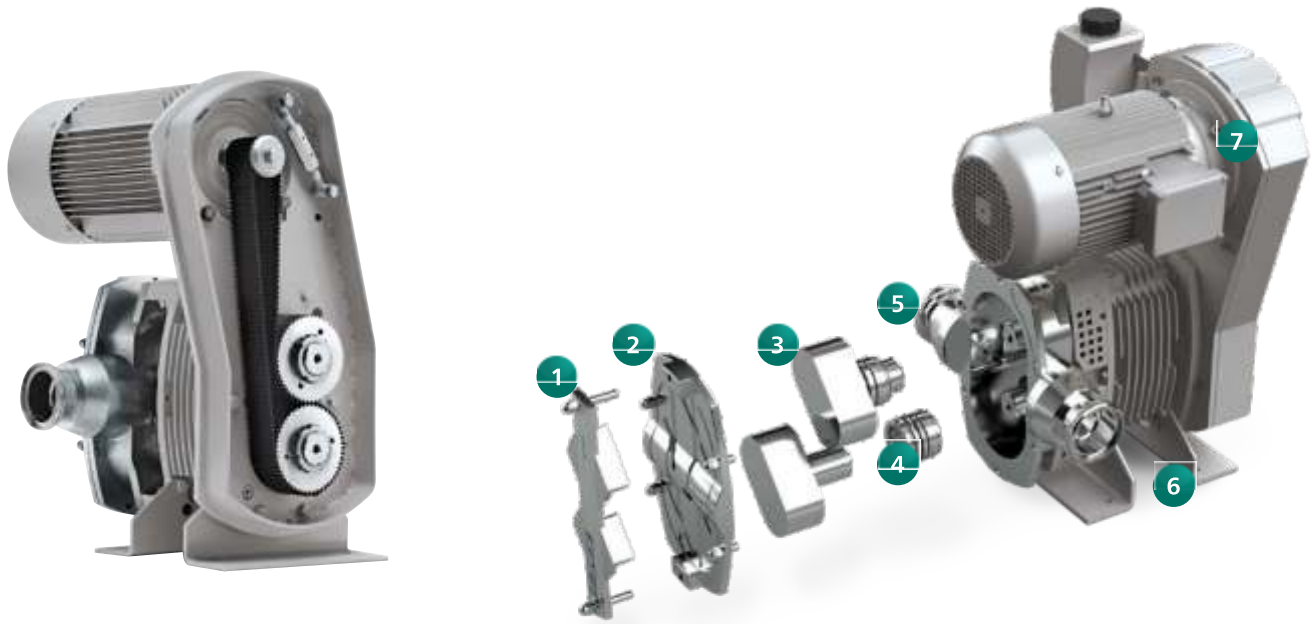
TORNADO® hygienic rotary lobe pumps are normally used for fluids having the following properties:

- Shear sensitive
- With or without solids
- Medium up to high viscosity (300 mPas to 100.000 mPas)
- Thixotropic and dilatant
- Lubricating and non lubricating
- Adhesive

Advantages

- Compact design, high performance
- Wide temperature range
- No dead spaces
- CIP and SIP capable
- Gentle product handling
- Reversible flow direction
- Flow rate in proportion to speed
- Low vibration, low noise emission
- Easy maintenance of the conveying elements and shaft seal without removing the pump from the pipeline

Characteristics and typical components



1 Rotor setting device

Using the setting device, the lobes are adjusted radially and axially.

2 Front cover

As an option, the pump cover can be heated.

3 Rotor

The stainless steel lobes are fixed externally. The surface of the lobes is perfectly smooth, and prevents any dead space.

4 Seal

The cartridge design is available in single- and double-acting versions. The seal is positioned specifically to avoid dead space, and the rotating seal faces are within the conveyed medium.

5 Rotor case

The suction housing is available with two options for connections: flanged or threaded. The interior of the housing has no dead space. The heatable pump housing is standard feature of the T.Sano® Smooth model.

6 Bearing housing

The bearing housing is constructed to the BSS System.

7 Tooth belt drive

Synchronisation and drive via maintenance free tooth belt drive, which runs completely oil free.

*BSS - Bearing Security System

PERIPRO Peristaltic Pump

A new concept for pumping food-grade products

The food version of the PERIPRO peristaltic pumps is optimised for hygienic applications. It is compatible with food and beverages as well as cosmetic products and complies with current specifications and regulations.

This version is made up of:

- The latest generation peristaltic hose in FDA food Nitrile
- DIN 11851 or Tri-clamp connections
- Easy and quick to remove the front cover to aid CIP cleaning processes
- Front removal roller
- Stainless steel base plate and cover

With this version, you can simplify your cleaning processes and improve efficiency. The innovative manufacturing process for peristaltic hoses offers additional temperature resistance and extends the service life. This minimises your downtime and reduces maintenance costs.

The inner extruded layer of the peristaltic hose increases the life of this component, thus reducing the consumption of spares and maintenance operations. At the same time, it improves the performance of the cleaning process with temperatures of up to 80°C.

Your benefits

- Ease of maintenance and operation
- Food version of the pump with the hose in FDA food Nitrile, hygienic connections, easy and quick removal of front cover and front removal roller
- Food internal lubricant
- Low shear fluid pumping
- Maximum process efficiency
- Self-priming pump
- Full control of dosing: $\pm 1\%$ accuracy

Typical applications in the food & beverage and cosmetic industry

- Pumping of diatomaceous earth
- Transfer of viscous juices and sauces or with solid pieces in the mixture
- Various additives, colourings and flavourings for food
- Feeding to filling machines
- Pumping of food products such as drinks, dairy and confectionery
- Yeast pumping
- Oil pumping
- Wine transfer



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 and totes of 1000 l or more. 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. Thus ensuring high dosing accuracy and minimising the wear of 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, repeatable accuracy
- 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
- Low life cycle costs
- Complete heating possible



NETZSCH barrel emptying system NBE 200 in hygienic design and NETZSCH barrel emptying system NBE 20 in industrial design

NOTOS® 2NSH



HYGIENIC TWIN SCREW PUMP

The benefit to the customer

Keeping its commitment to developing innovative and efficient solutions for the most demanding industries, NETZSCH presents to the market the NOTOS® Hygienic 2NSH Twin Screw Pump. Designed to optimize the transfer at high working pressures (up to 16 bar or 230 psi) of media with higher viscosity, such as chocolate, fruit, yogurt, juices, and pumping them while keeping the integrity and natural properties, without any quality loss. This pump is a practical solution that adds more efficiency and technology to the process.

The pump is made of AISI 316L stainless steel and polished according to international standards, making it easy to clean (CIP) and to sterilize (SIP). As there is no contact between the rotating parts, the pump speed can be increased. Therefore cleaning can be carried out without the need for an auxiliary system.

General characteristics

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

- Metal parts made of stainless steel
- High suction capability (low NPSHr)
- No contact between the rotating parts
- Reversible flow
- Low pulsation
- No dead spaces
- Smooth feeding of the pumped media

Adding a jacket for heating or cooling allows temperature control of the fluid

The conventional version of the NOTOS® 2NSH Hygienic Twin Screw Pump can be equipped with a heating or cooling jacket. The jacket is installed around the entire housing in which the screws are located. An external, independent circuit heats or cools the jacket. This pump is perfect for applications where the pumped fluid tends to harden or requires temperature control to guarantee its quality.

Large capacity and pressure range

The pump covers a wide capacity range and is therefore highly flexible in use.

- Flow rate up to 200 m³/h (880 gpm)
- Pressure up to 16 bar (230 psi)

Compact design

Small space requirements due to their compact design, having two options for mounting: with foot or flange.

General characteristics

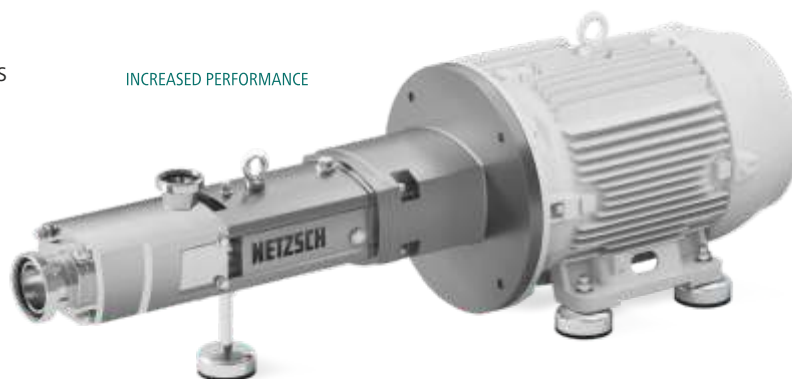
Heating or cooling jacket
Heating/cooling medium:
water 0 - 90°C
3 bar pressure (45 psi)

Broad range of applications

- Food industry: dairy products, delicacies, ketchup, sauces, confectionery and baby food
- Beverage industry: fruit juices, syrups, concentrates, breweries
- Cosmetic and pharmaceutical industry: creams, active substances, ingredients
- Chemical industry: adhesives, solvents, paints, varnishes and plastics

Your benefits

- Versatile use eliminating the need for a CIP pump
- Easy maintenance: simple assembly/disassembly
- Flexibility: the same equipment can be used for pumping fluids with low or high temperature/viscosity
- Seals with food-grade certification



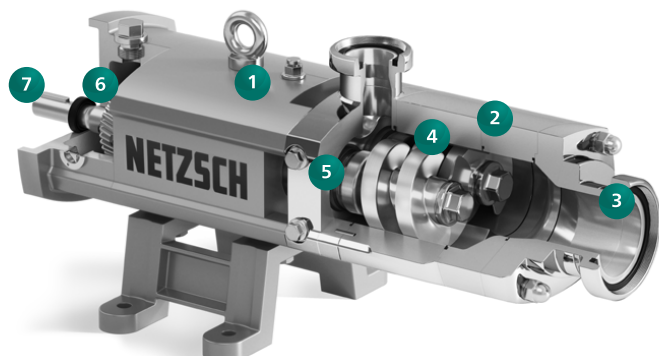
INCREASED PERFORMANCE

INNOVATIVE CONCEPT

MAXIMUM PRODUCTIVITY

Perfection down to the last detail

for outstanding results in your production



The NOTOS® 2NSH is a hygienic pump family composed of five series with four different models in pressure and bearing sizes. In all, they are 20 different sizes, they cover a wide range of flowrates and they will meet the needs of nearly all segments of many industries.

1 Bearings housing

Bearings designed for high load capacity with housing in stainless steel allowing external cleaning of the pump.

2 Pump housing

Pump housing with a unique design for FSIP® – Full Service in Place, allowing the easy and quick pump disassembly, without having to disconnect it from the piping. Available in foot or self-aligned flange design. FDA-approved sealing, without dead spaces.

3 Flanges

Internally polished flanges as per hygienic standards to ensure

complete pump cleaning [$Ra < 0.8 \mu m$]. Various sanitary connection options available such as DIN, TC, SMS, RJT, and others.

4 Screws

Stainless steel screws with high efficiency profile, allowing higher flow rates with low fluid shear. Multiple pitch options available, all balanced and with high suction capability. Easy replacement of the screws without disassembly of the bearings. Screws with the same diameter are changeable just by changing the pitch.



5 Shaft sealing

Available with single or double seals, both with modular cartridge design and interchangeable from one to another. Connections for flushing or quench are provided.

6 Synchronization gears

Helical gears provide smooth torque transmission between the screws and ensure the contactless operation of the pumping elements.

7 Shafts

Stainless steel shafts designed for high torque, with the option to rotate in both directions.

FSIP® concept for simplified maintenance

The NETZSCH Research & Development Department implemented FSIP® as a design concept in many products. It simplifies maintenance and the life of service staff. Thus it is possible to fully disassemble and assemble the screws and the mechanical seal without removing the pump from the processing line. As a result of this, the servicing downtimes are significantly reduced. FSIP® is an intelligent technological solution that brings even more comfort and reliability to your processes.

Simplify your CIP cleaning process with NOTOS® 2NSH

Reduce your costs with NOTOS®

In a conventional CIP cleaning-process usually an additional CIP pump is necessary to ensure the cleanliness of the system. With the 2NSH, there is no need for an extra pump because it also operates as a CIP pump during the cleaning process. By-pass valves and additional pipework are not necessary anymore.

How is it possible?

Its constructive form allows to reach the speed necessary for CIP cleaning. With a flow velocity of at least 1,5 m/s, it is possible for the cleaning liquid to ensure efficient cleaning of the pump, pipes, connections and accessories.

CIP/SIP temperature
Up to 140 °C



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.

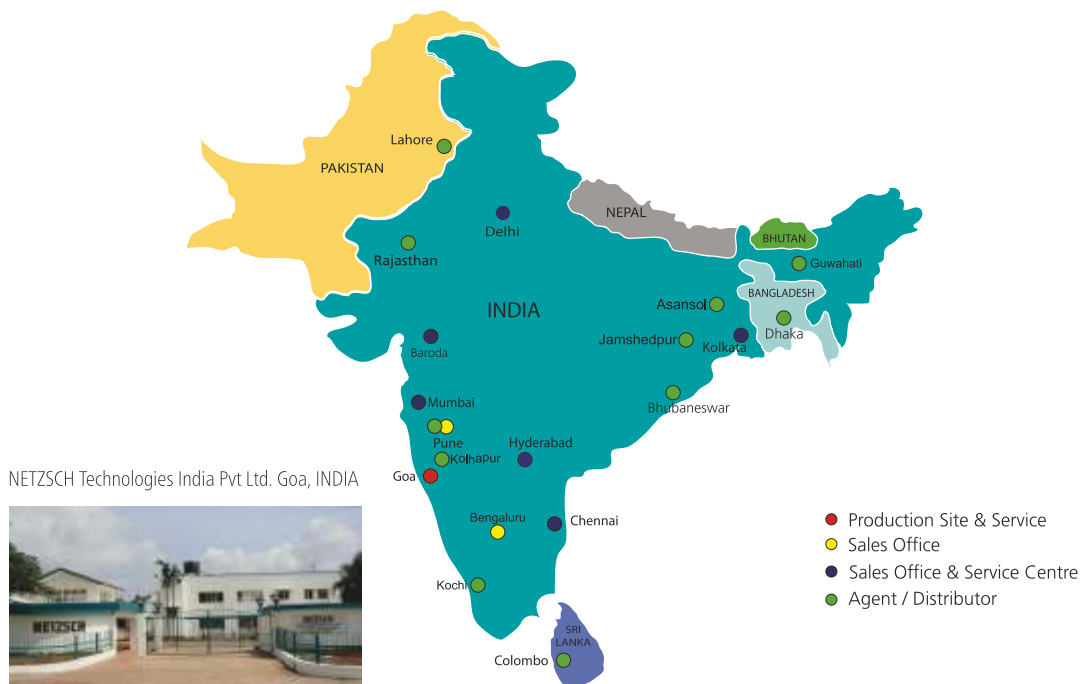
The three Business Units – Pumps & Systems, Grinding & Dispersing and Analysing & Testing – provide tailored solutions for highest-level needs. Over 4,000 employees at 210 sales and production centres in 36 countries across the globe guarantee that expert service is never far from our customers.

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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