

NETZSCH

Proven Excellence.



Highest Reliability throughout the Season

NETZSCH Positive Displacement Pumps for Sugar Manufacturing Process

Pumps & Systems

FOR SUGAR MANUFACTURING

through all stages

Sugar is produced in more than 120 countries and the global production exceeds 180 Million tons a year. Approximately 78 % is produced from sugar cane, a genus of grasses, which is endemic in tropical countries. The remaining 22 % is produced from sugar beet, a root crop, grown mostly in moderate temperature zones of the northern hemisphere.

NETZSCH positive displacement pumps have been successfully used for decades in nearly every stage of sugar production offering the highest level in reliability of operation.

For the applications in sugar manufacturing NEMO® progressing cavity pumps, TORNADO® rotary lobe and NOTOS® multi screw pumps can all be considered, each of them offering their unique benefits.

NETZSCH, as producer of three pump technologies, is ideally positioned to offer impartial and qualified advice, to help you choose the pump technology best suited for your application. NETZSCH is your holistic solution provider for complex fluid handling.



Application Examples

Lime milk (calcium hydroxide)

Product Features

- Abrasive
- Lightly corrosive
- Viscosity: Low
- Density: 63 lbs/ft³ / 1.01 kg/l
- Temperature: 70 - 86 °F / 20 - 30 °C
- Suction: Flooded

Benefits of the NEMO® Pump

- Low pulsation
- Continuous metered flow
- Metering precision even with suspended solids
- Easy installation and cleaning
- Operation speed: medium/low
- Smooth operation without jamming



Thick Juice

Product Features

- Non abrasive
- Non corrosive
- Viscosity: moderate
- Brix: 70 °Bx
- Density: 64.4 lbs/ft³ / 1.1 kg/dm³
- Temperature: 140 - 175°F / 60 - 80 °C
- Suction: flooded

Benefits of the TORNADO® Pump

- Compact design
- No lubricating oil required
- Maintenance free
- Full service-in-place



Application Examples

Magma

Product Features

- Abrasive
- Non corrosive
- Viscosity: high
- Brix: 88 - 90 °Bx
- Density: 93.6 lbs/ft³ / 1.5 kg/dm³
- Temperature: 105 - 140 °F / 40 - 60 °C
- Suction: flooded

Benefits of the NEMO® Pump

- Can handle high viscosity levels
- Can handle particles/sugar lumps
- High suction lift capability, low NPSHr values required
- Long lasting, reliable operation
- Smooth operation without jamming



Massecuite

Product Features

- Abrasive
- Non corrosive
- Viscosity: high
- Brix: 92 - 105 °Bx
- Density: 93.6 lbs/ft³ / 1.5 kg/l
- Temperature: 140 °F / 60 °C
- Suction: vacuum

Benefits of the NEMO® Pump

- No damage of sugar crystals
- No special adjustments needed during assembly
- Mechanical seal works under low pressure
- Operation speed: low
- Perfect for shear sensitive products



Run-off syrup

Product Features

- Non abrasive
- Non corrosive
- Viscosity: high
- Solids: 75 - 82 %
- Density: 87.3 lbs/ft³ / 1.4 kg/l
- Temperature: wide range, depending on application
- Suction: flooded

Benefits of the TORNADO® Pump

- Compact design
- No lubrication oil required
- Maintenance free
- Full service-in-place



Molasses

Product Features

- Non abrasive
- Non corrosive
- Viscosity: high
- Solids: 75 - 82 %
- Density: 87.3 lbs/ft³ / 1.4 kg/l
- Temperature: wide range, depending on application
- Suction: flooded

Benefits of the NEMO® Pump

- Can handle high viscosity levels
- High suction lift, low NPSHr values
- Long lasting operation



Application Examples

Additives

Product Features

- Non abrasive
- Corrosive
- Viscosity: low
- Density: 62.4 - 75 lbs/ft³ / 1.0 - 1.2 kg/dm³
- Temperature: 70 °F / 20 °C
- Suction: flooded

Benefits of the NEMO® Pump

- High metering accuracy
- Wide range of material options
- Low pulsation
- No impact on physical-chemical liquid properties



Lubricant oil

Product Features

- Lubricating
- Non corrosive
- Viscosity: 5 - 150 cSt
- Temperature: 70 - 140 °F / 20 - 60 °C
- Suction: negative or immersed

Benefits of the NOTOS® Pump

- Reliable solution for bearing lubrication of steam turbines, generators and gear reducers
- Low maintenance cost
- Flexible design adapting to field conditions
- Robustness in fuel pumping for boilers



Comprehensive and uncompromising: the NETZSCH modular system makes flexible solutions possible

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 different geometries, so that the right solution can always be found for your application.

Large variety 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, Hastelloy¹ and titanium to suit different conveying tasks.

Ceramics and plastics round off the list of materials for NEMO® pumps for aggressive and abrasive applications. Elastomers range from highly abrasion-resistant natural rubber, to oil-, acid- and alkali-resistant elastomers.

Large variety of shaft seals

The range of mechanical shaft seals includes single acting seals with and without quench, double-acting seals arranged back-to-back or in tandem, and cartridge seals. Especially for our TORNADO® T2 pumps, all seals are available in cartridge version for easy servicing.

For specific applications, gland packing, lip seals and other special seals are available, as well.

Large variety of joints

Another benefit from our continued investment in the product development of our NEMO® pumps is a range of gear joints selected to best fit each application no matter how demanding. And lastly, we supply a comprehensive range of options and accessories, as well as expert service.

¹Hastelloy is a brand name of Haynes International Inc.

NEMO® Progressing Cavity Pumps

SMOOTH CONVEYANCE AND STRONG PERFORMANCE

NEMO® Progressing Cavity Pumps have a long history in the sugar industry for their continuous, pressure stable, gentle and low-pulsation conveyance characteristics.

Large capacity and pressure range

- Flow rates from just a few ml/h up to 4,400 gpm / 1,000 m³/h
- Number of stages ranging from 1 to 8 for pressures from 90 psi to 680 psi / 6 to 48 bar (standard) or up to 4,350 psi / 240 bar (high pressure)

Broad range of applications

Within the sugar manufacturing process our NEMO® Progressing Cavity Pumps are used for the following applications:

- Mud
- Sugar beet slices/Cosettes
- Lime milk
- Additives/Chemicals
- Thick juice
- Run-off syrups
- Molasses
- Magma
- Massecuite
- Raw sugar melt

Your benefits

- High suction lift (up to 30 ft. / 9 m), vacuum conditions
- High reliability – well tried out in the sugar industry
- Reliable against abrasive media, such as magma and massecuite
- Smooth conveyance – low damage rate on sugar crystals
- Long process cycles
- Almost pulsation-free conveyance
- Flow rate in proportion to speed
- High dosing accuracy over a wide speed range
- Flow rate independent of variances in pressure or viscosity
- Elastomers according to FDA and EU-VO and 1935/2004
- Horizontal or vertical installation
- Full Service-in-Place models are available



TORNADO® Rotary Lobe Pumps

POWERFUL, ROBUST AND COMPACT

TORNADO® self-priming, valveless, positive displacement pumps for high-performance are optimally tailored to your individual requirements. For pressure up to 120 psi / 8 bar the compact, robust and powerful is an equally reliable alternative to the NEMO® pumps, especially when a small footprint or a flexible installation is required. They are used for continuous and smooth conveyance of almost all products, as well as for metering in proportion to speed.

Performance

Flow rates up to 4,400 gpm /
1,000 m³/h at pressures up to
120 psi / 8 bar

Broad range of applications

- Thick juice
- Run-off syrup
- Molasses
- Magma
- Massecuite
- Raw sugar melt

Features

Designed after the FSIP® concept (Full Service-in-Place), it makes servicing of the rotating parts simple and fast. Different configurations available for optimum performance with every kind of application.

Your benefits

- Valve-free construction
- Self priming
- Handling solids or fibrous matter
- Compact design
- Pumping media with high or low viscosity
- Handling shear sensitive fluids
- Operating at temperatures up to 212 °F / 100 °C
- Reversible operation
- Service without disconnecting from pipework
- Tolerance of dry running



NOTOS® Multi Screw Pumps

FOR HIGH SUCTION CAPACITY



2 NS – Two Screw Pump

NOTOS® two screw pumps have one drive screw, transferring torque through a hydrodynamic film to the rotating intermeshing driven screw.

- Flow up to 2,860 gpm / 650 m³/h
- Pressure up to 230 psi / 16 bar
- Temperature up to 570 °F / 300 °C
- Viscosity up to 100,000 cSt

3 NS – Three Screw Pump

NOTOS® three screw pumps have one drive screw, transferring torque through a hydrodynamic film to the two rotating intermeshing driven screws.

- Flow up to 1,760 gpm / 400 m³/h
- Pressure up to 1,450 psi / 100 bar
- Temperature up to 570 °F / 300 °C
- Viscosity up to 15,000 cSt

4 NS – Geared Twin Screw Pump

NOTOS® geared twin screw pumps have two shafts and four screws. The torque is transferred to the driven shaft via helical gears. The design is hydraulically balanced.

- Flow up to 11,000 gpm / 2,500 m³/h
- Pressure up to 1,160 psi / 80 bar
- Temperature up to 570 °F / 300 °C
- Viscosity up to 200,000 cSt

Your benefits

- High efficiency especially for highly viscous products
- Self priming
- Excellent suction capability
- Gentle product handling
- Continuous flow with low pulsation
- Low lifecycle cost
- Long service life
- Quiet operation

Application within sugar manufacturing process

Lubricant oil for reducers and milling turbines.

NETZSCH Pumps & Systems – Your partner for high quality products and first class service

With NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, N.Mac® Twin Shaft Grinders, macerators, metering systems and accessories, the Pump & System Business Unit of the NETZSCH Group has been offering customized and sophisticated solutions for applications in all sectors at a global level for more than 60 years. NETZSCH has manufactured over 1,000,000 pumps.

Benefit from the network of a global player – at your location

Besides the constantly high product quality, NETZSCH offers his customers comprehensive services, which are based on decades of application experience as a pump manufacturer, as well as on customer expectations toward a global market leader. Our consultation starts with an application-specific pump design and its complete documentation for operation and maintenance. On request, we support you during the whole life cycle of your NETZSCH product.


Regardless of where your sugar manufacturing site is located, we are there for you:

- 2,000 NETZSCH Business Unit Pumps & Systems employees
- more than 30 sites worldwide, with experienced co-operation partners in Japan
- more than 200 NETZSCH representatives and service partners worldwide

By means of this global network NETZSCH ensures that internationally operating companies, too, will receive fast and professional help for technical problems on site. We will always find a solution – even for unusual challenges.

Our services for you

- Commissioning
- Maintenance
- Service contracts
- Maintenance strategy
- Training and consulting



The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. More than 4,000 employees in 36 countries and a worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

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

Proven Excellence.■

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