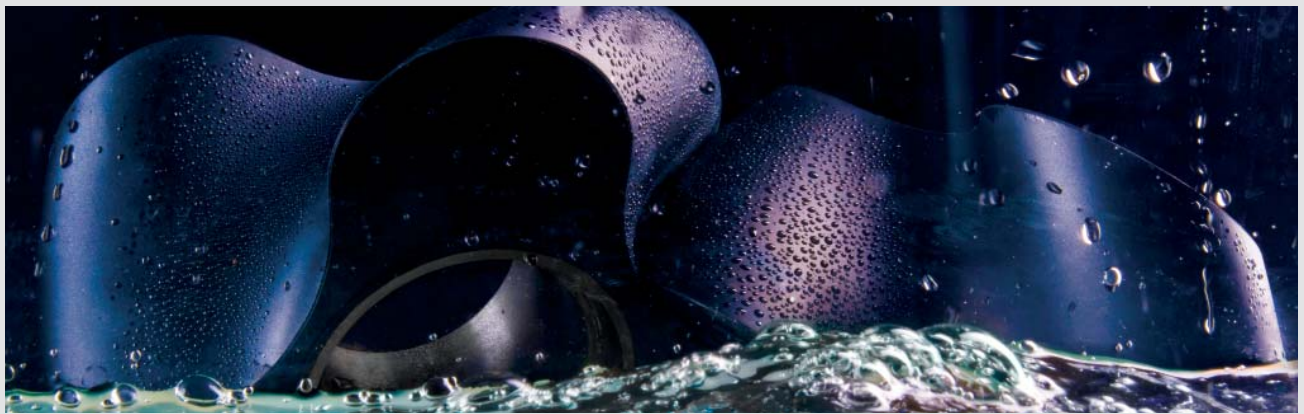


TORNADO® Rotary Lobe Pumps

High Performance, Reliability, Maintenance in Place



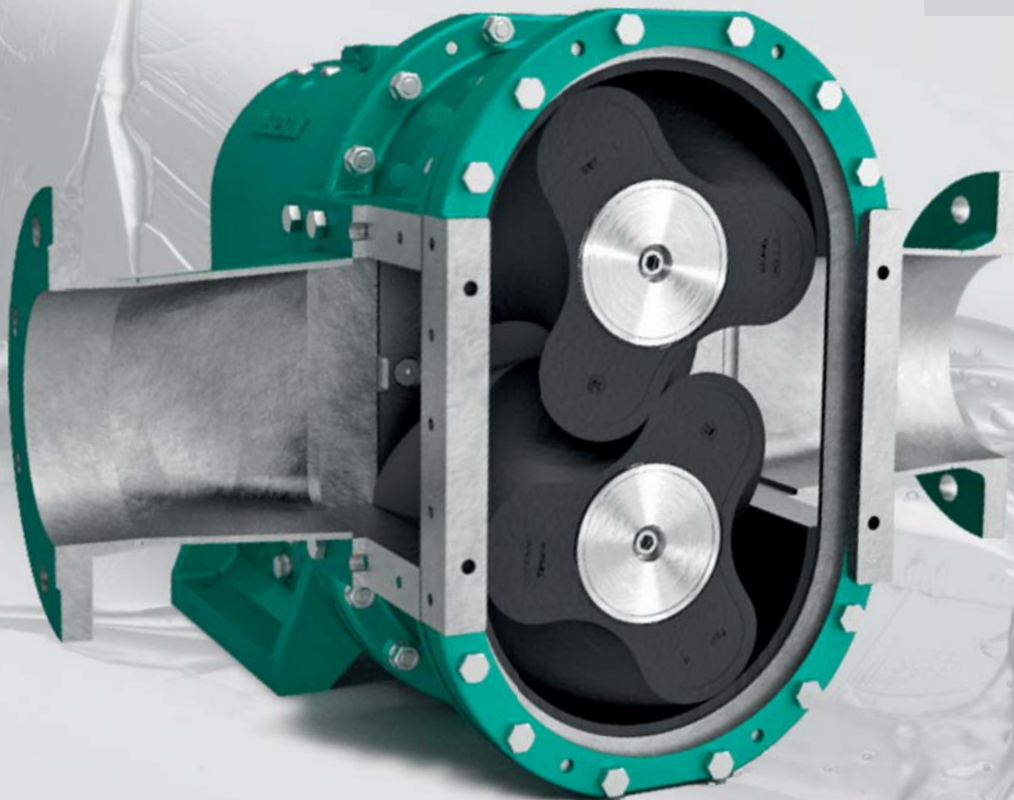
TORNADO® – high performance, reliability, maintenance in place

High performance rotary lobe pump with maximum operational reliability

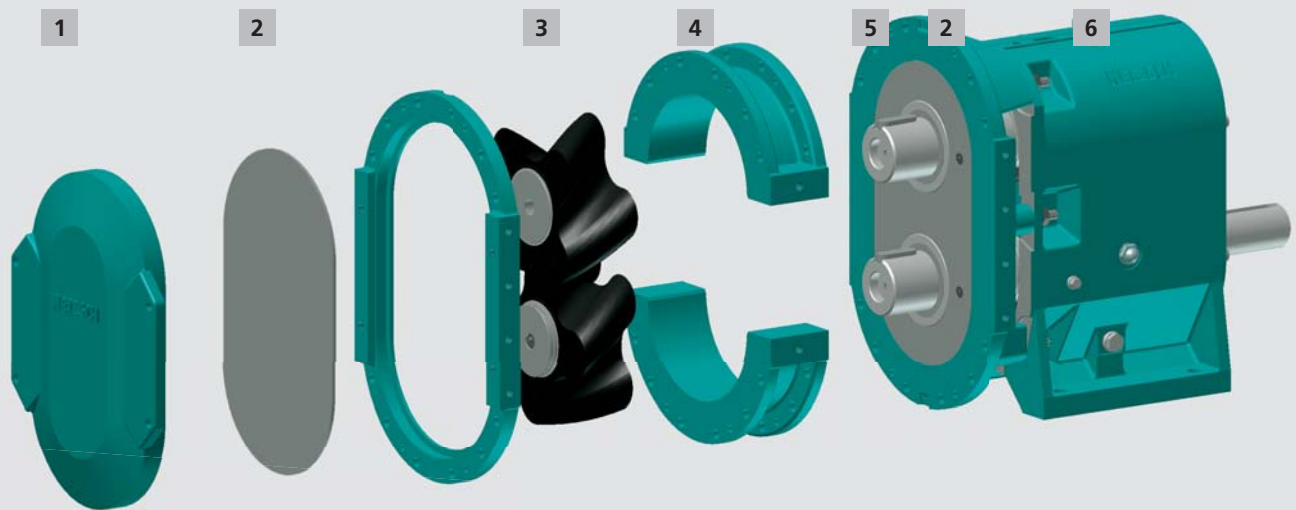
The NETZSCH TORNADO® positive displacement, self priming, valveless pumps offer high performance and are selected and configured for the individual requirements of each application. They are designed for intermittent or continuous operation and provide gentle pumping of the pumped product and are ideally suited to transfer, process and dosing applications.

Advantages

- Maximum operational reliability: the NETZSCH GSS-Technology
- User maintenance in place
- Small installation and maintenance envelope; compact construction
- Installation flexibility
- High suction lift capability – up to 26 ft wc (8 mwc)
- Dry running capability
- Reversible flow
- Low lifecycle costs



Our design – your benefit: low life cycle costs



1 Front Cover

Rotors, cover seal and product seals can be accessed for inspection, service or replacement by simply removing the front cover. Disassembly of the inlet and outlet pipework and pump housing is not necessary.

2 Wear Plates

Abrasion and chemically resistant, replaceable wear plates are fitted on both sides of the rotors.

3 Rotors

Straight-sided or helical rotors are selected to suit individual application requirements. Rotors are available as bi-lobe, tri-lobe or four-lobe and wide a range of materials are available.

4 Housing Crescents

Modular construction allows for the crescents to be simply replaced should wear occur. Pump life can be further extended with the option of replaceable crescent liners.

5 Product Seals

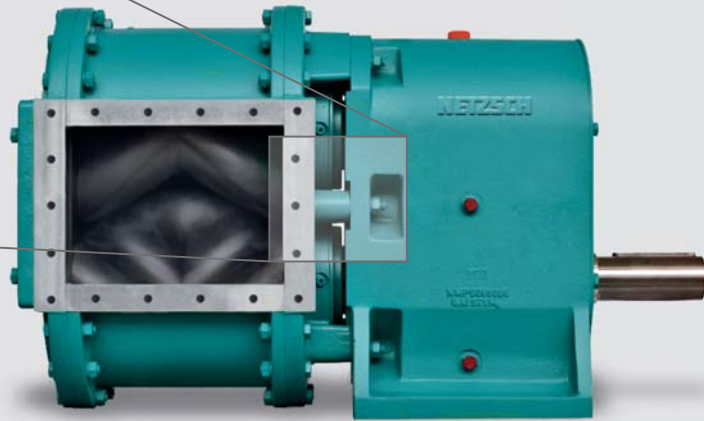
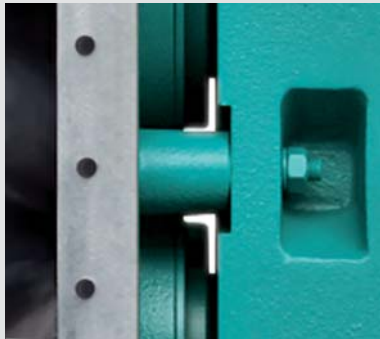
Wide range of product seals and materials are available, which are selected to suit individual application requirements. Seal arrangements include easy access connections for seal quench or flush.

6 Pump Gear Box

The patented gear box design includes NETZSCH GSS-Technology separating the pump head from the gear box which eliminates cross contamination between the pump product and gear box lubricant.

The NETZSCH GSS-Technology – open gap between pumphead and pump gear box

NETZSCH GSS-Technology – Gear box Security System



- Provides positive separation between pump head/product seals and pump gear box
- Protects bearing and timing gears extending operational life time
- Eliminates product contamination into gear box in the unlikely event of product seal failure
- Eliminates the risk of gear oil contamination into the pumped product
- Reduces total cost of ownership

A broad application spectrum

NETZSCH TORNADO® pumps are suitable for a wide range of applications but are particularly good for liquids which:

- Contain large solids, solids up to 3" (70 mm) in diameter can be pumped
- Have a wide range of viscosities, from 1 cps up to 1 million cps (1 mPas up to 1 million mPas)
- Are shear sensitive, i.e. thixotropic, dilatent, pseudoplastic, etc
- Are fibrous and/or abrasive
- Are lubricating or non-lubricating

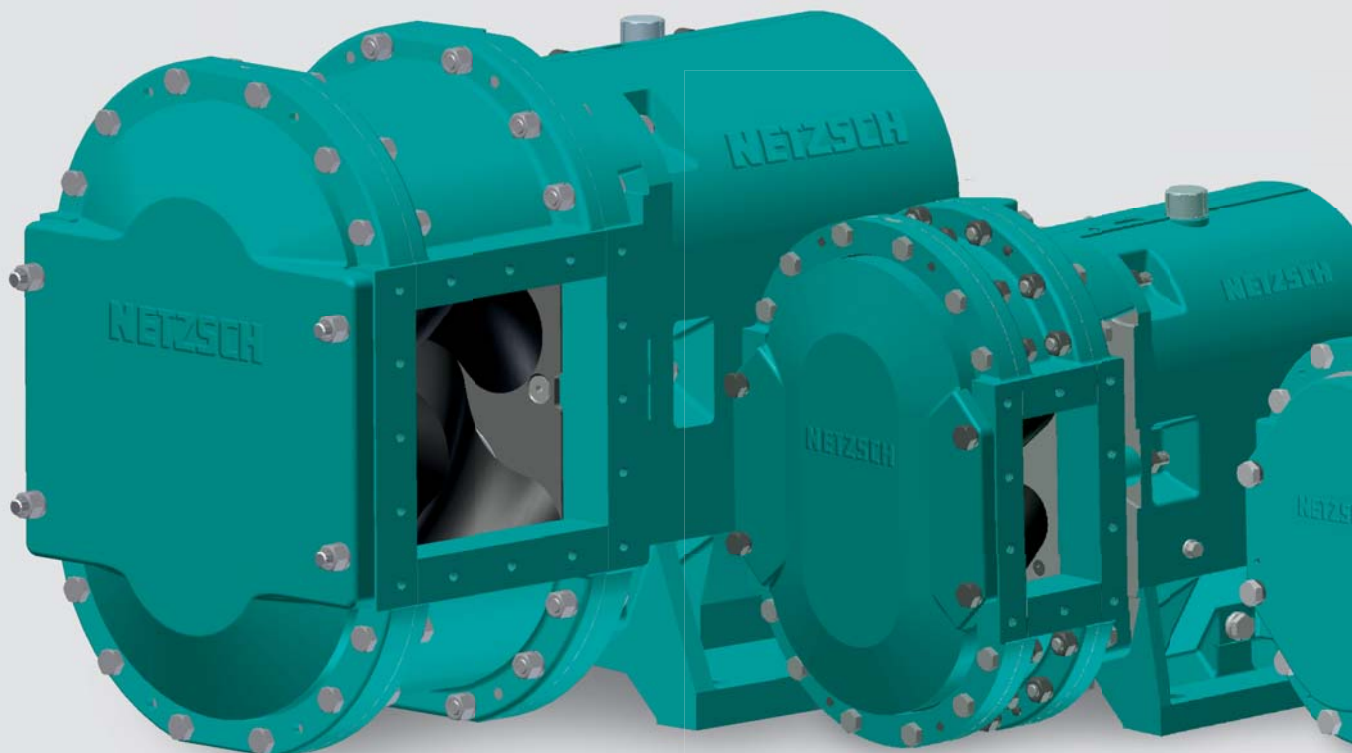
The NETZSCH TORNADO® module system – the optimal solution for any application

Three frames supporting twelve pump sizes provide standard solutions for flowrates from 5 to 4,400 gpm (1 m³/h to 1,000 m³/h) up to 145 psi (10 bar)

NETZSCH TORNADO® pumps can be selected and configured to suit individual duty, application and installation requirements. The wide range of wetted materials and product seals available cover the majority of applications in the Environmental & Energy, Chemical & Paper, and Oil & Gas process industries.

Customized Solutions

- Customized solutions for higher pressures and flowrates.
- Different materials and configurations are available.

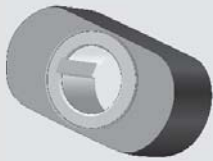


TORNADO® XLB-Frame

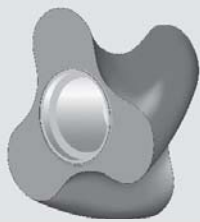
TORNADO® XB-Frame

The rotors – low pulsation, smooth pumping

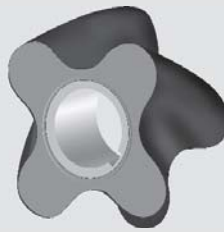
Rotors in different geometries and materials



2 lobe straight



3 lobe helical



4 lobe helical

Rotor materials and designs can be selected for the individual requirements of the product to be pumped. Geometries are available for products which are viscous, abrasive and contain solids. The correct selection of materials and geometries increases the rotors resistance to wear and contributes to extended operating life.

TORNADO® – design, engineering, manufacture, assembly – all under one roof

All major parts of the NETZSCH TORNADO® rotary lobe pump, including the rotors, are produced in NETZSCH factories. NETZSCH has 6 manufacturing facilities worldwide. This provides the assurance of certified quality control, competitive

lead times, and supports innovative ongoing product development. The latest production methods, combined with more than 50-years experience in producing positive displacement pumps, are the basis of NETZSCH's core competence.



Vulcanization – a key process in the production of elastomeric rotors



TORNADO® MB-Frame

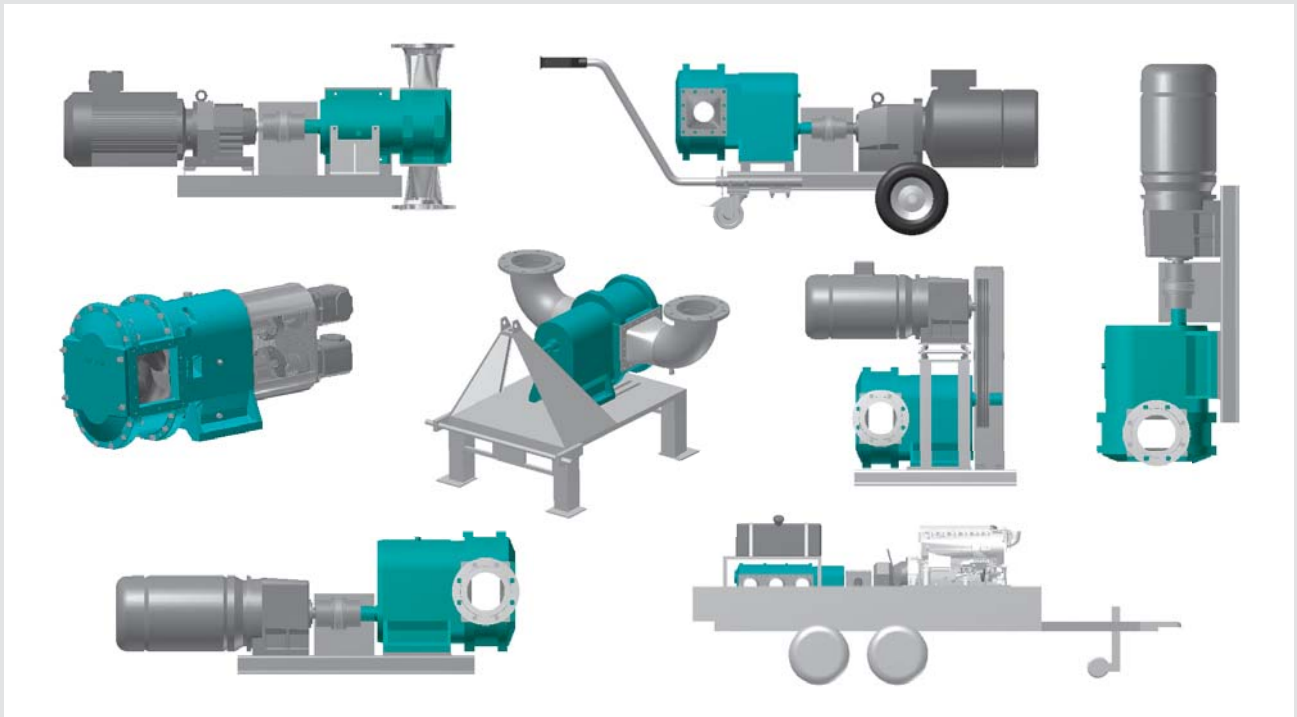


High precision, repeatable production on 7 axis CNC machines (drive shaft shown)

TORNADO® – installation flexibility

TORNADO® pumps can be installed with inlet and outlet ports horizontally or vertically oriented. Both simple standard and complex customized drive and base plate arrangements are available to suit

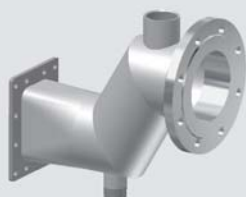
individual application needs. Base plates can be added for fixed installation or mobile units. The range of drives available includes electric motors, diesel engines and hydraulic drives.



Standard inlet and outlet pipework adapters are available in a wide range of designs



Straight flanges



Goose-neck form



Flanges 90° upwards

Additional Options

- Customized adapters are available to suit specific requirements.

TORNADO® – totally reliable everywhere

TORNADO® rotary lobe pumps will handle your product smoothly, safely and reliably.

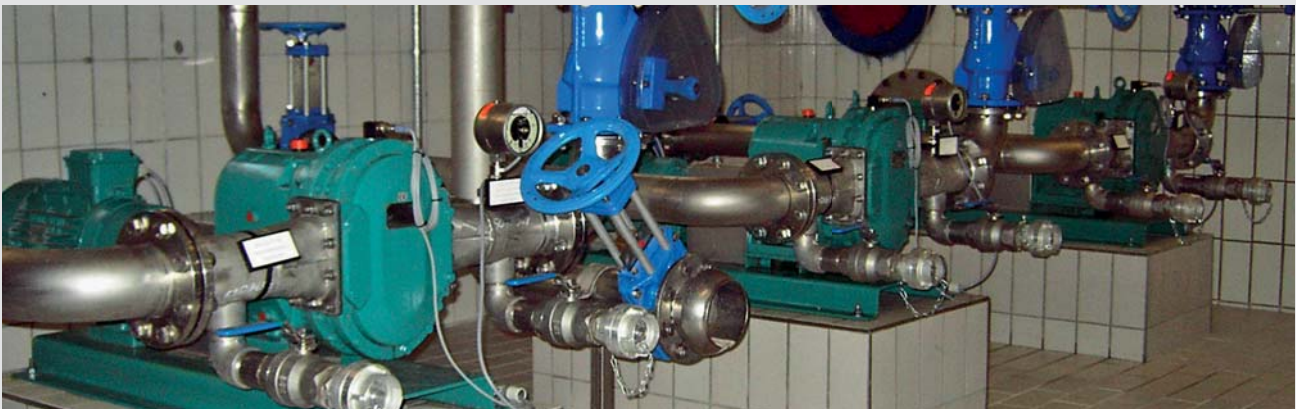
You can trust NETZSCH – over 50 years of experience across all process industry sectors.



Feed pump for a biogas substrate. Flow rate up to 175 gpm (40 m³/h) at a pressure of 30 psi (2 bar).



A TORNADO® pump in a paper factory for unloading Kaolin from tankers. Flow rate is 330 gpm (75 m³/h) and pressure is 60 psi (4 bar).



Application in a waste water treatment plant: here TORNADO® pumps are pumping waste water sludge with 3% DS at a flow rate of 242 gpm (55 m³/h) and pressure of 30 psi (2 bar).



A mobile TORNADO® pump in a rendering plant. A mixture of fat and waste water is pumped at a flow rate of 220 gpm (50 m³/h) at a pressure of 45 psi (3 bar).

Additional Information

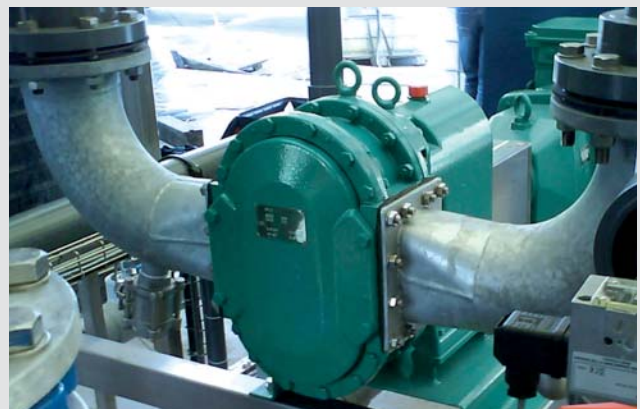
TORNADO® Mobile
Brochure NMP · 045 · 02



A TORNADO® pump vertically mounted on a container for oil field drilling mud feed to centrifuge.



A TORNADO® mobile unit offers quick and flexible removal of large quantities of different liquids. Flow rates offered up to 4,400 gpm (1,000 m³/h) at pressures up to 85 psi (6 bar).



A TORNADO® pump for 1-3% DS waste water in a membrane filter system for flow rates up to 350 gpm (80 m³/h) in either direction of rotation.

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 3,500 employees at 210 sales and production centers in 35 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, NOTOS™ multiple screw pumps, macerators/grinders, dosing systems and equipment custom built and challenging solutions for different applications on a global base.

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