

# NETZSCH



## NEMO® Progressing Cavity Pumps

Comprehensive and uncompromising solutions for all industries

For six decades and at five sites all over the world, NETZSCH has been developing and producing high-quality, innovative pump systems supported by a large number of patents.

# Good reasons

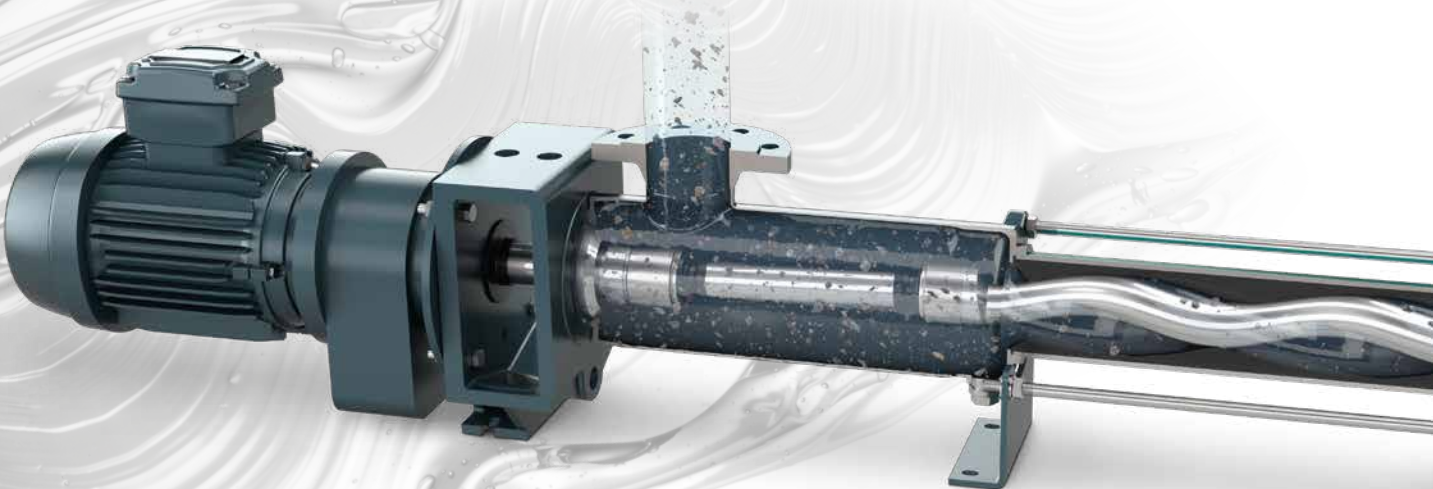
## for choosing NEMO® Progressing Cavity Pumps

### Benefit to the customer

Always focused on benefit to the customer, the NETZSCH product range covers everything from the smallest dosing pumps with flow rates of a few ml to high-performance pumps that pump up to 1000 m<sup>3</sup>/h. We also supply grinders and a comprehensive range of accessories. We supply everything in and around the pump to suit your application perfectly, because we understand and know your process.

### Proximity to our customers

We guarantee proximity to our customers with 30 branches and more than 130 agencies around the world. Our application-oriented organisational structure across six business fields ensures that each of your contacts at NETZSCH® has detailed knowledge of the application, that national and international standards are complied with, and that contact routes are short, delivery is fast and on-site service is competent.



## Individual pump selection

Each individual pump is precisely tuned to the requirements of the application to deliver optimum performance, service life and reliability.

The pumps are available with conveying elements in four different rotor/stator geometries, so that the right solution can always be found for your application.

Another benefit from our continued investment in product development is a range of gear joints selected to suit each and every application no matter how demanding.

And last but not least, we supply a comprehensive range of options and accessories, as well as expert service, as we want you to stay in close contact with NETZSCH even after your pump has been commissioned.

Please see for yourself and contact us.

## Large capacity and pressure range

- Flow rates from just a few ml/h up to 1000 m<sup>3</sup>/h
- Number of stages ranging from 1 to 8 for pressures from 6 to 48 bar (standard) or up to 240 bar (high pressure)

## 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 millions mPas)
- Thixotropic and dilatant
- Shear sensitive
- Abrasive
- Non-lubricating and lubricating
- Aggressive (pH 0 – 14)
- Adhesive
- Toxic

## 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.

(See pages 20 to 23)

## Various conveying elements

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

(See page 18 and 19)

## Large variety of shaft seals

The range of mechanical shaft seals includes simple seals with and 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.

(See pages 24 and 25)

## Additional features

- High suction capacity - up to 9 mH<sub>2</sub>O
- Direction of rotation and flow can be reversed
- Can be installed in any position
- Quiet, smooth running
- Temperatures from - 20 °C to + 200 °C



# Design of the NEMO® 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.

(see pages 20 and 21)

### 2.2 Stator with iFD technology

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

(See brochure NPS · 344)

## 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

The NEMO® Progressing Cavity Pump in FSIP® design is available...

- in the sizes NM 045 to NM 105 for flow rates from 2 to 200 m<sup>3</sup>/h
- for differential pressures from 6 bar (1 stage) up to 12 bar (2 stages)
- in various materials, from steel to chrome-nickel-steel, various other materials on request
- with various stator elastomers, from highly abrasion-resistant natural rubber, to oil-, acid-, and alkali-resistant elastomers, to Aflas and Viton
- in all 4 geometries, S, L, D, and P to be customized optimally to your application

...and conveys

- substances with consistencies from runny to pasty, with or without solid content.



## 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, but the housing dimensions remain unchanged. All installed NEMO® BY/SY pumps in the sizes mentioned above can be upgraded without any problem. After this upgrade you can fully service the pump while it is installed. All wetted parts are immediately accessible. All wearing parts can be replaced in less than half the time.

## 2 Inspection cover

The inspection cover is fixed by only 5 screws which can be easily removed without special tool.

## 3 Stator with iFD® technology

The stator consists of a reusable two-part stator housing and an exchangeable elastomer part. The benefits of the new technology are a reduced starting torques, higher degree of efficiency, prolonged lifetime, easier and faster change of the wear part and environmentally friendly disposal. In combination with the suction housing in FSIP® design there is the additional benefit that the rotor/stator can be changed simply and quickly outside the pump and without pre-tensioning, once the stator housing has been opened. The rotating unit can simply be lifted out and leaves the pump open from flange to flange. The formerly needed „service length“ is no longer required, giving the pump a much shorter footprint – a strong argument for the installation of the relatively long progressing cavity pumps. This is also valid when a standard stator is being used.



#### 4 Rotor

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

#### 5 5a Drive train and sleeve coupling

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

#### 6 Shaft sealing

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

#### 7 xLC stator adjustment unit

The xLC unit is attached to the flange of the elastomer part of the stator and can compress or stretch it. In the 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.