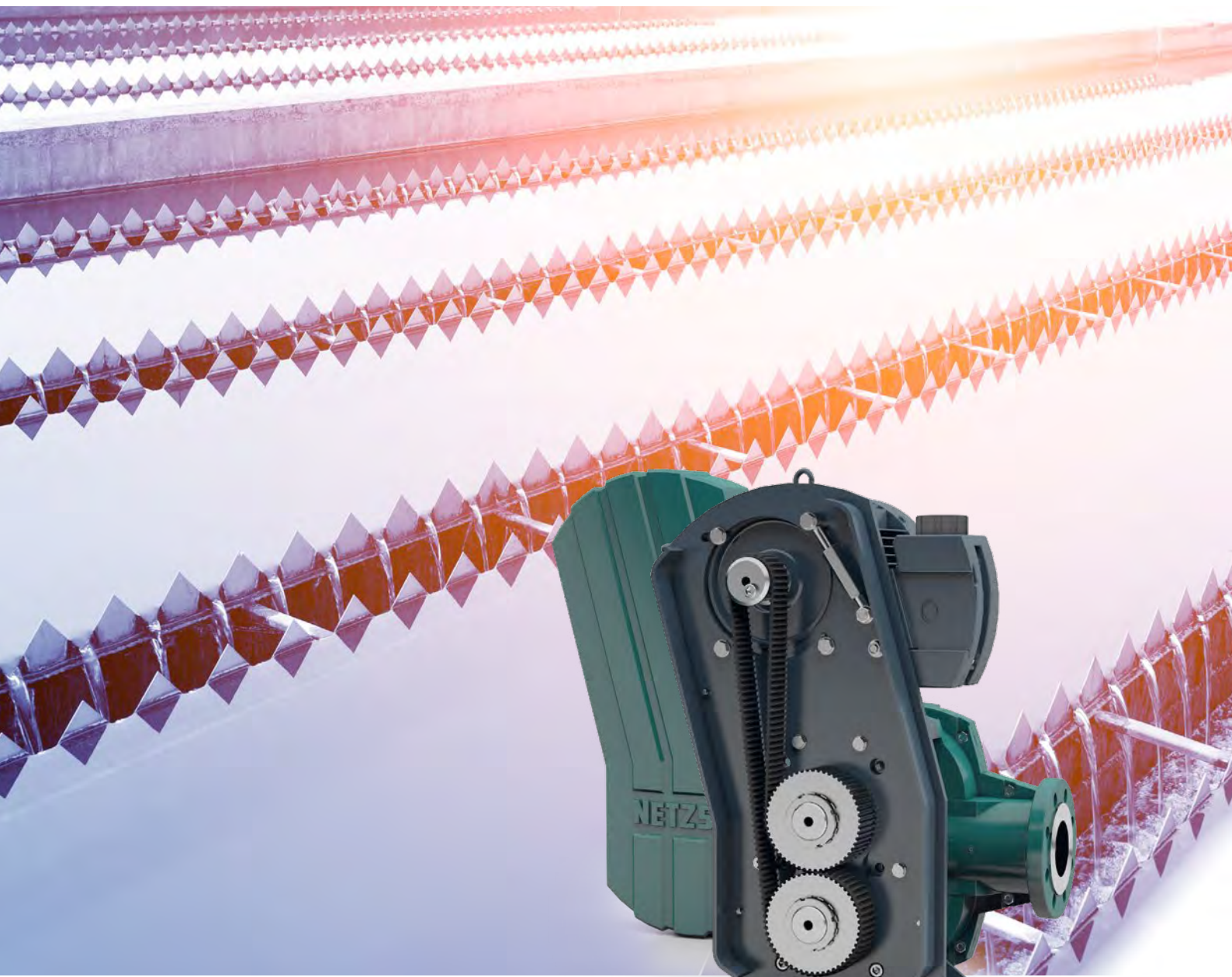




**NETZSCH**

Proven Excellence.



## TORNADO<sup>®</sup> Rotary Lobe Pumps

T.Envi<sup>®</sup> – The heart in environmental and biogas

Pumps & Systems

# TORNADO® ROTARY LOBE PUMPS

## T.Envir®

Designed for applications in environment and biogas technology

SERVICE FRIENDLY

WEAR RESISTANT

DURABLE

ROBUST

OILFREE

COMPACT

LOW COST



Long-lasting design with reversal of material

Maximally robust and long-lasting design was at the heart of the development of this type of pump. Its characteristic feature is a reversal of material: The rotary lobes, made of hardened steel, run in a rubberised and flow-optimised housing. Pads vulcanised onto the edges of the lobes create continuous hard-soft contact at any time during rotation. This prevents high-wear friction of rubber against rubber.

The specially attuned shapes of the rotary lobes and housing not only improve the pumping capacity, but also reduce friction and energy consumption.

The simplest maintenance is no maintenance: FSIP®

The oilfree belt drive ensures that the pump unit operates extremely smoothly. This results in a reduced load and fewer vibrations, which affect the components. The service life is thus significantly longer overall.

The maintenance is also simple. Since the system is not lubricated, time-consuming lubricant changes and the risk of leakages are a thing of the past. If T.Envir® requires service or repair nonetheless, direct access to the pump chamber means work can be performed quickly and, above all, easily. After removing the drive cover, the entire synchronised belt drive can be accessed. Workload is kept to a minimum and downtimes are shorter.

The most suitable solution for each application

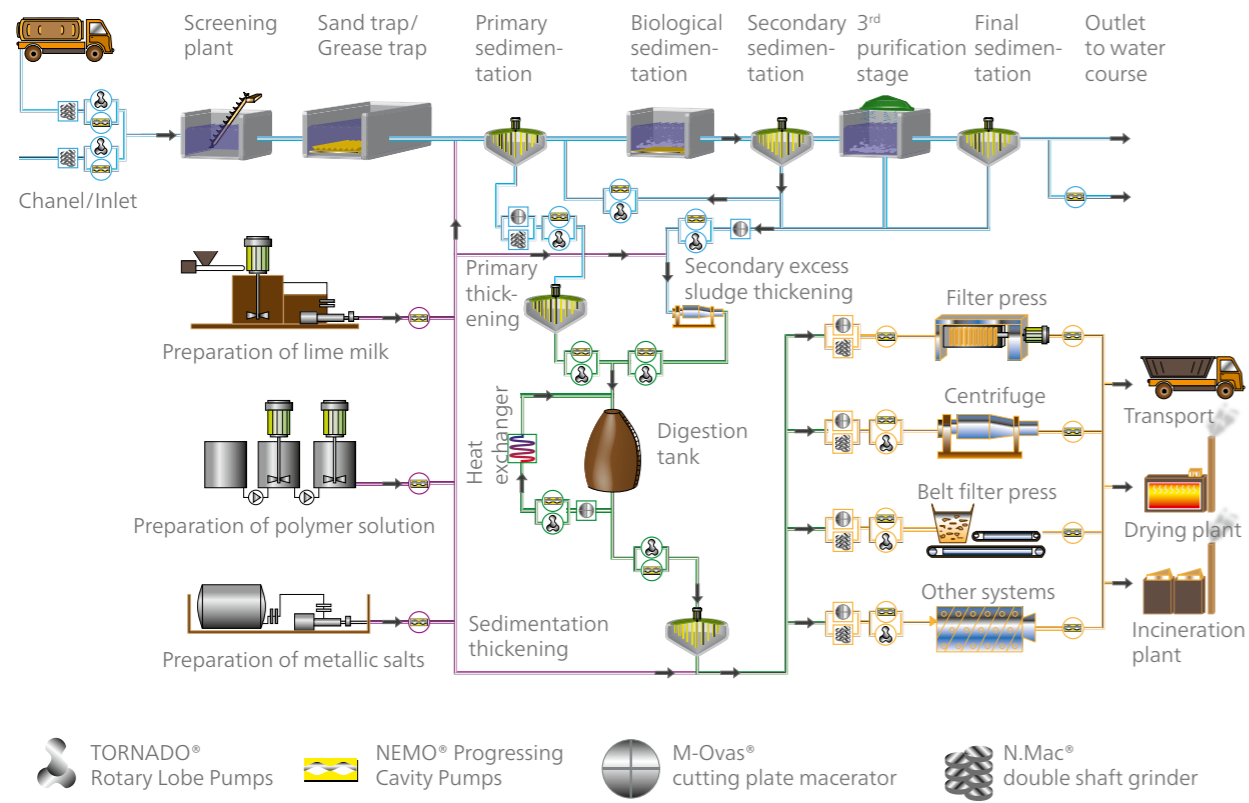
The demands in applications in the environmental sector require various pump systems. NETZSCH rotary lobe and progressing cavity pumps, as well as grinders, provide the right solution for your process.

For some applications the use of either rotary lobe or progressing cavity pump is potentially possible. NETZSCH as producer of both pump technologies is ideally positioned to offer impartial and qualified advice, which pump technology is best suited to your application.

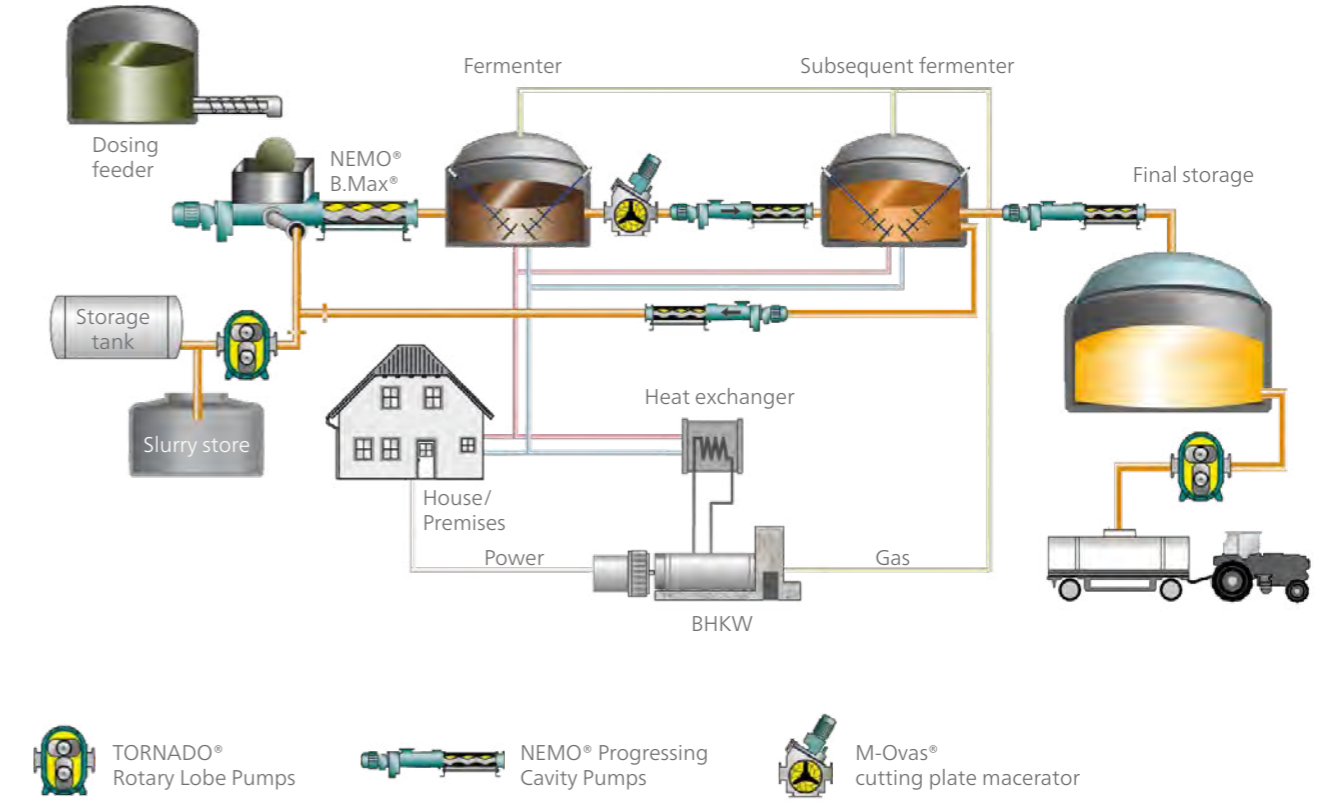
In this case, both the application characteristics and the space is the decisive factor for give the optimal choice.



### Process chart of sewage treatment plant – application range of NETZSCH products



### Process chart of a biogas plant – application range of NETZSCH products



Centrifuge feed: 2 % DS excess sludge at a flowrate of 18 m<sup>3</sup>/h against a discharge pressure of 1,5 bar.



Recirculating liquid manure in a biogas plant from a fermenter to a heat exchanger at a flow rate of 20 m<sup>3</sup>/h against a discharge pressure of 1,5 bar.

# The right choice

## FOR YOUR APPLICATION

NETZSCH TORNADO® Rotary Lobe Pumps T.Envir® – Operating Parameters										Advantages		
Range	Model		Flowrate at nominal speed range (theoretical)**	Speed (nominal) recommended range	Flowrate at max. speed (theoretical)**	Speed max.	Discharge pressure (max.) continuous/intermitted		Displacement (theoretical)		Flange connections	Pump head materials (wetted)
			appr. m³/h	rpm	m³/h	rpm	bar	l/r	mm		material	
T1	MB-1		3 to 14	100 to 500	23	800	6/8		0,47	65	metal/elastomere*	
T1	MB-2		4 to 20	100 to 500	32	800	6/8		0,67	80	metal/elastomere*	
T2	04/45	08/45	8 to 39	100 to 500	45	600	4/6	8/10	1,27	80	metal/elastomere*	
T2	03/70	06/70	12 to 58	100 to 500	70	600	3/5	6/8	1,90	100	metal/elastomere*	
T1	XLB-1		15 to 98	100 to 500	109	550	6/8		3,56	125	metal/elastomere*	
T1	XLB-1/2		15 to 98	100 to 500	109	550	8/10		3,56	125	metal/elastomere*	
T2	04/100	08/100	16 to 82	100 to 500	100	600	4/6	8/10	2,74	125	metal/elastomere*	
T2	03/140	06/140	24 to 119	100 to 500	140	600	3/5	6/8	3,95	125	metal/elastomere*	
T1	XLB-2		30 to 151	100 to 500	166	550	4/6		5,03	150	metal/elastomere*	
T1	XLB-2/2		30 to 151	100 to 500	166	550	8/10		5,03	150	metal/elastomere*	
T2	08/200		41 to 161	100 to 500	200	600	8		5,72	150	metal/elastomere*	
T2	04/200	08/200	41 to 161	100 to 500	200	600	4/6	8/10	5,7	150	metal/elastomere*	
T1	XLB-3		43 to 214	100 to 500	235	550	4/6		7,12	150	metal/elastomere*	
T1	XLB-3/2		43 to 214	100 to 500	235	550	8/10		7,12	150	metal/elastomere*	
T2	03/300	06/300	50 to 240	100 to 500	270	550	3/5	6/8	7,95	200	metal/elastomere*	
T2	06/300		60 to 226	100 to 500	300	600	6		7,95	200	metal/elastomere*	
T1	XLB-4		60 to 302	100 to 500	332	550	4/6		10,06	200	metal/elastomere*	
T1	XLB-4/2		60 to 302	100 to 500	332	550	8/10		10,06	200	metal/elastomere*	
T1	XLB-5		72 to 434	100 to 500	479	550	3/5		15,09	250	metal/elastomere*	
T1	XLB-5/2		72 to 434	100 to 500	479	550	5/7		15,09	250	metal/elastomere*	
T1	XLB-6/2		121 to 604	100 to 500	604	500	4/5		20,12	250	metal/elastomere*	
T1	XLB-8/2		181 to 905	100 to 500	905	500	3/5		30,18	250	metal/elastomere*	

### Advantages

- Oil-free tooth belt drive
- no dead areas, lobes attached outside the pump chamber
- lobe changing takes place in 1/4 of the usual service time
- Pulsation-free housing construction
- solids-laden media will be conveyed easily
- Also in mobile version available with/without heated front cover
- The design is made according to customer request

\* Temperature, depending on elastomer: 100° C, custom-made: 140° C

\*\* Each flow rate can generally be covered with the conventional TORNADO® T1.



# Totally reliable

EVERYWHERE

Membrane filtration: Permeate with 0,5 % DS at a flowrate of 80 m<sup>3</sup>/h against a discharge pressure of 1 bar.



Spraying liquid manure at a flow rate of 5000 l/min, the pump being driven from a tractor via a PTO shaft. Other capacities available.

Pumping of water with high content of magnesium ammonium phosphate (MAP): T.Envi® with an annual conveying volume of approximately 22,000 m<sup>3</sup>/h.



TORNADO® Mobil XLB-6/2 with three point frame for mounting on tractor/Unimog with pump capacity of 200 - 700 m<sup>3</sup>/h.



# The mobile rotary lobe pump

## RELIABLE AND DURABLE IN EMERGENCY SITUATIONS

At the core of the mobile units are the TORNADO® pumps with two rotary lobes which are three-winged and screw-shaped and engage whilst rotating. They thereby generate a vacuum on the suction side. This means the water is drawn in automatically and conveyed to the discharge side. Viscosity and dry matter content have a minimal effect on the volumetric flow. Solids like sand or clumps of earth pose absolutely no problems for the robust pumps.

### Robust design ensures reliable operation

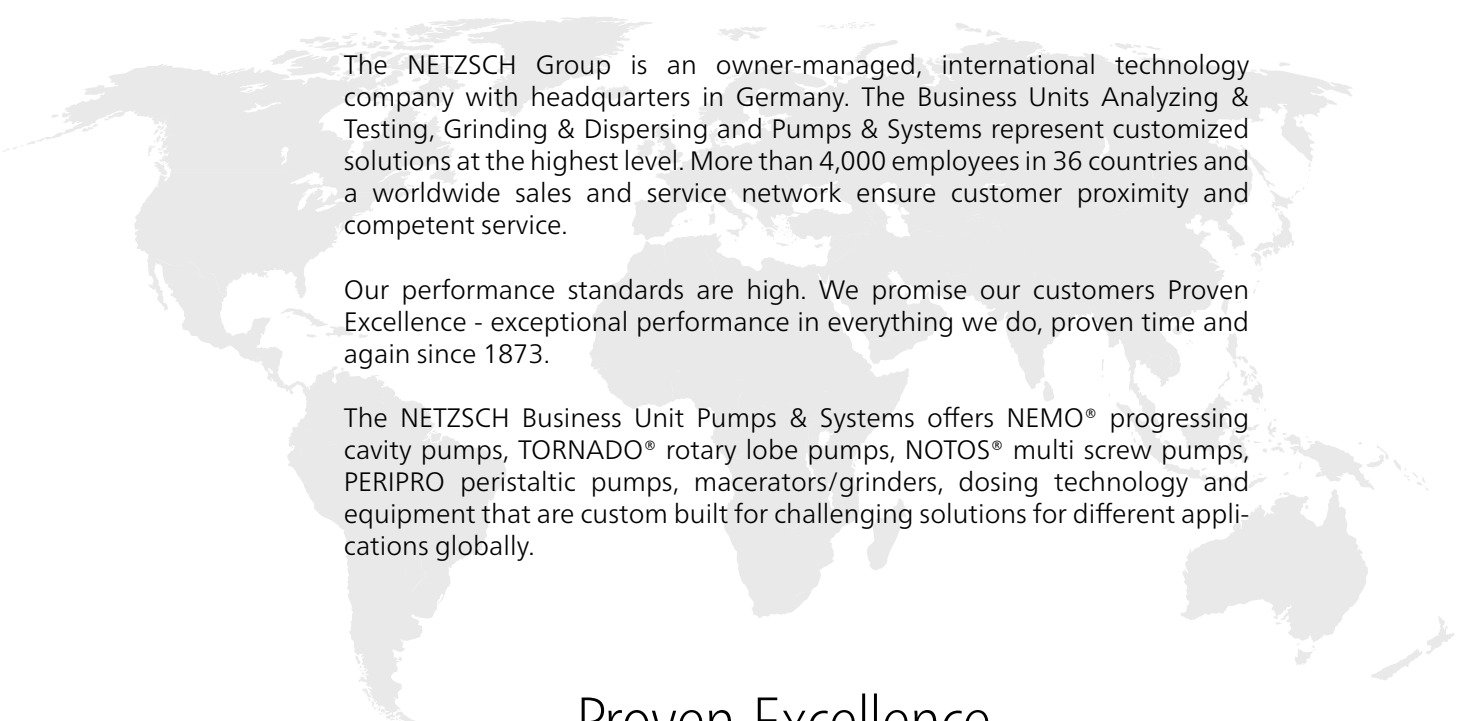
When designing the pumps, special attention was paid to robustness to ensure that abrasive or aggressive media would be unable to damage the technology. The rotary lobes are coated with resistant nitrile rubber, which enables the pump seal to do its job reliably even under great stress and strain. Furthermore, the gear box and pump chambers in the pumps are separated from one another. Even in the event of the shaft sealing failing, the media being conveyed will not be able to get into the gear box and damage it.



Mobile pumps: For municipal and industrial water and sewage treatment plants and other applications, where mobility and flexibility are required. Mobile units are designed individually to meet customer specification and requirement.



TORNADO® Mobil XLB-8/2 with noise shell for total weight of up to 3.5 t with pump capacity of 300 - 1100 m<sup>3</sup>/h.



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, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

## Proven Excellence.

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