



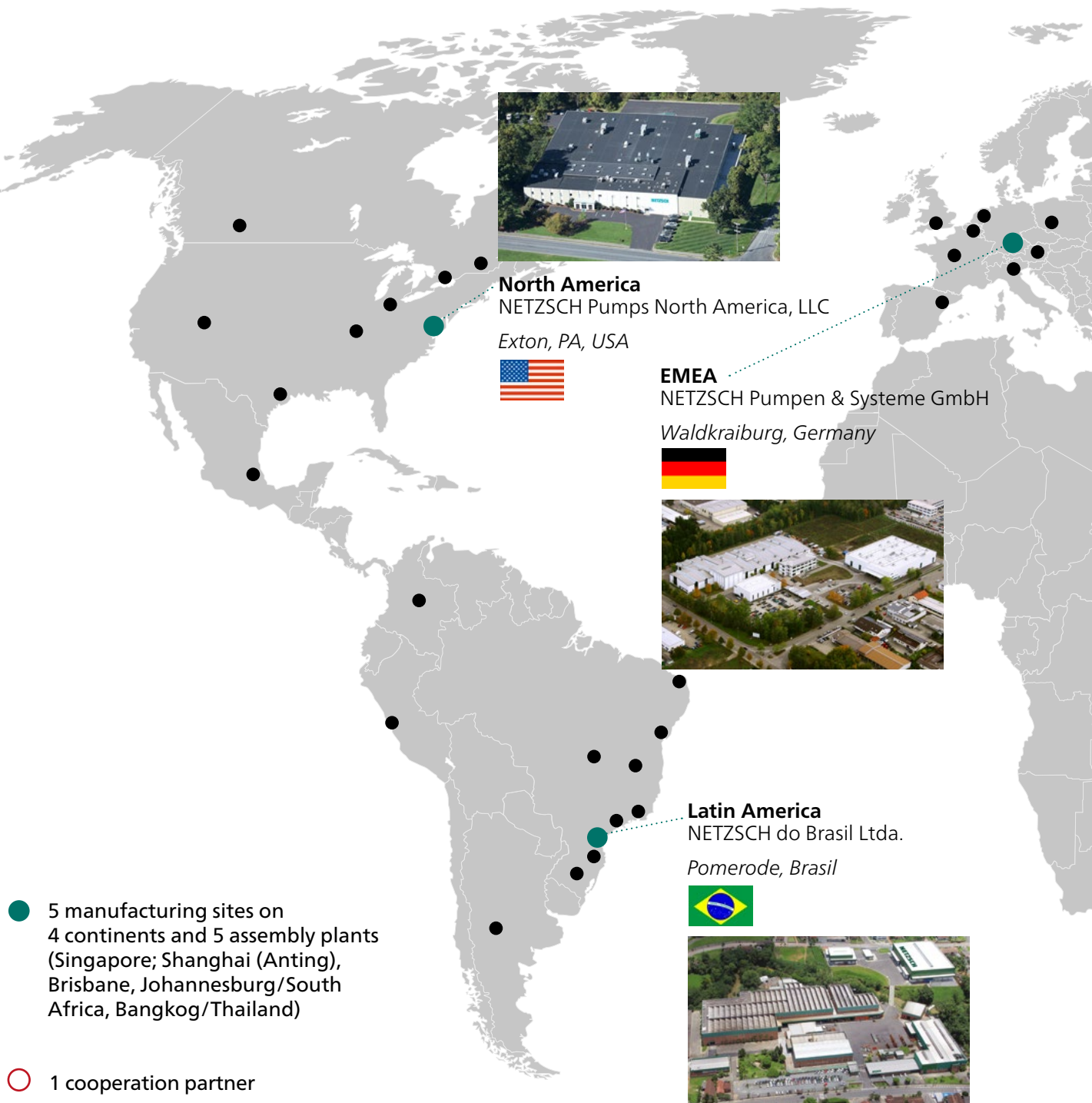
## Reliable and Safe Pumps for Ships

Product Overview, Technology and Applications

Pumps & Systems

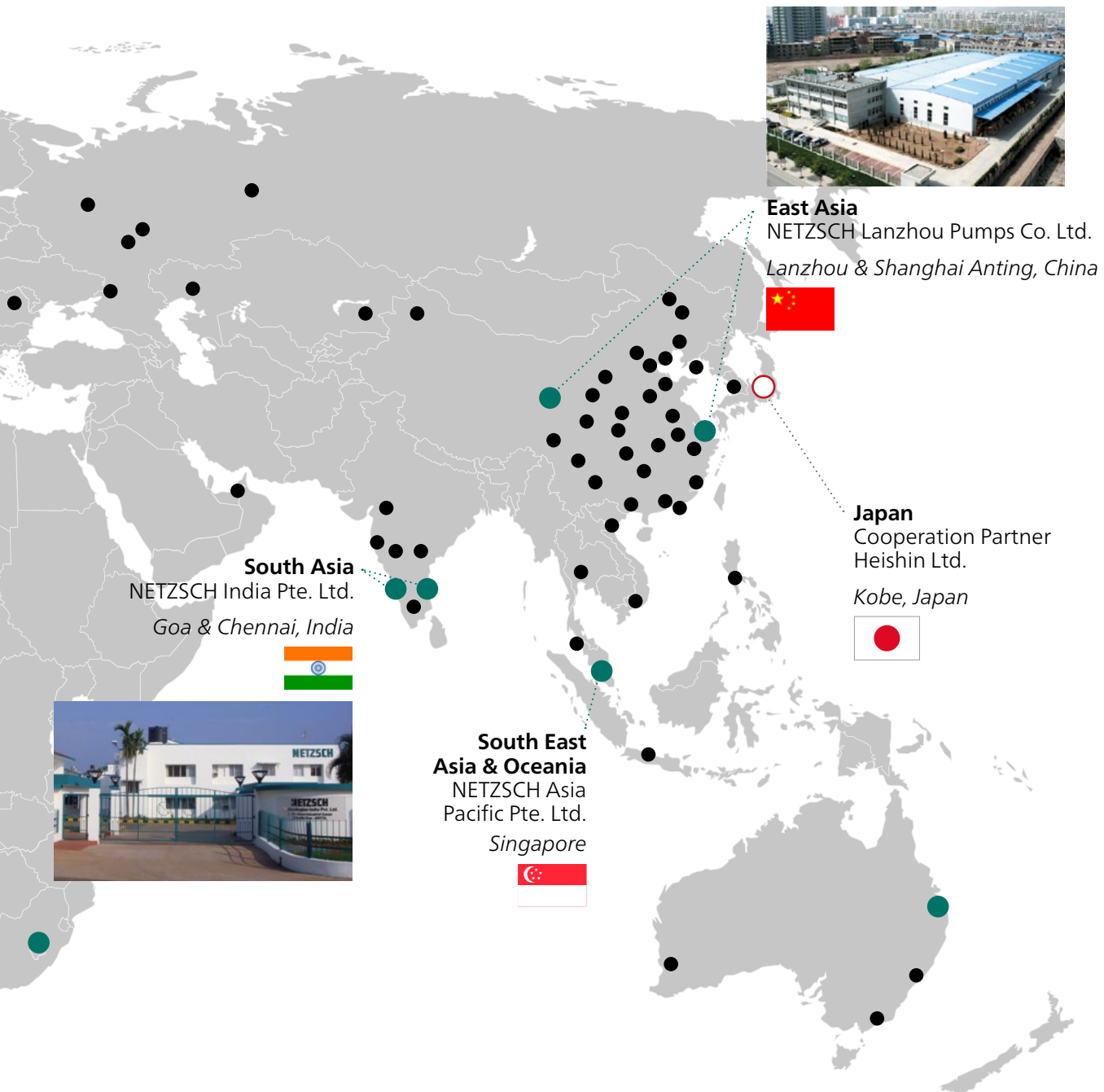
# NETZSCH Global Network Pumps & Systems

## ALWAYS CLOSE



- More than 30 NETZSCH sales companies  
More than 200 NETZSCH distributors and agents

# TO OUR CUSTOMERS





# Your Application –

## Our Solution

In order to succeed in the increasingly competitive global maritime markets, the shipping industry is facing fundamental challenges such as the automation and digitalisation of products and services, production and logistics processes, marine safety, and increasing requirements in the field of environmental and climate protection. NETZSCH sees itself as a partner to meet these requirements successfully. With the modern pump technology from NETZSCH, you benefit from environmentally friendly and efficient pumping processes and a pump design that is easy to service and maintain thanks to clever technology.

We offer you the ideal pump for every application from our extensive product range:

Waste water:

NEMO® pump

Lube oil pumps for hydraulic units:

NOTOS® pump 2NS and 3NS series

Water oil separator:

NEMO® pump

Ballast/wastewater:

TORNADO® pump

Oil sludge:

NEMO® pump

Bilge:

NEMO® pump

Lube oil pumps for engine rooms

diesel/HFO injection to engines:

NOTOS® pump 2NS and 3NS series

Bunkering pumps for loading/  
unloading fuel oil:

NOTOS® pump 2NS and 4NS series

Transfer pump for diesel and fuel oil:

NOTOS® pump 2NS and 3NS series

Lube oil pump for steering gears and  
pitch propellers:

NOTOS® pump 3NS series

Alternative fuel:

NEMO® pump and NOTOS® pump

Bilge water and oil sludge:

PERIPRO pump

## VARIOUS PRODUCTS FOR MARITIME APPLICATIONS

# *NOTOS® Multi Screw Pumps*

The NOTOS® multi screw pump family comprises three series in various designs for maritime applications. They are particularly suitable for shipbuilding as they are incredibly well suited for lubricating media such as fuel oil and lube oil



2 NS – Two Screw Pump

- Flow rates up to 650 m<sup>3</sup>/h (2,860 gpm)
- Pressure up to 16 bar (230 psi)
- Temperature up to 300 °C (570 °F)
- Viscosity up to 100,000 cSt



3 NS – Three Screw Pump

- Flow rates up to 400 m<sup>3</sup>/h (1,760 gpm)
- Pressure up to 120 bar (2,300 psi)
- Temperature up to 300 °C (570 °F)
- Viscosity up to 15,000 cSt



4 NS – Geared Twin Screw Pump

- Flow rates up to 3,000 m<sup>3</sup>/h (13,200 gpm)
- Pressure up to 80 bar (1,160 psi)
- Temperature up to 400 °C (750 °F)
- Viscosity up to 200,000 cSt

# A PRODUCT PORTFOLIO THAT MEETS YOUR NEEDS ON THE SHIP

## *Multi-layered technologies*

As a global specialist in complex fluid handling, we offer 5 different pump technologies. So we can give you unbiased advice to find the best pump and additional equipment for your application.

### NEMO® Progressing Cavity Pump

- Flow rate up to 1,000 m<sup>3</sup>/h
- Pressure up to 240 bar
- Pumping high-viscosity fluid
- Transferring fluid of multiphase mixture with liquid, gas, and solids
- Pumping fluids containing abrasive solids
- Flow rate is in direct proportion to pump revolution speed
- High discharge pressure
- Dry running protector is optional



NEMO® pump with "Full-service-in-place" technology: the large removable inspection cover generously opens the pump room for maintenance, and in addition with the xLC® stator adjustment system for tripling the service life.

### PERIPRO Peristaltic Pump

- Flow rates from 2.2 l/h to 12,000 l/h
- For pressures up to 10 bar
- Excellent resistance to abrasion
- No valves or mechanical seals
- Indefinite dry running
- Up to 70 % solids in conveyed media



# *for optimal fluid management*

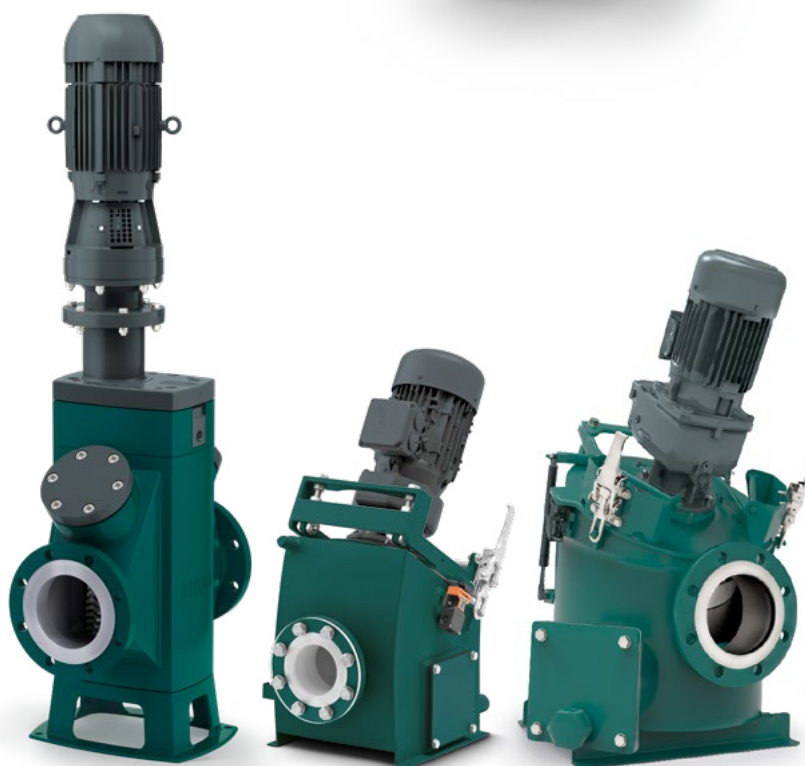
## TORNADO® Rotary Lobe Pump

- Flow rate up to 1,000 m<sup>3</sup>/h
- Pressure up to 10 bar
- Compact design
- Pumping multiphase mixtures containing solids, fluids and gas
- High self-priming ability
- Even withstands dry-running for a certain time
- Front cover can be opened quickly, easy for maintenance



## N.Mac® and M-Ovas® Macerators

- Grinding and cutting large and solid particles
- Installation into effluent channels or flange assembly
- Avoid blocking of pump, pipeline and subsequent equipment
- With cleaning port, easy for maintenance or with optional cleaning comb for fibrous material





# Where NETZSCH Products Can Be Used

As a global partner for complex fluid management, we at NETZSCH Pumps & Systems will work with you to find a customised and sophisticated pump solution for your individual application. We promise you Proven Excellence - outstanding performance in all areas.



## Passenger liner

- NEMO® progressing cavity pump or TORNADO® rotary lobe pump: Used for sewage transfer
- NOTOS® 2NS and 3NS multi screw pump: Used for lube oil and fuel oil transfer, mainly in engine room
- N.Mac® Macerator: Mainly used for grinding & cutting any big & hard objects during transferring sewage



## Gas Tanker

- NEMO® progressing cavity pump or TORNADO® rotary lobe pump: Used for transferring waste oil, sludge oil and oily water
- NOTOS® 2NS and 3NS multi screw pump: Mainly used for main engine lubrication system to circulate lube oil





### Ocean Work Vessel (Platform Supply Vessel)

- NEMO® progressing cavity pump or TORNADO® rotary lobe pump: Mainly used to transfer and circulate slurry
- NOTOS® 2NS and 3NS multi screw pump: Mainly used for transfer of lube oil and fuel oil



### Container Vessel

- NEMO® progressing cavity pump or TORNADO® rotary lobe pump: Used for transfer of waste oil, sludge oil, oily water and sewage
- NOTOS® 2NS and 3NS multi screw pump: Mainly used as hydraulic pump, winch pump, and to transfer lube oil
- NOTOS® 2 NS and 3NS multi screw pump: Mainly used to transfer fuel oil & lube oil for the main engine



### Bulk Carrier

- NEMO® progressing cavity pump or TORNADO® rotary lobe pump: Used for transfer of waste oil, oily water and sewage
- NOTOS® 2NS and 3NS multi screw pump: Mainly used for transfer of oil and lube oil
- NOTOS® 4NS multi screw pump: Mainly used for transferring heavy oil and loading/unloading oil

## Examples – NETZSCH Products Specific Applications



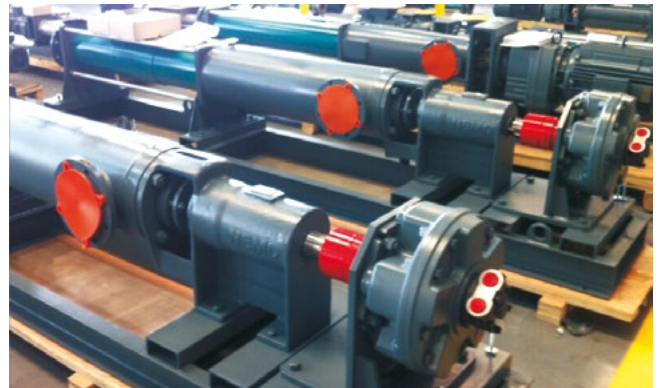
NEMO® pumps to transfer kaolin on board



NEMO® pump to transfer sludge



NEMO® pumps wastewater



NEMO® pumps for marine ready to be delivered



NOTOS® pumps for lube oil transfer



NOTOS® pumps to transfer lube oil to bearings



NEMO® pumps for magnesium oxide MgO (scrubber system)



TORNADO® pump for sewage water



With the worldwide implementation of common standards following ISO 9001 and many others, we guarantee the highest quality at each production site within the NETZSCH organisation.

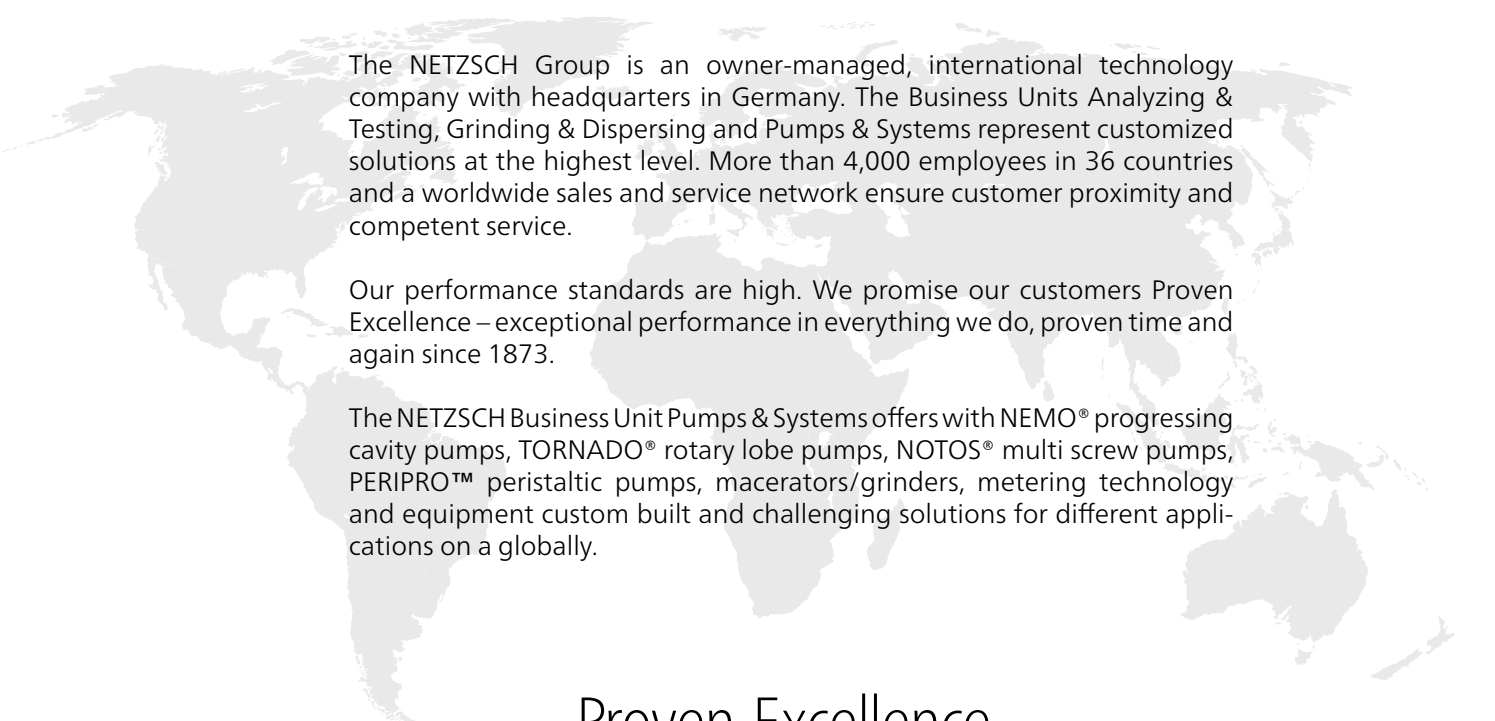
# Qualification

## Certificates & Documentation



### NETZSCH ensures highest international standards

- DNV-GL (Det Norske Veritas – Germanischer Lloyd)
- ABS (American Bureau of Shipping)
- CCS (China Classification Society)
- BV (Bureau Veritas)
- RINA (Registro Italiano Navale)
- IRS (Indian Register of Shipping)



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 with NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO peristaltic pumps, macerators/grinders, dosing technology and equipment custom built and challenging solutions for different applications on a global basis.

## Proven Excellence.

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