

## Face Unique Challenges with Proven Pumping Solutions NETZSCH Pumps in the Mining Industry



# We are there, where you need us

## The global network at your side

The extraction and processing of minerals takes place every day on every continent. Every day mining companies need reliable pumps for a wide range of diverse and challenging applications including slurry transport, dewatering, chemical dosing, and waste water treatment.

NETZSCH Pumps and Systems is everywhere you need us. Our companies in Europe, Africa, Asia, Latin America and North America will reach every customer that needs us.

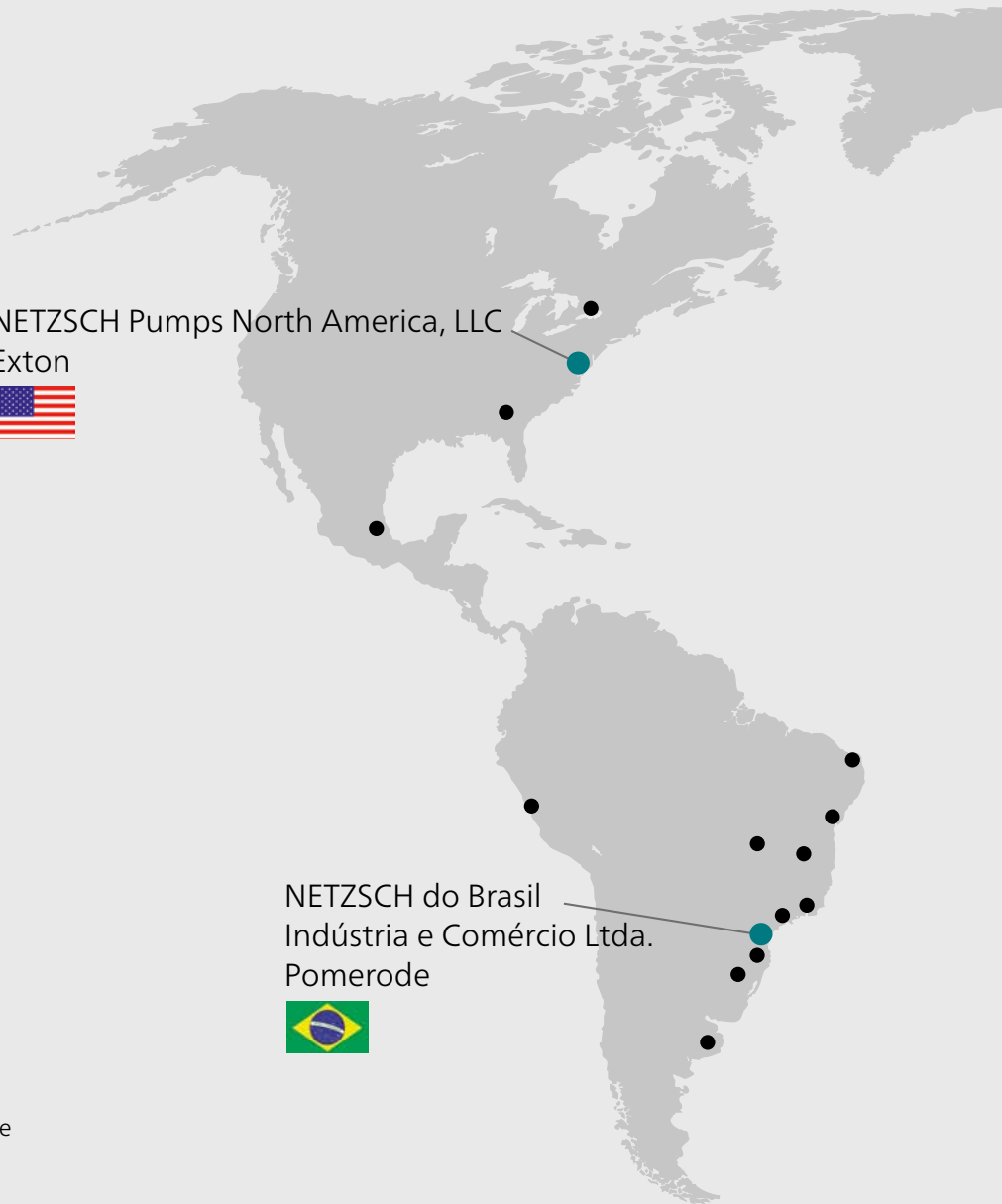
NETZSCH Pumps North America, LLC  
Exton

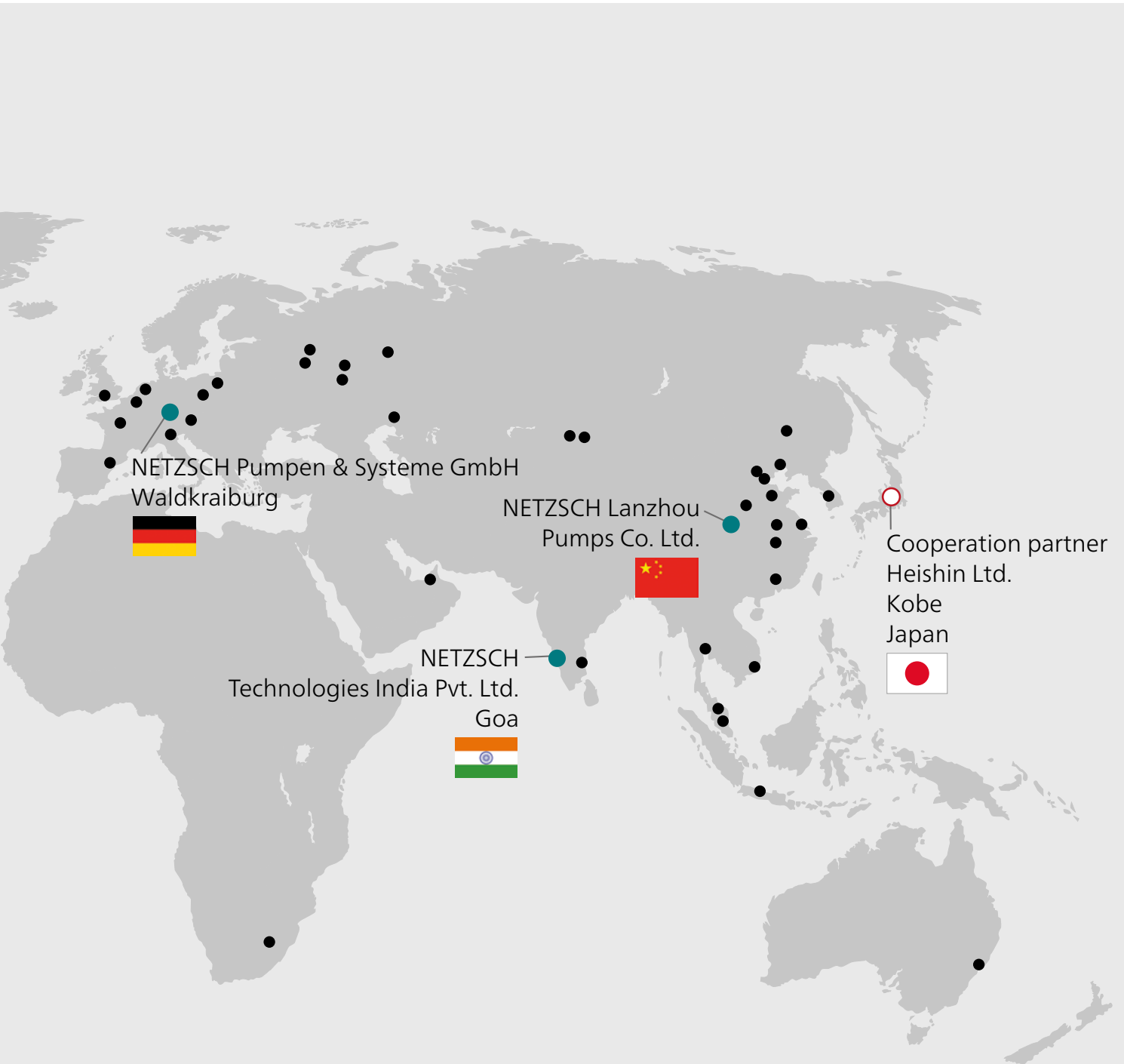


NETZSCH do Brasil  
Indústria e Comércio Ltda.  
Pomerode



- 5 NETZSCH factories on 4 continents
- More than 30 NETZSCH sales and service companies  
More than 200 NETZSCH distributors, agents and service partners worldwide





# NETZSCH brings you a new solution

## Unrivalled Expertise in Positive Displacement Pumps

NETZSCH Pumps and Systems has been serving its clients for over 60 years all around the world. We have satisfied clients from even the most demanding and difficult industries. What they are looking for, first of all, is a reliable solution, which will secure and maintain production with long-term cost efficiency.

Our roots in mining and mineral processing go back however even further. From 1896 when NETZSCH Grinding and Dispersing was established, the NETZSCH company has delivered products and solutions to this demanding industry.

### Advantages

With NETZSCH Pumps you can

- reduce the cost of wear
- pump slurries with very high solids content
- transport very abrasive, dense and viscous media
- convey aggressive media
- save time and money on maintenance

We welcome even the most difficult tasks!



Expertise in Mining

## Two different technologies for one aim

NETZSCH Pumps and Systems offers two different pump technologies for the mining industry: NEMO® progressing cavity pumps and TORNADO® rotary lobe pumps. Both types of pumps can be successfully applied in difficult mining conditions. However we also believe that NEMO® and TORNADO® pumps have their unique features and are not always replaceable.

### Applications in Mining

- slurry transfer including coal water mixtures
- thickener underflow
- dewatering
- explosive dosing
- back-filling
- gland seal water
- yellow cake
- leachates
- chemical dosing of all types
- wastewater treatment

Which technology we recommend to you depends on the unique features of your application and the particular working conditions. However, what you can be absolutely sure of is that we will always offer you the better solution!



Ease of maintenance and long service life are the strengths of the TORNADO® rotary lobe pumps.



Excellent solids handling and pressure capabilities enable the handling of demanding slurries.

# NETZSCH pumps for long-term savings

## NETZSCH Pumps and Systems for the Mining Industry

Despite the potentially higher initial cost compared to other pumping technologies such as centrifugal, NETZSCH positive displacement pumps are a long-term cost-effective solution.

In the mining industry high solids content and large particles can dramatically increase wear costs and have a negative impact on the pump's operation. NETZSCH pumps are robustly built to increase reliability enabling them to operate longer without interruptions, significantly reducing maintenance costs.

What's more NETZSCH pumps are not limited in their ability to transport very dense slurries and paste-type materials unlike some other pump technologies and therefore dense slurries are easily transported with low wear rates.

NETZSCH Pumps are the perfect solution when you are looking for a long lasting investment!

### Our pumps

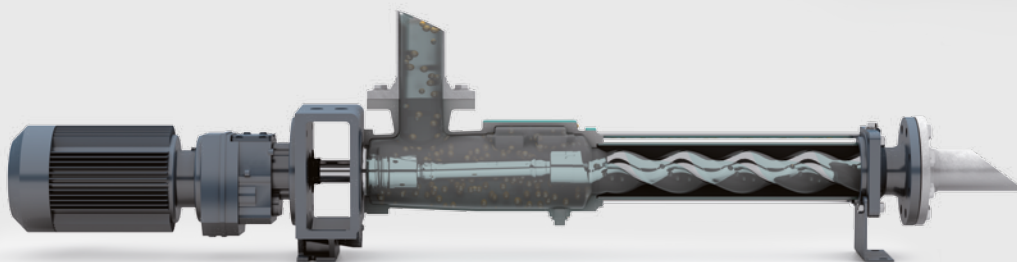
- convey media even with very high solid contents or large particles
- can transport low and highly viscous media at low speed
- are suited for higher density and higher yield stress applications
- operate a wide range of pressures
- handle shear sensitive materials
- are perfect solution for a long distance transfer applications



TORNADO® T2



TORNADO® T2



NEMO® Progressing Cavity Pump

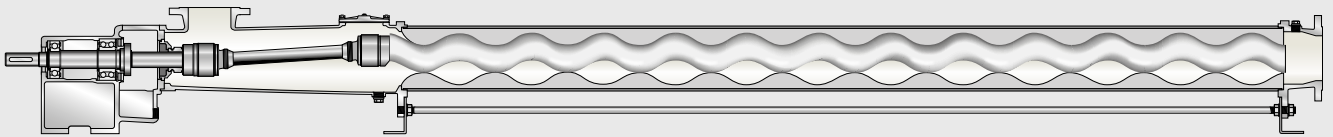


NEMO® Progressing Cavity Pump



## NEMO® Progressing Cavity Pump

When slurries are too thick and pump speeds get too high for other technologies NETZSCH steps in



NEMO® progressing cavity pumps can transfer even very thick slurries at low operational speeds, thus significantly reducing wear. NEMO® pumps can also easily handle big solids and withstand high pressures.

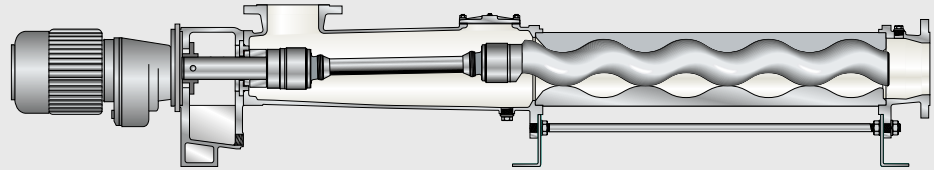
### Main advantages

- Transport of liquids with or without high solid content (maximum particle 6"/150 mm)
- Wear and corrosion resistant materials for handling demanding products
- Low operating and maintenance costs
- Very low emulsification effect
- Efficient transport of slurries
- Efficient transport of highly viscous products (1mPas and above)
- Almost pulsation-free pumping
- Installation in any position
- Almost no shear rate



# NEMO® Progressing Cavity Pump

## NEMO® BY



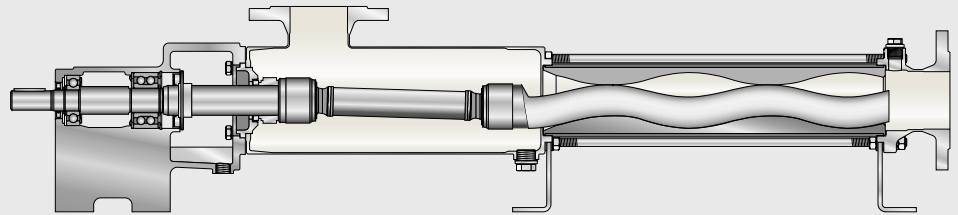
### Applications

Wastewater treatment, chemicals, flocculants, leaching solutions, explosive emulsions, gland seal water and slurries

### Special features

Compact design with directly flanged drive, 4 different rotor and stator geometries, flow rates of up to 400 m<sup>3</sup>/h and pressures up to 24 bar

## NEMO® SY



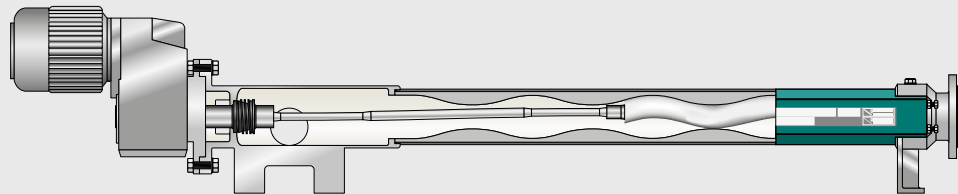
### Applications

Mine dewatering, back filling (pastes), slurries & tailings

### Special features

Universal use of all types of drives, 4 different rotor and stator geometries, flow rates of up to 500 m<sup>3</sup>/h and pressures 72 bar in standard design. Special designs are available for pressures of up to 200 bar.

## NEMO® M.Champ®



### Applications

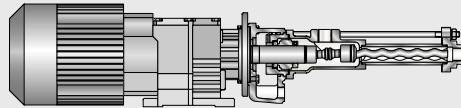
Wastewater treatment

### Special features

Maintenance free flexible rod, available with high flow rate geometries, reversible stator (built-in replacement), Clamp-Tec stator quick clamping system, flow rates up to 80 m<sup>3</sup>/h and pressures up to 6 bar



## NEMO® MINI BY



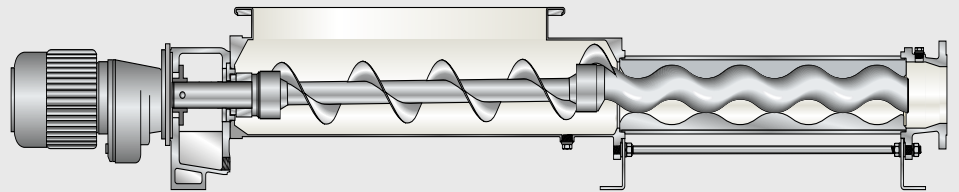
### Applications

Small chemical dosing, lab testing

### Special features

Dosing accuracy +/- 1%, 0.1 – 500l/hr, pressures of up to 36 bar

## NEMO® BO and BS (SO and SS)



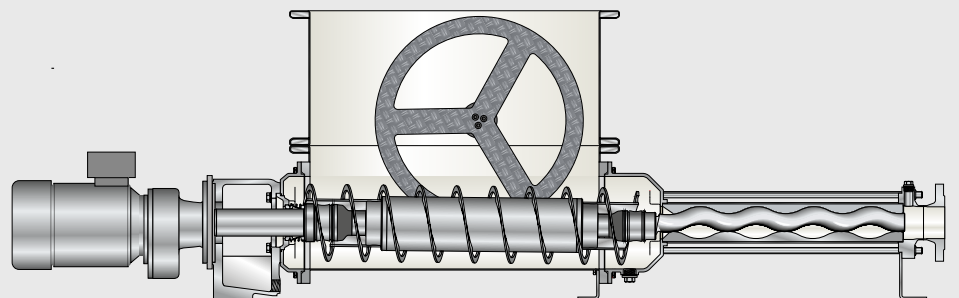
### Applications

Medium density slurries/sludges

### Special features

Viscosity of up to 100,000mPas , flow rates of up to 200m<sup>3</sup>/hr and pressures of up to 24 bar

## NEMO® BF optional with or without aBP-Module®



### Applications

High density slurries or sludges

### Special features

Viscosity capabilities of over 1 million mPas for products with or without a tendency to bridge. Pressure capabilities of up to 24 bar

# Small Pump for Big Challenges!

So effective and reliable to run

The TORNADO® rotary lobe pump is the best solution if you are looking for a maintenance friendly pump and have limited space requirements. TORNADO® pumps can run slowly even for abrasive applications, which significantly reduces the wear compared to other pumping technologies such as centrifugal pumps. What's more NETZSCH TORNADO® pumps can successfully handle viscous slurries and liquids with high solids content.



TORNADO® T2  
Rubber-Metal Pump seen  
from behind: uses a robust  
and maintenance friendly  
tooth belt drive



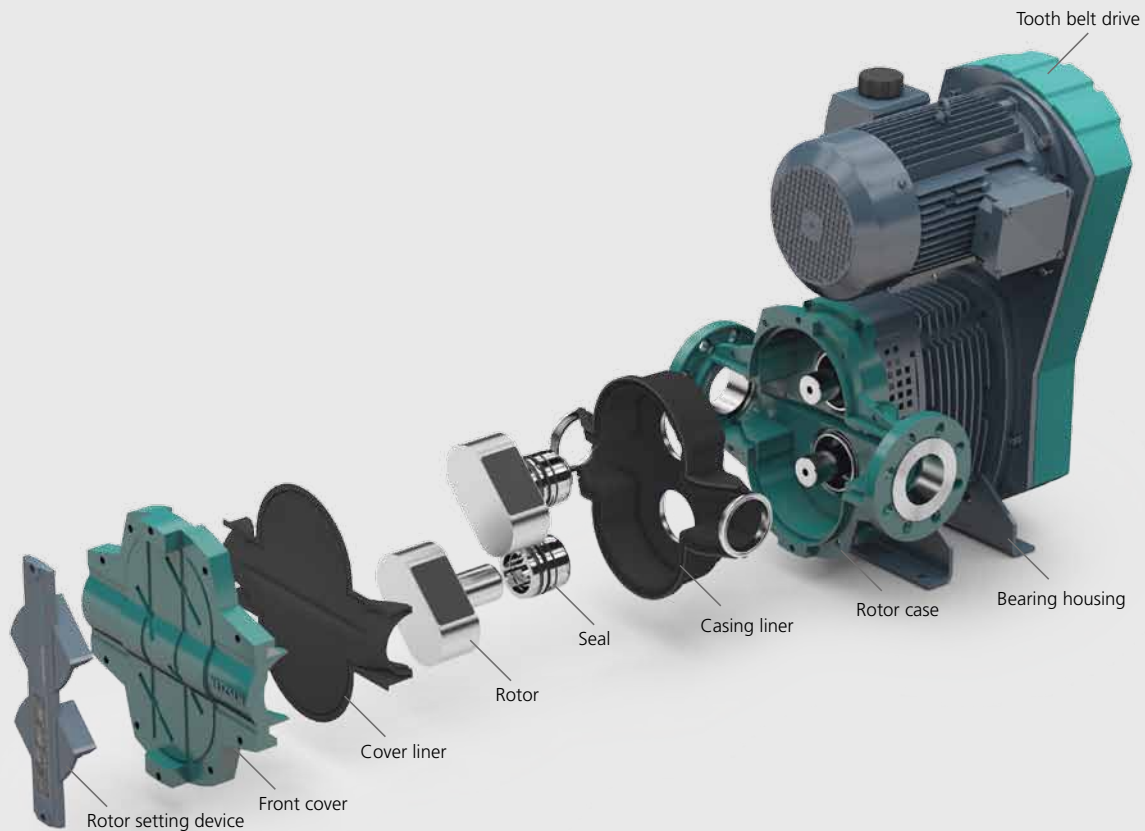
Application example from Southern Africa with  
a vertical installation

## So quick and simple to maintain

**TORNADO® Pumps** have been designed with ease of maintenance in mind. All of the product wetted components, including the mechanical seals are accessible from the front with inbuilt jacking points, allowing the replacement of the components in minutes saving you hours.

### Main advantages

- Small installation space requirements
- High performance and maximum operational reliability
- Physical separation between the pump head and bearing housing
- Service and maintenance friendly
- All parts in contact with the media are directly accessible without dismantling the pipework or disconnecting the drive



# Application Examples

A NEMO® BY pump pumping polyelectrolyte at a copper mine



A NEMO® SO pump under a centrifuge at a yellow cake plant



A BY NEMO® pump on an uranium final recovery application







A truck mounted NEMO® BY pump dispensing ammonium nitrate

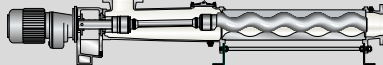
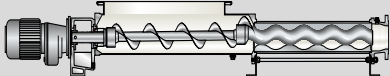
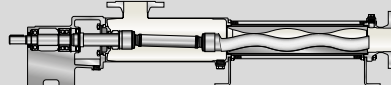
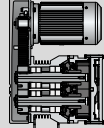

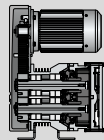
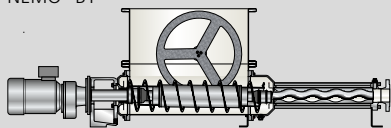
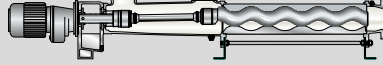
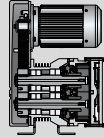
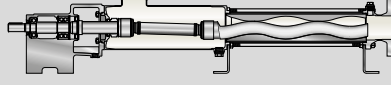
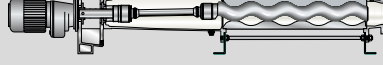
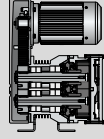
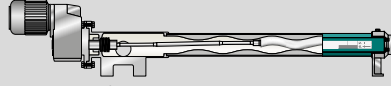
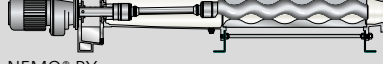
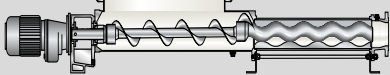
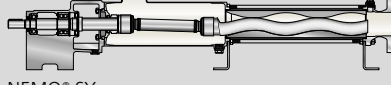
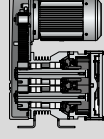


A bank of NEMO® BY pumps on a reagent dosing duty



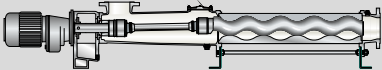
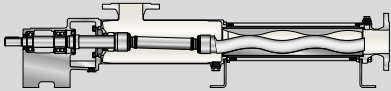
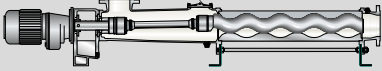
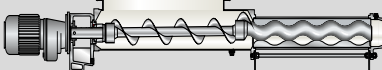
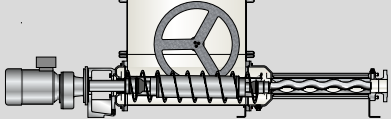
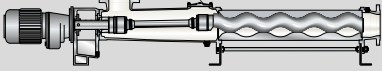
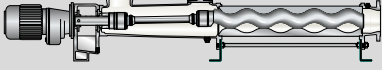
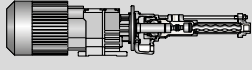
A centrifuge feed installation using a NEMO® BY pump

# NETZSCH Pumps for Mining

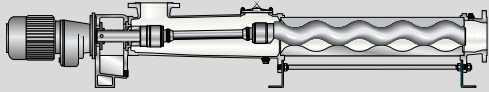
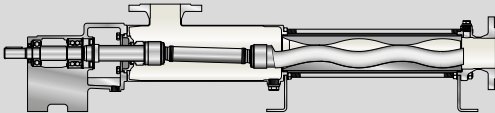
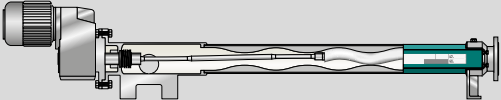
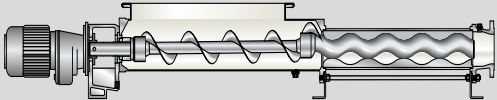
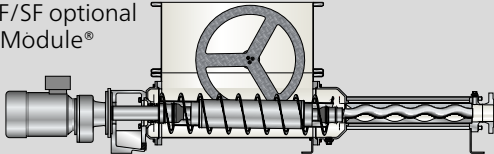
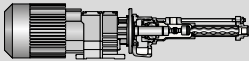
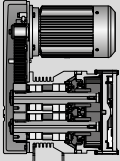
NETZSCH Pumps mining		
Application	Model	
Slurry Transfer	 NEMO® BY	 NEMO® BO and BS (SO and SS)
	 NEMO® SY	 TORNADO® T2
Thickener Underflow	 NEMO® BY	 TORNADO® T2
	 NEMO® BF/SF optional with aBP-Module®	
Dewatering	 NEMO® BY	 TORNADO® T2
	 NEMO® SY	
Wastewater Treatment	 NEMO® BY	 TORNADO® T2
	 NEMO® M.Champ®	
Explosive Dosing	 NEMO® BY	 NEMO® BO and BS (SO and SS)
	 NEMO® SY	 TORNADO® T2



## NETZSCH Pumps mining

Application	Model	
Back Filling	 <p>NEMO® BY</p>	 <p>NEMO® SY</p>
Gland Seal Water	 <p>NEMO® BY</p>	
Yellow Cake	 <p>NEMO® BO and BS (SO and SS)</p>	 <p>NEMO® BF/SF optional with aBP-Module®</p>
Leachate	 <p>NEMO® BY</p>	
Chemical Dosing	 <p>NEMO® BY</p>	 <p>NEMO® MINI BY</p>

# NETZSCH Pumps for Mining Applications

NETZSCH Pumps				
Model	Slurry Transfer	Thickener Underflow	Dewatering	Wastewater Treatment
NEMO® BY 	X	X	X	X
NEMO® SY 	X		X	
NEMO® M.Champ® 				X
NEMO® BO and BS (SO and SS) 	X	X		
NEMO® BF/SF optional with aBP-Module® 		X		
NEMO® MINI BY 				
TORNADO® T2 	X	X	X	X

Explosive Dosing	Mine Back Filling	Gland Seal Water	Yellow Cake	Leachate	Chemical Dosing
X	X	X		X	X
X	X				
X			X		
			X		
					X
X					

# For a long-lasting Partnership

## Quality comes first

Our high-quality products are manufactured according to the highest international standards in our own production plants in Germany, Brazil, China and India.

## Partnership

With our customers from all over the world we incorporate the latest market trends and requirements into the development and improvement of our products.

## Competence and reliable service

- We guarantee you optimal service, fast response and delivery times.
- With more than 1,400 employees at five development and production sites as well as 25 sales offices and 200 NETZSCH Pumps & Systems representatives worldwide we are close to you wherever you are.

## Our Contribution to Partnership

- special internal and external training for customers
- flexibility
- customized solutions



## What can we offer you more

### Safety Valves and Bypass System

- Safety valves and bypass system equipped between the inlet and outlet can protect the system.
- When pressure exceeds the maximum allowable limit, relief valves protect pump and pipe systems from damage.

### Diaphragm Pressure Gauge and Over Pressure Protection

- Gauge internals are isolated from the media by a generously dimensioned diaphragm
- Stainless steel diaphragm
- Display of operation pressure
- For highly clogging fluids
- Shutdown at the adjusted pump's maximum discharge pressure

### Heating Jacketed Pump Housing and Dry Running Protection

When the temperature of the medium in the pump exceeds the set value or no medium passes through, the NEMO® pumps equipped with STP-2A dry running protective system will stop operation automatically. For special applications, such as the pumps are installed in a cold region, we provide the pumps with a heating jacket. When the hot water is introduced in the jacket, the whole pump will be heated, ensuring that the pumped media is kept in a flowable condition.

### Control Panel

- Frequency inverter
- Complete instrumentation
- PLC controlled

### After Sales

- Commissioning
- Start-up assistance
- Maintenance on site
- Training on site and in-house



The NETZSCH Group is a mid-sized, family-owned German company engaging in the manufacture of machinery and instrumentation with worldwide production, sales, and service branches.

The three Business Units – Analyzing & Testing, Grinding & Dispersing and Pumps & Systems – provide tailored solutions for highest-level needs. Over 2,700 employees at 140 sales and production centers in 27 countries across the globe guarantee that expert service is never far from our customers.

The NETZSCH Business Unit Pumps & Systems offers with 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 basis.

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