NETZSCH

Dosing Technology

Product Overview, Technology and Application Areas

The heart of your process.

Business Field Dosing Technology
Products and Components

NETZSCH

Bonding, sealing, conveying – You've got the application, we've got the solution!

As a truly global producer of progressing cavity pumps NETZSCH Mohnopumpen GmbH has been developing, manufacturing and selling NEMO® progressing cavity pumps worldwide for more than five decades.

Business Field Dosing Technology

- cars and trains
- planes and ship construction
- electrical
- renewable energies
- pharmacy
- food
- bonding and sealing
- and similar

How fortunate to be able to choose ▪

Through continuous product research and development coupled with unrivalled process know-how, NETZSCH has gained its reputation as a trendsetting problem solver for the most difficult applications, especially in the field of dosing. A high value is placed on the improvement of positive displacement pump technology in general, as well as on the further development of existing dosing components to meet continually rising customer demands.

Always the right product ▪

NEMO® pumps belong to the group of rotary positive displacement pumps. They consist of two conveying elements, the rotor and the fixed stator, in which the rotor rotates.
For each individual case of application, the technically most suitable pump is chosen. Your advantages are pump types and series, which are optimally matched to your specific application, reliable and market driven.

We are where you are ▪

With more than 1,300 employees at four development and production sites as well as 20 sales offices, a cooperation partner (in Japan) and another 200 NETZSCH representatives NETZSCH Mohnopumpen GmbH is close to you wherever you are.

Product Programme of Dosing Technology

The product programme of dosing technology contains:

NEMO® Dispenser and Hand Dispenser

Capacities from ca. 0.05 ml up to 10 ml chamber volume per revolution.

NEMO® Barrel Emptying Units

Standard units for the emptying of barrels from 1 l to 200 l. Special barrel emptying units, up to 1000 l on request. Capacities from ca. 0.002 m^3/h up to ca. 4.8 m^3/h. Clean emptying, better than 99 % emptying without liner.

NEMO® Cartridge Emptying Units

For the emptying of all popular cartridge sizes by means of a pneumatic cylinder, whereby no compressed air is introduced into the product during operation.

NEMO® Buffer Vessel

Buffer Volume ca. 1.0 l; delivers a constant feed pressure for the dispenser to ensure the highest levels of dosing accuracy. Also enables barrel changes without interrupting production.

NEMO® Mixing Components

Static mixers for 2 component applications.

NEMO® Control Systems

From simple start/stop control up to complex control for 2 component dosing; designed for each individual application.

NEMO® Automatic Dosing Units

Tailor made solutions for applications ranging from simple dosing to fully automated solutions.

NEMO® Progressing Cavity Pumps

For characteristics and typical components of the NEMO® progressing cavity pumps see pages 14 and 15.

The heart of your process.

General Characteristics of NEMO® Dispensers

General

NEMO® dispensers guarantee very precise dosing and high repeatability. As a result of these qualities NEMO® dispensers are being used for various applications in the automotive industry, in the electrical industry, in the field of renewable energy, in the pharmaceutical and food industry, as well as in other bonding and sealing industries.

Wide Range of Application

NEMO® dispensers are mainly used for media with the following properties:

- low to very high viscosity
- dilatant, thixotropic or having a viscous structure
- highly filled products
- shear and pressure sensitive
- highly abrasive
- lubricative and non lubricative
- adhesive and gel like
- heated and unheated

Large Range of Capacities

- capacities between approximately 0.5 ml/rev. and 10.0 ml/rev.

S-Geometry

The S-Geometry which is used for dosing applications has the following qualities:

- very smooth conveyance
- compact dimensions despite high number of stages
- large cross section rotor inlet
- conveyance of compacted media
- conveyance of large solid particles
- particularly suitable for metering

Advantages

- virtually shear free conveyance and dosing of highly viscous, abrasive and filled products
- capacity directly proportional to pump speed
- dosing accuracy ±1 % volumetric from 90° rotor turns
- smooth dosing with hardly any pulsation
- dosing accuracy nearly independent of temperature and viscosity of the media
- eliminates dripping through a suck back system
- highly dynamic application of the media through servo technology
- maintenance friendly quick release system for simple assembly and disassembly
- simple integration with a robotic system
- optional heating
- valve free dosing method

Construction of a NEMO® Dispenser
according to the Principle of a NEMO® Progressing Cavity Pump

1 Drive Connection
Tri-Clamp (quick change connection) for simple exchange of the pump

2 Pump Housing and End Connection
finished in stainless steel or aluminium dependent upon the application

3 Drive Shaft
with stable bearing arrangement for precise concentricity of the shaft

4 Shaft Sealing
double lip sealing for highest vacuum or pressure conditions

5 Rotor
in extremely wear resistant and corrosion free materials (full ceramic versions, available from pump size 3NDP08)

6 Stator
available in numerous elastomer qualities as well as solid material stators for the highest possible durability and abrasion resistance

NEMO® Progressing Cavity Pumps

For characteristics and typical components of the NEMO® progressing cavity pumps see pages 14 and 15.

General Characteristics of NEMO® Hand Dispensers

General

NEMO® dispensers guarantee very precise dosing and high repeatability. As a result of these qualities NEMO® hand dispensers are being used for various applications in the automotive industry, in the electrical industry, in the field of renewable energy, in the pharmaceutical and food industry, as well as in other bonding and sealing industries.

Wide Range of Application

NEMO® dispensers are mainly used for media with the following properties:

- low to very high viscosity
- dilatant, thixotropic or having a viscous structure
- highly filled products
- shear and pressure sensitive
- highly abrasive
- lubricative and non lubricative
- adhesive and gel like
- heated and unheated

Speciality

A specially developed, contact free sensor allows accurate dispensing by hand proportional to speed. This results in even bead application regardless of variations in hand movement or hand speed.

Large Range of Capacities

- capacities between approximately 1.0 ml/rev. and 4.0 ml/rev.

S-Geometry

The S-Geometry which is used for dosing applications has the following qualities:

- very smooth conveyance
- compact dimensions despite high number of stages
- large cross sections of rotor inlet
- conveyance of compacted media
- conveyance of large solid particles
- particularly suitable for metering

Advantages

- virtually shear free conveyance and dosing of highly viscous, abrasive and filled products
- capacity directly proportional to pump speed
- dosing accuracy ±1 % volumetric from 90° rotor turns
- smooth dosing with hardly any pulsation
- dosing accuracy nearly independent of temperature and viscosity of the media
- eliminates dripping through a suck back system
- highly dynamic application of the media through servo technology
- optional heating
- valve free dosing method

NEMO® Progressing Cavity Pumps

For characteristics and typical components of the NEMO® progressing cavity pumps see pages 14 and 15.

Construction of a NEMO® Hand Dispenser according to the Principle of a NEMO® Progressing Cavity Pump

1 Drive Connection
compact flanged unit

2 Pump Housing and End Connection
finished in aluminium

3 Drive Shaft
with direct connection to the drive to reduce length and weight

4 Shaft Sealing
double lip sealing for highest vacuum or pressure conditions

5 Rotor
in extremely wear resistant and corrosion free materials (full ceramic versions, available from pump size 3NDP08)

6 Stator
available in numerous elastomer qualities as well as solid material stators for the highest possible durability and abrasion resistance

7 Medium Inlet
swivel joint with 360° rotation in the horizontal axis and 36° movement in the vertical axis

8 Handle
stable handle and adjustable front grip

General Characteristics of NEMO® Barrel Emptying Pumps

General

NEMO® barrel emptying pumps draw themselves towards the bottom of the barrel and empty barrels and containers in chemical, pharmaceutical and food industries with the absolute minimum of product wastage. The heart of the barrel emptying system is a NEMO® progressing cavity pump. When the NEMO® pump is started a vacuum is created below the follower plate, which at the same time creates a light pressure on the media to guarantee a consistent suction into the pump.

Wide Range of Applications

NEMO® barrel emptying pumps are predominantly used for media with the following properties:

- low to very high viscosity
- dilatant, thixotropic or having a viscous structure
- highly filled products
- shear- and pressure sensitive
- highly abrasive
- lubricative and non lubricative
- adhesive and gel like
- heated and unheated

Large Range of Capacities

- Capacities from approximately 0.002 m³/h to 4.8 m³/h

Barrel Sizes

- Barrels between 1 l to 200 l as standard
- Special barrels up to 1000 l

Advantages

- virtually shear free conveyance and dosing of highly viscous, abrasive and filled products
- continuous or intermittent discharge
- complete discharge, residues < 1 - 2 %
- no pressure or flow hiatus
- smooth dosing with hardly any pulsation
- low pressure on the follower plate in the barrel
- discharge of conical barrels
- low pressure conditions in the system
- continuously adjustable discharge capacity through the speed of the drive
- dosing directly from the barrel

NEMO® Progressing Cavity Pumps

For characteristics and typical components of the NEMO® progressing cavity pumps see pages 14 and 15.

BET 200 Fixed Version for 100 - 200 l Barrels

BEF 200 Mobile Version for 100 - 200 l Barrels

BE 20M Mobile Version for 20 - 30 l Barrels

BE5T Table Top Version for 1 - 5 l Barrels

NEMO® Dosing Components
NEMO® Dosing Control

NETZSCH

Dosing Components

To offer you a complete dosing solution our product programme is supplemented by the cartridge emptying units, buffer storage vessels and 2C mixing units.

Cartridge Discharge

For emptying all standard cartridge sizes through pneumatic cylinder, which prevents unwanted ingress of air. Available as table top or robot version.

Buffer Storage

The buffer storage vessel provides a constant pressure on the suction port of the dispenser to achieve the highest metering accuracy. It compensates for any pressure fluctuations and also allows a change of barrel without interrupting the process. The buffer storage volume is approximately 1.0 l.

2C Mixing Head

Consisting of a distribution block and static mixing tube. Proportion of mixture up to 10 : 1.

Accessories

- heated and unheated hoses for all applications
- nozzles and dosing needles, coated and uncoated
- customer specific nozzle geometries
- fittings
- and many more

Interested? Call us to discuss your application.

Dosing Control

The control system plays a vital part in the correct and reliable operation in any dosing application. The NEMO® dosing control unit with its innovative, modular construction is capable of meeting even the most complex customer demands. From simple start/stop up to the most comprehensive of 2C control units, we offer the right solution for each application.

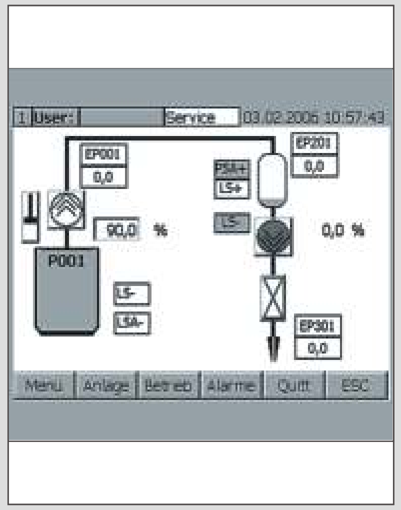
Visualisation

Simple, clear user screen with touch panel, complete with mimic diagram of the plant, displaying all important process parameters at a glance. Error message as clear text. User interface English or German, other languages on request.

Installation

Available in all common installation variants such as free standing and wall mounted control cabinets as well as console units.

Parameterisation



The servo controller parameters of the dispensers can be set via touch panel, no additional software is required. Simple switching between the various control parameters.

Interfaces

Usually through potential-free contacts, optional profibus, further field bus connections on request.

NEMO® Automatic Dosing Units
Bonding, Sealing, Conveying

NETZSCH

You've got the Application, we've got the Solution.

Due to continuous development and consistent implementation of process expertise, NETZSCH belongs to the trend-setting problem solvers for the most difficult applications, from dosing technology to automatic application. Our products integrate seamlessly into your process regardless of whether it is six axis or linear. We offer customised solutions for your requirements.

Benefits

- Project planning and implementation of automated technical solutions, from simple dosing to fully automated solutions
- Optional process visualization, data log and data archiving
- Customized solutions for your dosing tasks

Product Advantages

- Combination of dosing technology and automatic application
- Application with six axis or linear robots
- Clear interfaces for integration in complete range
- Remote maintenance optional

Construction of an Automatic Dosing Unit with Linear Robot

1 Dispenser

2 Barrel Emptying Unit

3 Electrical Control

4 Touch Screen

5 Linear Robot

6 Enclosure

Construction of an Automatic Dosing Unit with Six Axis Robot

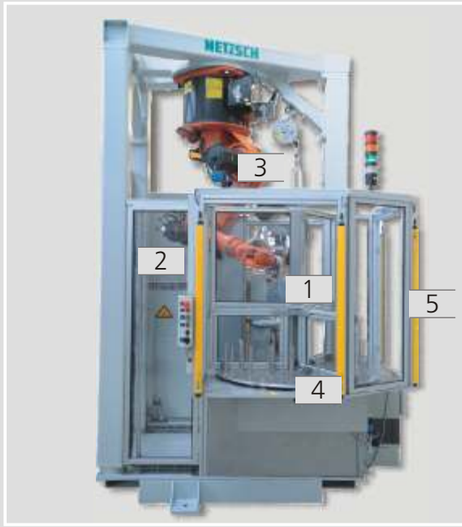
1 Dispenser

2 Electrical Control Automation

3 Six Axis Robot

4 Rotary Table

5 Enclosure



Advice.

Our team of experienced experts is happy to advise you.

Characteristics and Typical Components of the NEMO® Progressing Cavity Pumps

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Universal Installation

NEMO® progressing cavity pumps are utilised in various industries to convey many types of fluids in a continuous, low pulsating manner, while maintaining an accurate flow.

Wide Range of Applications

The pumps are specifically designed for products with the following characteristics:

- high solids content (maximum particle size up to 6" / 150 mm) and free of solids
- low to high viscosity (1 mPas - 3 million mPas)
- thixotropic and dilatant
- shear-sensitive
- abrasive
- lubricating and non-lubricating
- aggressive (pH 0 - 14)
- adhesive
- toxic

Large Range of Capacities and Pressures

- capacities from a few millilitres up to 500 m^3/h (2200 gpm)
- number of stages ranging from 1 up to 8 for pressures up to 48 bar (680 psi)

Various Conveying Elements

Four different rotor/stator geometries are available allowing optimisation of the pump characteristics for specific applications.

Extensive Range of Materials of Construction

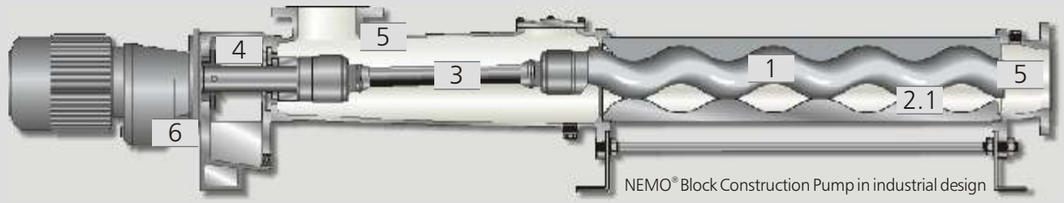
Wetted parts are available in numerous materials. Standard housings are made of cast iron and stainless steel. Parts are available in mild steel, stainless steel and tool steel. Other materials are available upon request. Elastomers like highly abrasion resistant natural rubber, oil, acid and alkali proof elastomers, Aflas and Viton are available.
When elastomers cannot be used due to high temperatures or compatibility reasons, NETZSCH offers a variety of solid materials.

A Wide Variety of Shaft Sealing Options

Shaft seals range from single acting mechanical seals, with and without quench, to double acting mechanical seals in back to back or tandem arrangement as well as cartridge seals as per customer specification.
For certain applications there are gland packings, lip seals and specially designed seals.
In the case of toxic fluids we offer a pump with a magnetic coupling which is 100 % leakproof.

Additional Features

- high suction capability up to 9 mwc (30 ftwc)
- reversible direction of rotation and thus flow
- installation in any position
- smooth and quiet operation
- temperatures of -20 up to +200 °C (-5 up to +570 °F)



NEMO® Block Construction Pump in industrial design

NETZSCH iFD Stator®

1 Rotor
In wear and corrosion resistant design including the wear free ceramic rotor, NEMO CERATEC®.

2.1 Stator with Conventional Technology
Vulcanised into a tube, with integrated seals on both ends in a variety of elastomers, plastics or metals. Stator inlet with chamber to facilitate the entry of the fluid into the conveying chamber.

2.2 Stator with iFD Technology
The stator consists of a disposable elastomer part and an aluminium outer sleeve in which the elastomer is housed. The advantages of this new technology are the reduced starting torque, the higher degree of efficiency, longer lifetime, simple and quick change as well as the easy disposal.

For further information about the iFD Stator® simply order brochure NMP • 344/02.

3 Drive Chain
Plug in shaft with coupling rod and two universal joints for power transmission from the drive to the rotor.

4 Shaft Seal
Standard design with single acting, wear resistant, bidirectional mechanical seal; on request different types of single/double acting mechanical seals by various manufacturers, cartridge and other special seals as well as gland packing. For toxic fluids, magnetic, leakage-free couplings are available.

5 Suction and Pressure Housing
Designed to optimise through flow with flanges or threads according to DIN and other international standards. Materials in cast iron, nickel chromium steel, rubber-coated cast iron as well as special materials according to specifications.

6 Block Construction Design
A drive flanged directly to the housing reduces length, weight and gives a constant shaft height, independent of construction and size of the drive. It is both maintenance- and service-friendly as well as economical.

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