



## Grinding Systems

Product Overview, Technology and Application Areas

# Grinding Systems protect your installation

## Universal Use

Grinding systems are used to effectively protect your complete installation including the pumping equipment. They ensure that over-size solids are reliably reduced to a pumpable size therefore safely avoiding the danger of blockages.

Grinders and macerators are designed for the most arduous of industrial applications to prevent pipe blockage and damage to downstream equipment by reliably reducing the size of solid matter in pumped media. The extensive selection of macerating systems provides an ideal solution for many industries and processes. The robust design of the grinding systems from NETZSCH ensures a high performance coupled with trouble free operation.

### Primary Applications

- Waste water treatment
- Agriculture
- Biogas plants
- Slaughterhouses and recycling plants
- Canning/tinning factories
- Industrial kitchens
- Sugar factories

### Advantages

- Low running costs through high operating efficiency
- High operational reliability
- Simple maintenance
- Comprehensive range of accessories available for almost every application
- Worldwide service network and weekend emergency support



# *... and are so easy to maintain:*

## *FSIP® Full Service in Place*

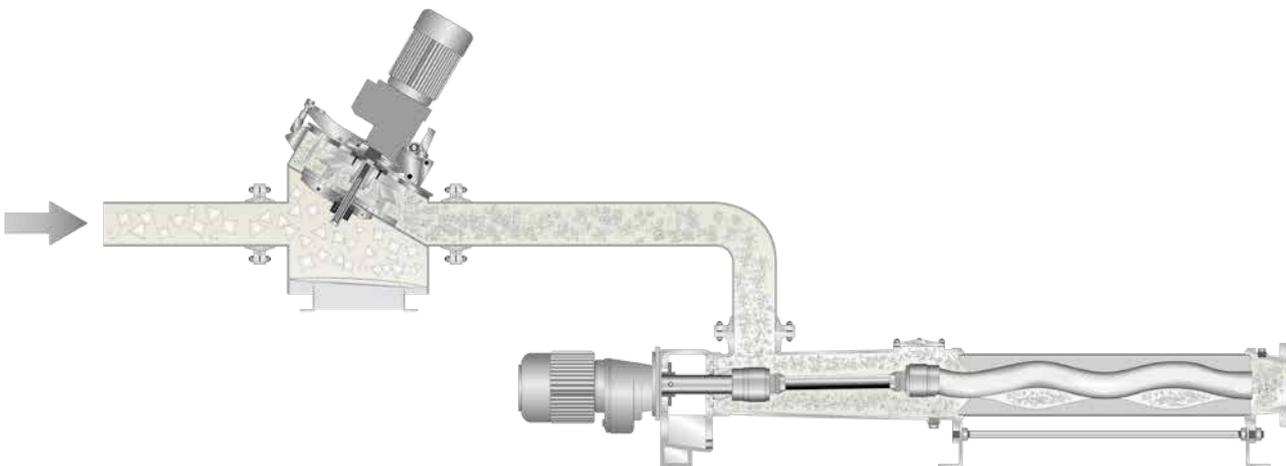
### The Right Model for Every Application

#### M-Ovas® Cutting Plate Macerator

The special shape of the housing directs solid particles in the waste water towards the cutting plate, where they are held and chopped by the rotating blades.

#### N.Mac® Double Shaft Grinder

The double shaft macerators has been designed for applications where the medium contains large solid objects. Dependent on the size reduction requirements there is a choice of different tooth and spacer plate combinations.



NEMO® BY progressing cavity pump with a cutting plate macerator M-Ovas®

# M-Ovas<sup>®</sup>

## CUTTING PLATE MACERATOR

The M-Ovas<sup>®</sup> macerator for coarse materials is ideally suited for use in biogas plants where impurities in the medium reduce process reliability. The solids in the medium are reliably macerated or separated from the medium (e.g. stones), to prevent pipes getting blocked or damage to downstream equipment.

### Broad range of applications

The M-Ovas<sup>®</sup> should preferably be used to macerate the following media:

- Fermented, renewable raw materials
- Slurry
- Bio waste
- Slaughter waste
- Manure

### High flow rates

- Throughput rates of up to 70 m<sup>3</sup>/h for substrates of up to 12 % dry solid content

### 1 Housing

Hydrodynamic design with integrated stone trap for solids, and a clean-out port. The sediment can easily be removed by opening the cover plate. The housing is galvanized to ensure corrosion resistance. Available in stainless steel (optional).

### 2 Housing Cover

Cutting unit integrated into housing cover. A gas strut is fitted to the cover to assist opening.

**2a** This port allows for easy cleaning of solids in the stone trap.

### 3 Cutting Unit

Cutting plate made of wear resistant, hardened steel. Optimum cutting performance through cutting unit with a fixed cutting mechanism. Blades made from wear resistant hardened steel. The flywheel effect of the cutter head reduces the installed power. Easy exchange of cutting plate and cutting blades without the necessity to disassemble the pipework.

### 4 Shaft Seal

Hard metal faced mechanical seal with oil quench to prevent product leakage.

### Advantages

- Compact design with high throughput rate
- Simple, easy disassembly of the cutting plate
- Low energy requirement with high throughput rate
- Integrated separator vessel with separate cleaning and drainage aperture
- Effortless disposal of the sedimented materials through easy access
- Shaft sealing using mechanical seal with lubrication
- Particularly maintenance friendly
- Cutting plate usable on both sides
- Different perforated plates depending on the application

### 5 Drive

The standard drive unit has reinforced bearings.

### 6 In-line Version

Product inlet and outlet are positioned on the same level. The M-Ovas® can be directly connected to a horizontal pipeline or to a NEMO® pump inlet where the flange is set at 90°.



# N.Mac®

## DOUBLE SHAFT GRINDER

### Inline and Channel Constructions

Capable of fragmenting large and solid particles, the N.Mac® Double Shaft Grinder is the ideal equipment to suit different applications such as wastewater treatment, biomass substrate handling, food and fruit scraps. Its various housing designs in channel and inline version allow installation into effluent channels or flange assembly to prevent pipe clogging and to protect downstream equipment, such as pumps.

#### Design Details

- Housing for inline or channel installations
- Double shaft technology for reduction of solid particles
- Low power installation at 2,2 kW (and 3 kW)
- Low rotation of the cutters at high torque (1:29 reduction)
- Hexagonal shaft in hardened steel
- Standard cutter arrangement 7/7 teeth
- Optional control unit to reverse direction of rotation in case of blockage

#### Main Applications

- Biogas plants
- Agriculture
- Slaughterhouses and recycling plants
- Canning factories
- Industrial kitchens
- Sugar factories

#### Your benefits

- Shock absorption system
- Mechanical seals with quench
- Modular design of cutting units
- Optional clearing comb for fibrous materials
- Efficiency increasing side rails (flow and cutting)
- Optional extended shaft for channel version



N.Mac® 150I



N.Mac® 50C



N.Mac® 120C



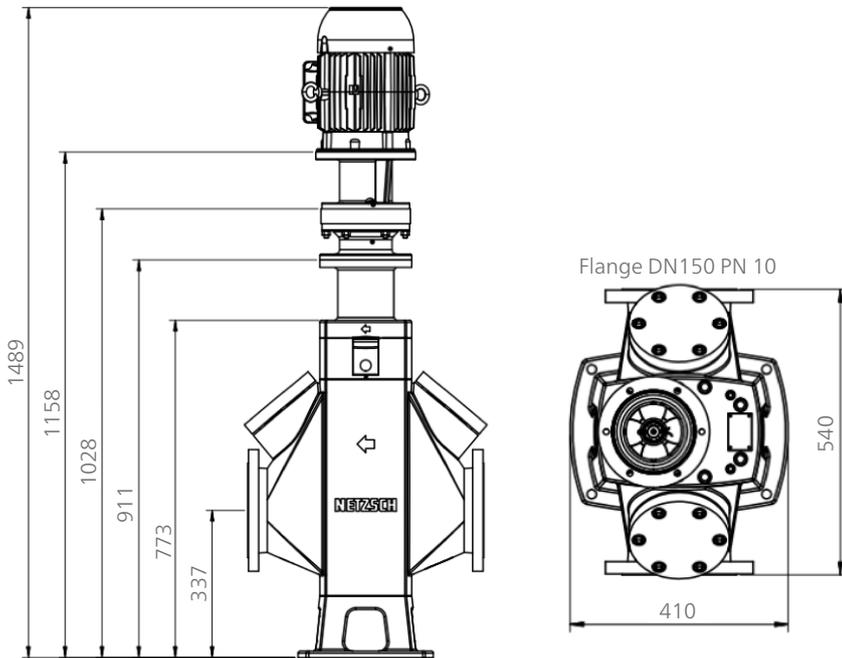
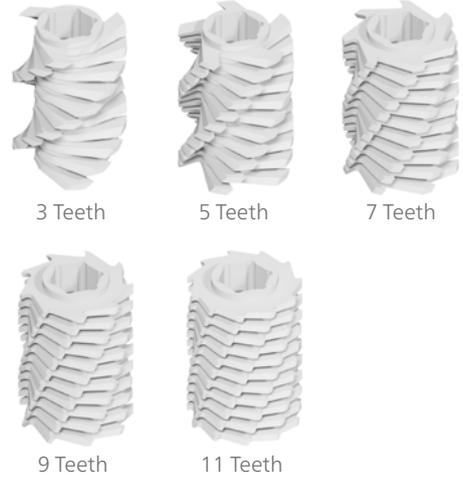
N.Mac® 400C

## Cutters

Specific cutter geometries for each type of solids facilitate the particle reduction process. To reach the required particle size the different cutters with 3 to 11 teeth may be combined accordingly.

### Characteristics

The cutters are thermally hardened to increase resistance and sharpness assuring reliable grinding of the toughest solids.



Inline Version	Flow Rate (m <sup>3</sup> /h)	Pressure loss (bar)	Maximum Incoming Pressure (bar)	Weight (kg)	Dimensions (mm)		
					A	B	C
N.Mac® 150I	150	0,36	6.0	380	540	410	1489
Channel Version	Flow Rate (m <sup>3</sup> /h)	Load loss (mm)	Weight (kg)	Dimensions (mm)			
				A	B	C	
N.Mac® 50C	50	80	200	190	310	1191	
N.Mac® 120C	120	214	230	190	310	1365	
N.Mac® 400C	400	750	350	190	310	2061	



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 3,400 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 with NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, macerators/grinders, dosing technology and equipment custom built and challenging solutions for different applications on a global basis.

NETZSCH Pumps & Systems – Solutions you can trust ■

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Alliance Member

Partner of the Engineering Industry  
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