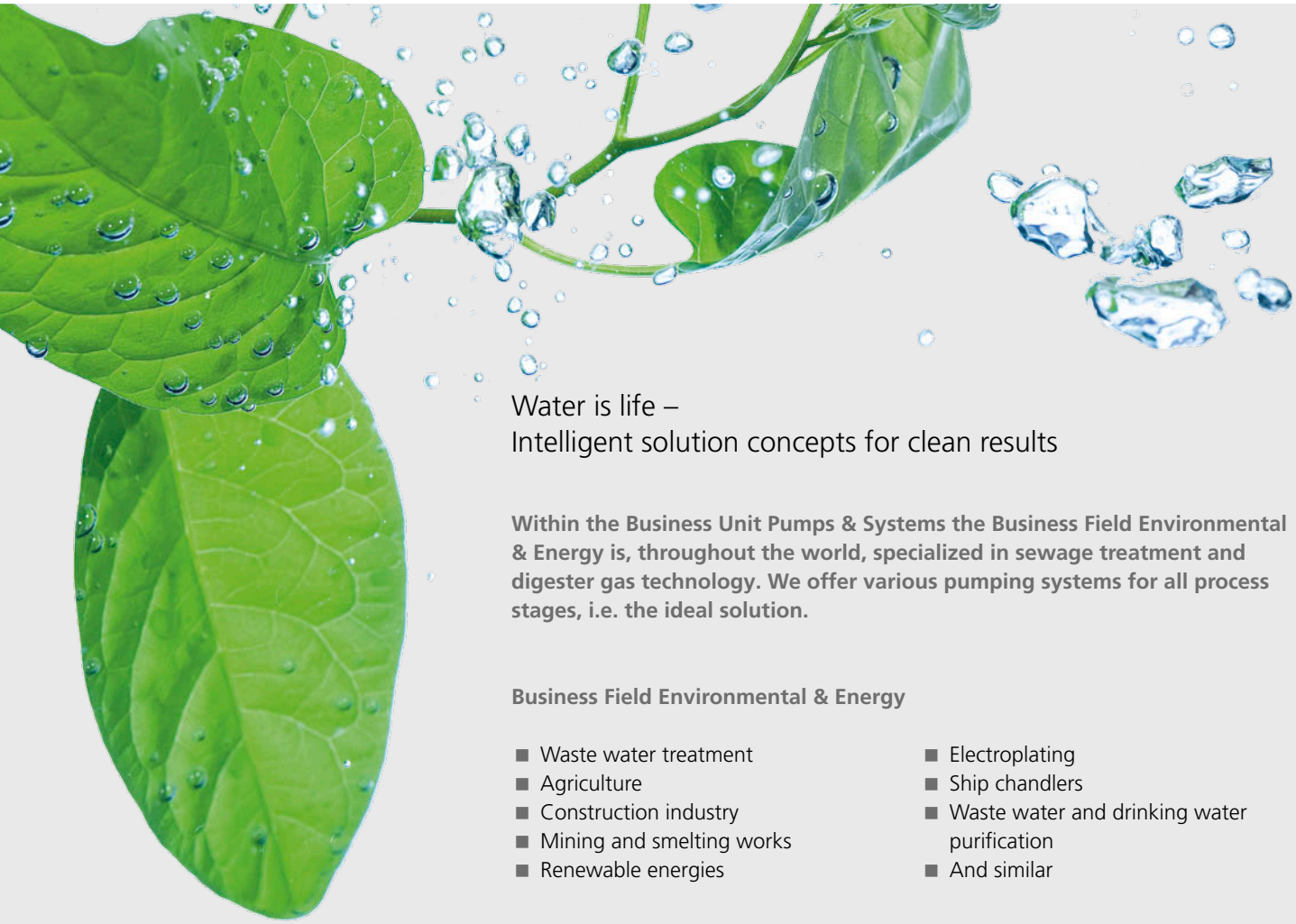
NETZSCH

Pumps & Systems

Environmental & Energy

Processes, Markets and Applications

NETZSCH Pumps & Systems – Solutions you can trust



Water is life –
Intelligent solution concepts for clean results

Within the Business Unit Pumps & Systems the Business Field Environmental & Energy is, throughout the world, specialized in sewage treatment and digester gas technology. We offer various pumping systems for all process stages, i.e. the ideal solution.

Business Field Environmental & Energy

- Waste water treatment
- Agriculture
- Construction industry
- Mining and smelting works
- Renewable energies
- Electroplating
- Ship chandlers
- Waste water and drinking water purification
- And similar

How fortunate to be able to choose

For centuries rotating positive displacement pumps have been used as conveying systems for all kinds of fluids in wastewater treatment. Due to their inherent characteristics these pumps guarantee a reliable, safe and efficient process. For such applications NEMO® progressing cavity pumps and NETZSCH TORNADO® rotary lobe pumps are available.

Always the right product

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. The NEMO® and TORNADO® pumps are complemented by the NETZSCH Grinding Systems.

We are where you are

With more than 1,300 employees at six development and production sites as well as 25 sales offices, a cooperation partner (in Japan) and another 200 NETZSCH representatives we are close to you wherever you are.

NETZSCH

Product Range

NEMO® Progressing Cavity Pumps

- Standard pumps
- Hopper pumps
- Immersible pumps
- Custom-built pumps

TORNADO® Rotary Lobe Pumps

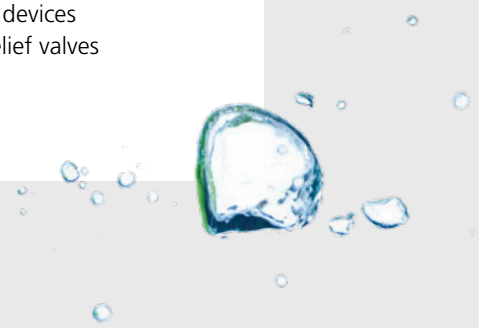
- Standard pumps
- Mobile pumps
- Custom-built pumps

NETZSCH Macerators

- Cutting plate macerator
  - M-Ovas®
- Twin shaft macerator
  - Taskmaster®

NETZSCH Accessories

- Protection devices
- Pressure relief valves
- Controls
- Trailers
- Tools

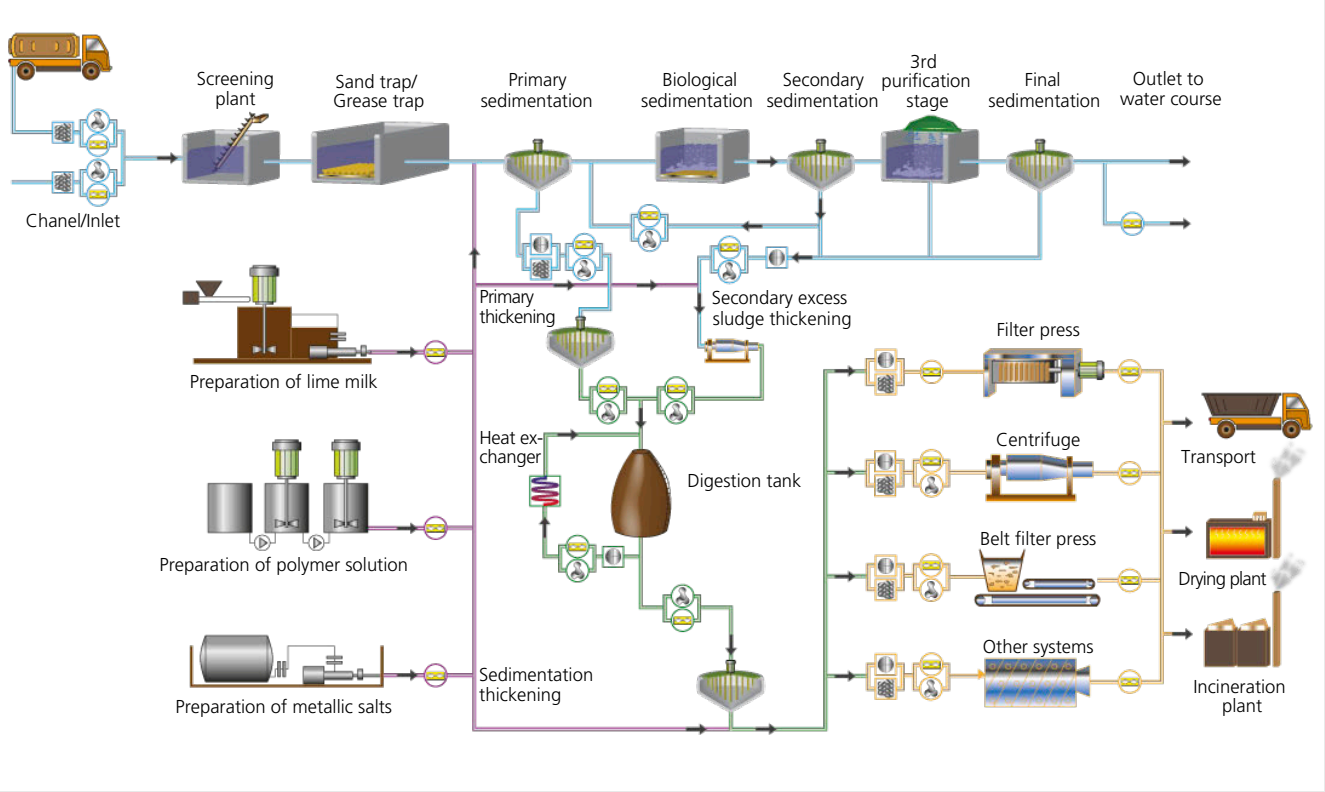


Your medium – We are ready for everything

- Activated sludge
- Auxiliary flocculents
- Bio-mass
- Centrate
- Clay sludge
- Combined sewage
- Compacted sludge
- Conditioned sludge
- Crude sewage
- Dewatered sludge
- Digested sludge
- Excess sludge
- Faecal substances
- Ferric Chloride
- Flotation sludge
- Fresh sludge
- Grease and oil emulsions
- Gypsums suspension
- Hygienic sludge
- Industrial wastes
- Leachate
- Lime milk
- Liquid manure
- Lubricant
- Metallic hydroxide sludge
- Peat sludge
- Pit water
- Polymer
- Polymer solution
- Primary sludge
- Refinery sludge
- Returned sludge
- River sludge
- Secondary sludge
- Sewage sludge
- Sludge cakes
- Stabilised sludge
- Surplus activated sludge
- Thickened sludge
- Thin sludge
- Wastewater

Range of Applications and Performance Data in Waste Water Technology and Biogas Technology

Flow Chart of a Waste Water Treatment Plant



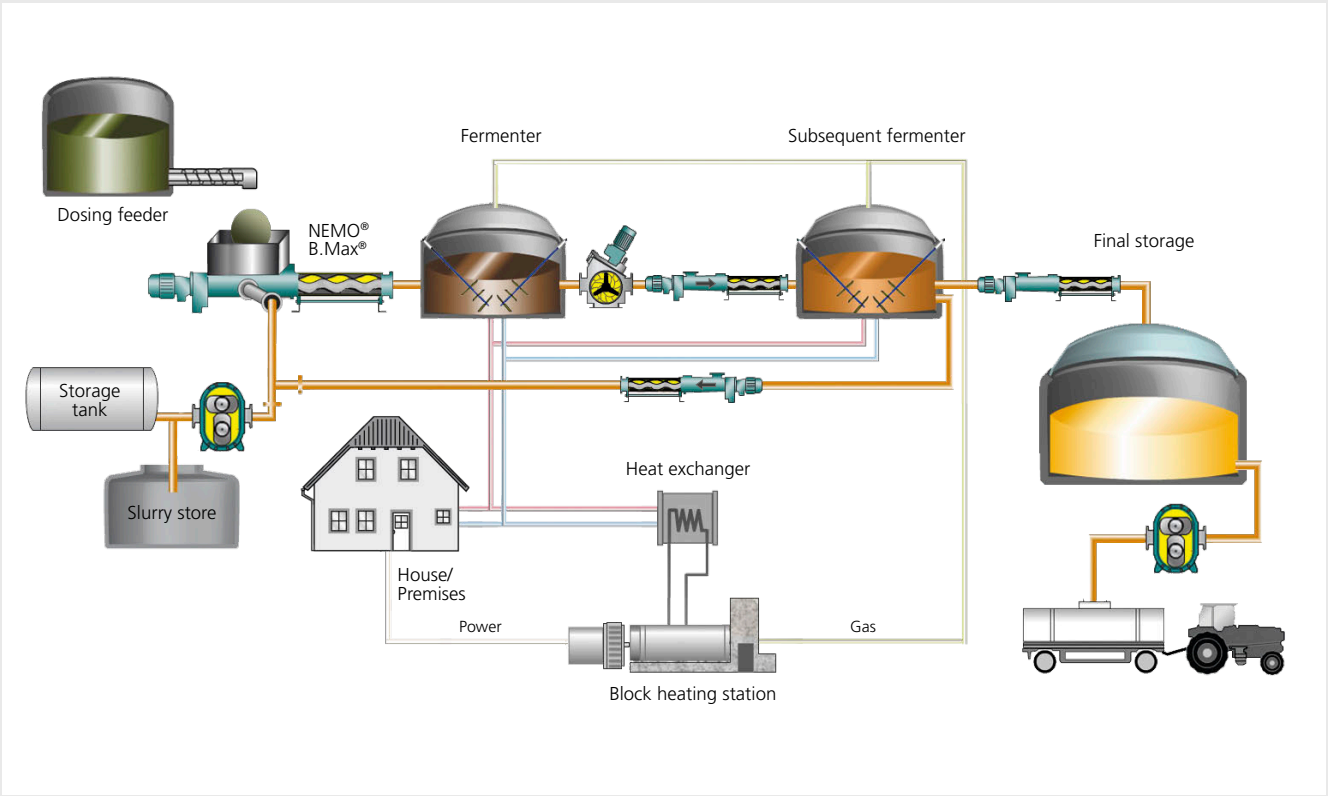
Application Points of

- NEMO® Progressing Cavity Pumps
- TORNADO® Rotary Lobe Pumps
- NETZSCH Cutting Plate Macerator M-Ovas®
- NETZSCH Twin Shaft Macerators Taskmaster®

We speak your language

The flow diagrams show the individual process stages for wastewater treatment in municipal and industrial treatment plants from entry up to being introduced into the receiving water, including the associated sludge treatment and the sequence of processes in the biogas plant. The pictograms explain the use of NETZSCH products in all process stages.

Flow Chart of a Biogas Plant



Application Points of

NEMO® Progressing Cavity Pumps

TORNADO® Rotary Lobe Pumps

NETZSCH Cutting Plate Macerator M-Ovas®

NETZSCH Units

NEMO® progressing cavity pumps and NETZSCH TORNADO® rotary lobe pumps are normally used in wastewater treatment plants for pumping fluids with the following properties:

- low viscosity or compacted
- solids content up to 45 % and solids size up to 150 mm
- fibrous
- adhesive
- thixotropic
- abrasive
- lubricating and non-lubricating
- varying temperatures
- aggressive (pH 0-14)

For the protection of your plant including pump units, efficient NETZSCH grinding systems are used.

For every application the right product

TORNADO® Rotary Lobe Pumps

Large Range of Capacities and Pressures

- Flow rates up to 1,000 m³/h
- Pressures up to 6 bar

Special Features

- high efficiency, space saving
- continuous, almost pulsation-free conveyance
- high solids handling capability even with small pump sizes
- flow rate proportional to speed
- reversible direction of flow
- high suction capability and resistant to dry-running
- use of special geometries to avoid wrapping
- low life cycle cost due to high operational reliability and simple service requirements

Advantages

- variable, modular system
- robust and space saving design
- three lobe geometries
- highly abrasion resistant and replaceable protection plates on both faces of the housing
- adjustable housing for long service life
- standard mechanical seal, will accept any DIN 24960 seal (optional)
- the patented timing gear, together with separate seals for pump and drive housings prevent ingress of any product leakage
- bearing shafts on the rotary lobes with polygonal plug-in connection simplify maintenance

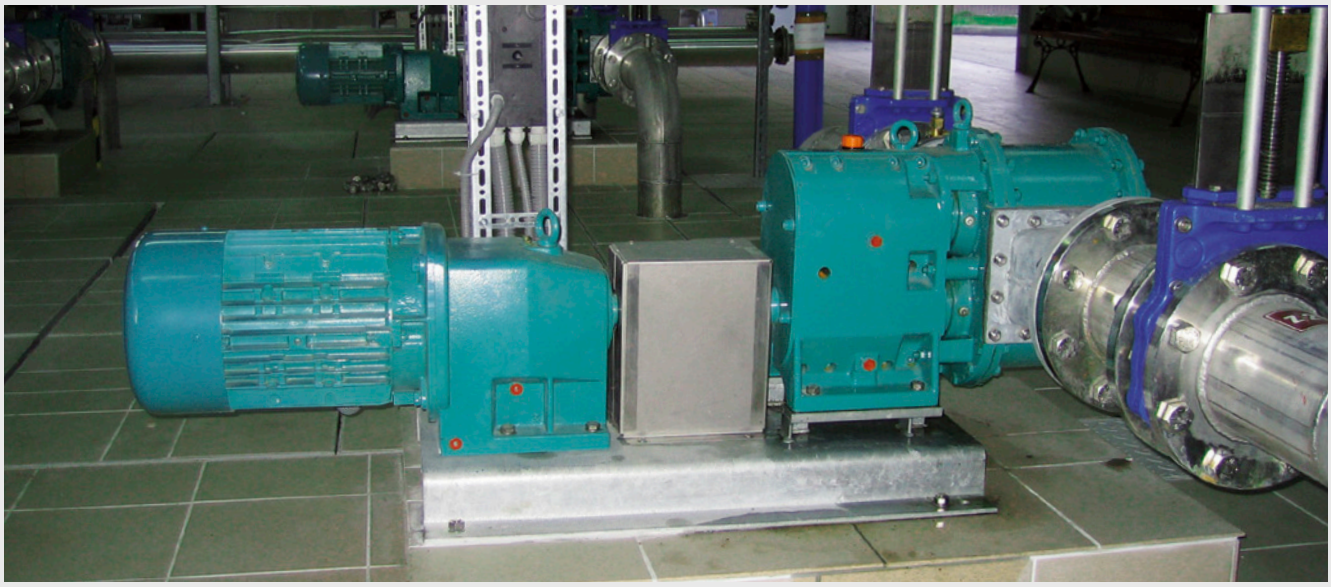
TORNADO® Mobile

The NETZSCH TORNADO® Mobile is ideal for applications where pumps have to be used quickly and flexibly outside buildings and plants or away from any infrastructure. This unit comprises a mobile TORNADO® rotary lobe pump with diesel drive. Independent of local conditions, this pumping system is capable of delivering large quantities of wastewater and sludge.

Further information

TORNADO® rotary lobe pumps
Brochure NMP · 080 · 02

TORNADO® Mobile
Brochure NMP · 045 · 02



NETZSCH

NEMO® Progressing Cavity Pumps

NEMO® M.Champ® progressing cavity pump and M-Ovas® macerator

Large Range of Capacities and Pressures

- Flow rates up to 500 m³/h
- Pressures up to 48 bar

Special Features

- continuous, almost pulsation-free conveyance independent of pressure and viscosity
- high dosing accuracy even at low rotational speed
- high suction and pressure capability (-0.9 bar up to +48 bar), no valves
- reversible direction of flow
- stator inlet with taper for optimal entry of the fluid into the conveying chamber
- patented, positioned feeding screw for viscous products with high dry solids contents
- By compact sludges with a tendency for bridge building, the hopper of the NEMO® pump is additionally
- TM equipped with the aBP-Module® (up to installation size NM090) or an integrated bridge breaker (from installation size NM090 upwards)
- low life cycle cost due to high operational reliability and simple service requirements
- maximum mixing and conveying of the bio-substrate is achieved by the specially designed NEMO® B.Max®

Advantages

- variable, modular system
- robust and compact block design also available with bearing housing
- four rotor/stator geometries and an extensive range of materials
- the most suitable joint for every application
- mechanical seal as standard, other seals optional

NETZSCH Grinding Systems

NETZSCH grinding systems are used to effectively protect your complete installation including the pumping equipment. They ensure that oversize solids are reliably reduced to a pumpable size therefore safely avoiding the danger of blockages.

NETZSCH Cutting Plate Macerator M-Ovas®

The special shape of the housing directs solid particles in the waste water towards the cutting plate, where they are held and chopped by the rotating blades. These units are suitable for a flow of up to 300 m³/h for sludge containing up to 7% dry solids and are characterised by their ease of maintenance.

NETZSCH Twin Shaft Macerator Taskmaster®

The NETZSCH twin shaft macerator has been designed for applications where the medium contains large solid objects. Dependent on the size reduction requirements there is a choice of different tooth and spacer plate with combinations. Five different NETZSCH twin shaft macerators are available with varying design options for flow rates from 1 to 270 m³/h and a dry solids content of up to 10%.

Further information

Grinding Systems
Brochure NMP · 040 · 02

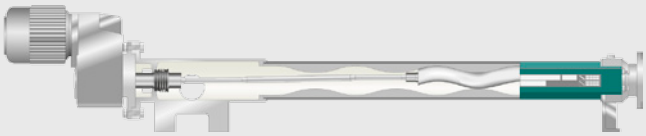
Taskmaster® manufactured by Franklin Miller

NEMO® Progressing Cavity Pumps in Waste Water and Biogas Technology

NEMO® M.Champ®

in block construction design with maintenance free flexible rod and integrated reserve stator

Compact design with flanged robust IEC parallel shaft gear unit. The patented and integrated NEMOLAST® reversible stator and the simple design guarantee a long service life and low life cycle cost. Increased application possibilities with the use of P or L geometries.



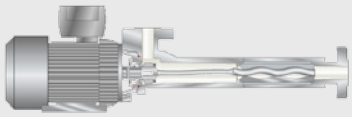
Further information

Brochure NMP · 311 · 02

NEMO® C.Pro®

plastic dosing pump

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



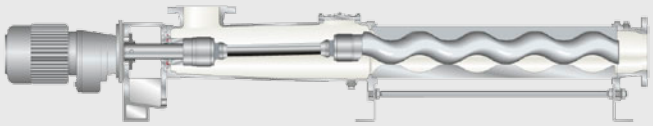
Further information

Brochure NMP · 313 · 02

NEMO® BY

in block construction design

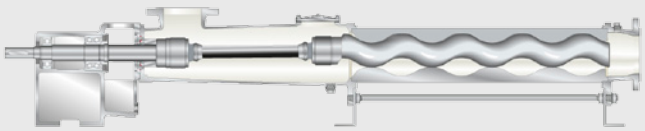
Compact design with flanged drive; low investment and operating and maintenance costs. Four rotor/stator geometries for optimised performance.



NEMO® SY

with bearing housing and drive shaft

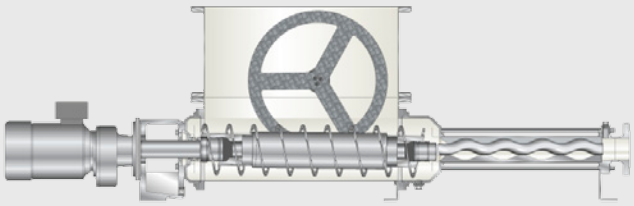
Design with bearing housing and drive shaft allows for universal use of all types of drives. Four rotor/stator geometries for optimised performance.



NEMO® BF optional with aBP-Module®

in block construction design with directly flanged drive or as NEMO® SF optional with aBP-Module® with bearing housing and drive shaft (no fig.)

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.



Further information

Brochure NMP · 070 · 02

NEMO® BO/BS

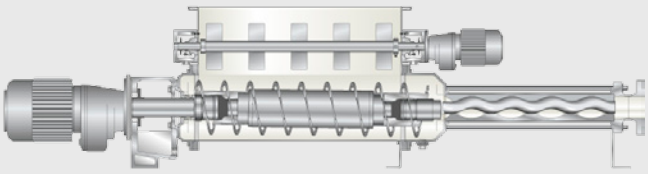
in block construction design with directly flanged drive or as NEMO® SO/SS with bearing housing and drive shaft (no fig.)

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 the rotor and stator.

NEMO® BP

in block construction design with directly flanged drive or as NEMO® SP with bearing housing and drive shaft (no fig.)

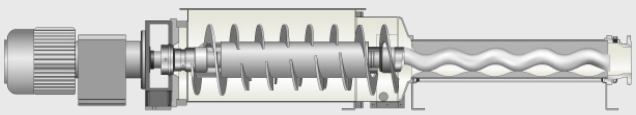
Housing with integrated bridge breaker, mixing additions, enlarged rectangular hopper and tapered force feed chamber as well as coupling rod with patented, positioned feeding screw for optimal transfer of the medium to the rotor and stator.



NEMO® B.Max®

in block construction design with directly flanged drive or with bearing housing and drive shaft (no fig.)

Housing with large, rectangular/square 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. The ideally placed flushing stud at the hopper housing sees to the best (possible) blending of the substrates.



Further information

NEMO® B.Max®
Brochure NMP · 060 · 02

Pulp Feed
Brochure NMP · 061 · 02

Typical Range of Applications

Thickened Sludge

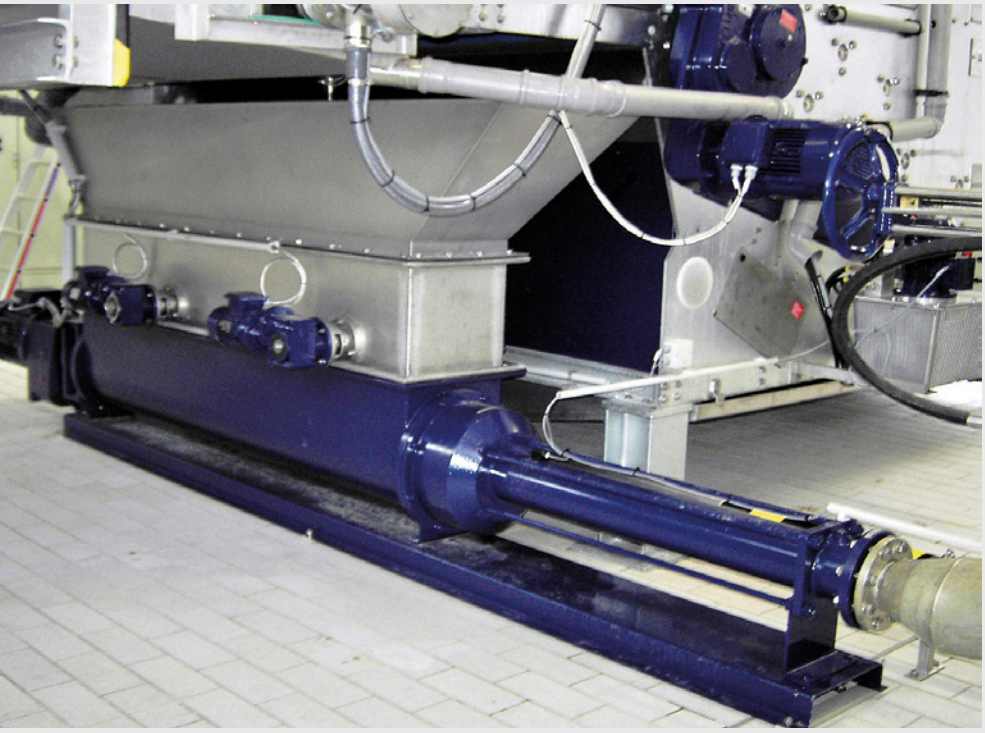
By static or mechanical thickening methods a first reduction in the volume of the sludge is achieved. The objective is to reach a dry solids content of 4 % - 11 % in the pumped fluid. Depending on the consistency, the fluids have low to high viscosity and may be pumped over long distances. Multistage NEMO® progressing cavity pumps are capable of pumping against high pressures. Even fluctuating process conditions are handled without problems.

Auxiliary Flocculents

Flocculents are added to the sludge before dewatering. They stimulate the formation of big flocs of suspended solids contained in the sludge, thus, contributing to improved dewatering results. In general, flocculents are dosed as polymeric solutions or dispersions. Their viscosity – together with the necessity for exact dosing – requires for pumps with certain capabilities, capabilities which NEMO® progressing cavity pumps provide.

Dewatered Sludge

Dewatering of the sludge with the addition of conditioning additives into centrifuges, decanters or filter presses generates a further reduction of volume between 65 % and 80 %. The result is a crumbly, compacted, nonflowing product. Due to these features force feeding of the fluid within the pump is required. Furthermore, bridgebuilding has to be avoided. In general, NEMO® progressing cavity pumps with rectangular hoppers and feeding screws are used for this application. The special features of these pumps are the positioned, patented feeding screws for optimal transfer into the conveying chambers. By compact sludges with a tendency to bridge-building, the hopper of the NEMO® pump is additionally equipped with the aBP-Module® (up to installation size NM090) or an integrated bridge breaker (from installation size NM090 upwards).



Process Monitoring and Accessories

NETZSCH protection units ensure the operating reliability of the pump and the plant and minimising downtime.

Further information

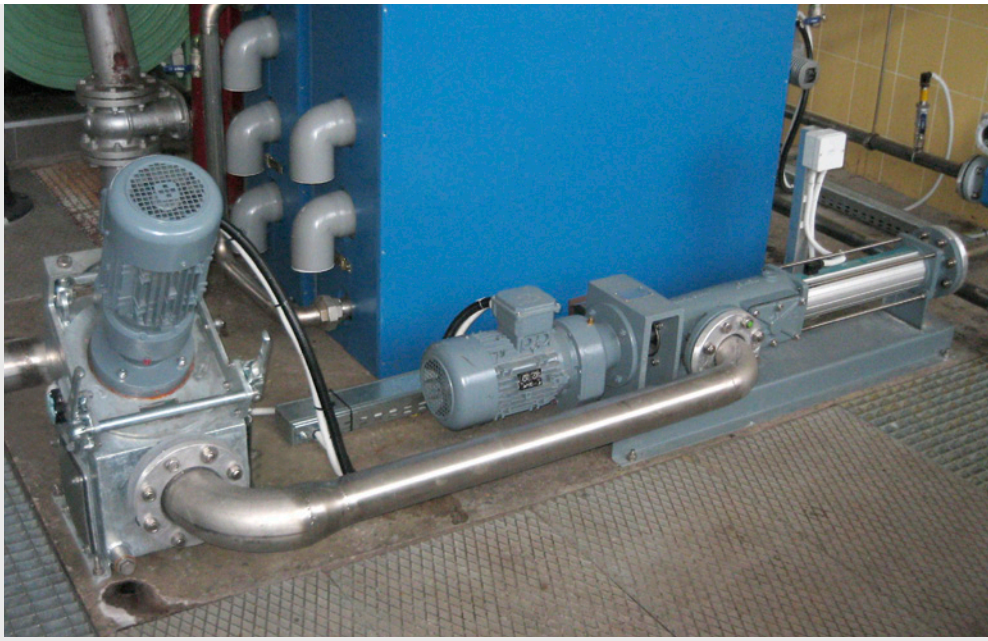
NETZSCH Original-Accessories
Brochure NMP · 343 · 02

Thin Sludge

This sludge is the most common sludge in a wastewater treatment plant. The dry solids content is approx. 1 % to 4 %. According to the stage of the process the sludge contains varying quantities of organic and inorganic solids. Depending on the process, pumps with long serviceable lives are required which provide high flow rates at low pressures. Both NEMO® progressing cavity pumps and TORNADO® rotary lobe pumps are eminently suitable. The NEMO® progressing cavity pump stands out above all for its high performance based on L or P geometries. Another advantage is a long service life due to an extended seal line and a reduced flotation sludge sliding velocity of the rotor.

Flotation Sludge

Flotation sludge and sludge foam are floating sludge fractions building up on the surface of the secondary sedimentation tank. This undesirable effect will necessitate the pumping away of the flotation sludge in the form of an air-fluid mixture. The ideal device for this application is the NEMO® progressing cavity pump which can reliably and continuously convey fluids containing a high gas content.



Bio-Mass

Bio-mass is a renewable raw material source for the future. The inhomogeneous, organic substance occurs in anything between liquid and solid form. With the help of micro organisms gaseous methane and carbon dioxide are reclaimed. Depending on the process, the biomass has to be continuously agitated in the reactor. In this case you need pump systems capable of easily coping with high flow rates and large particle sizes within the dry solids content. Both NEMO® progressing cavity pumps and TORNADO® rotary lobe pumps are used for this application. However, due to the completely free passage of particle sizes up to 70 mm dia. TORNADO® rotary lobe pumps are usually preferred. Another advantage of this pump is its compact, space saving design.

Lime Milk

By lime milk we understand an inorganic suspension consisting of lime hydrate and water. Alternatively, lime milk can be produced by slaking unhydrated lime with water. Lime milk is used as a conditioning substance for dewatering sludges. Geometry and structure of the calcium hydroxide (lime) is dependent on its origin and the method of processing. The medium is very abrasive. For long serviceable life, NEMO® progressing cavity pumps are made from high quality rotor/stator materials. Most suitable is the wear-free NEMO CERATEC® ceramic rotor in connection with an extremely wear resistant polyurethane stator.

Further information

NEMO CERATEC®
Brochure NMP · 347 · 02

NETZSCH

The NETZSCH Group is an owner-managed, internationally operating technology company headquartered in Germany.

The three Business Units – Analyzing & Testing, Grinding & Dispersing and Pumps & Systems – provide tailored solutions for highest-level needs. Over 2,200 employees at 125 sales and production centers in 23 countries across the globe guarantee that expert service is never far from our customers.

The NETZSCH Business Unit Pumps & Systems offers NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, screw pumps, macerators/grinders, dosing systems and equipment custom built and challenging solutions for different applications on a global base.

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NMP · 307 · 02 · 08/10 · 02 · Technical specifications are subject to change.