

NETZSCH

Proven Excellence.



Areas of application

Efficient and reliable biogas production with NETZSCH products

Sustainable energy from biogas

Pumps & Systems

NETZSCH Pumps & Systems: Your specialist for biogas technology

We offer a wide range of technologies for the entire biogas process - from conveying and shredding to the targeted metering of solids. Our aim is to supply not only products, but also sophisticated system solutions that meet the specific requirements of every biogas plant.

TORNADO® Rotary
Lobe Pump



N.Mac®
Twin Shaft
Grinder



M-Ovas®
Macerator



NEMO® Progressing
Cavity Pump

PERIPRO®
Peristaltic Pump



NEMO® B.Max Mixing Pump



THANKS TO THE EMERGENCY SPARE PARTS SERVICE FROM NETZSCH, WE RECEIVED THE REQUIRED SPARE PARTS WITHIN A FEW HOURS AND WERE ABLE TO PUT THE PUMP BACK IN OPERATION. I AM TRULY IMPRESSED, HOW EFFICIENT AND ACCOMODATING THE NETZSCH TEAM RESPONDED - WITHOUT THE FAST SERVICE WE WOULD HAVE HAD HIGH DOWNTIME COSTS.



Günther Drobilitsch

Biogas Plant Operator



BIOGAS PRODUCTION WITH NETZSCH Products

Biogas plants work more efficiently with NETZSCH products

As interest in renewable, environmentally friendly, and sustainable energy continues to grow across the United States, the potential for bioenergy is expanding rapidly. While Germany has long led the way with over 9,000 biogas plants, NETZSCH has been a trusted partner to the global biogas industry for more than 30 years—delivering expert engineering, proven reliability, and ongoing innovation. Now, as the global market embraces a broader range of organic materials for energy production, NETZSCH stands ready to support this growth with advanced technologies and tailored solutions backed by decades of experience.

A multitude of substrates

Many operators are seeking cost-effective, eco-friendly alternatives to corn or other traditional organics. Grass silage and sugar beets have already undergone successful practical testing, and the range of usable liquids and solid organic substrates continues to grow. At the same time, the reuse of food waste is gaining ground as a secondary method of biogas production through co-fermentation. As input materials diversify, feeding technology must adapt accordingly.

With the **NEMO® B.Max** mixing pump, the **M-Ovas® Cutting Plate Macerator** or the **N.Mac® Twin Shaft Grinder**, NETZSCH offers appropriate products enabling the use of existing plants for new organic substrate processing. NETZSCH has the grinding technology and capability to reduce the particle size to allow for a more uniform mixture allowing the process and liquid to flow through the rest of the process while increasing the gas production yield.

Feeding technology

Feeding organic substrates often causes problems, it is time-consuming for the operator, and causes downtime for the plant. It also includes an increase in maintenance.

Switching to combined dry and liquid feeding using the **NEMO® B.Max® Mixing Pump** can contribute to a significant improvement in consistency, the operator's uptime and increased production. In addition can simplify and reduce the equipment required for processing.

The **NEMO® B.Max® Mixing Pump** combines substrate feeding with liquid media in defined proportions to thoroughly mix by means of the special mixing auger with overfeeding to increase resonance time to ensure a homogeneous solution before it goes into the digester.

Plant layout and biogas process

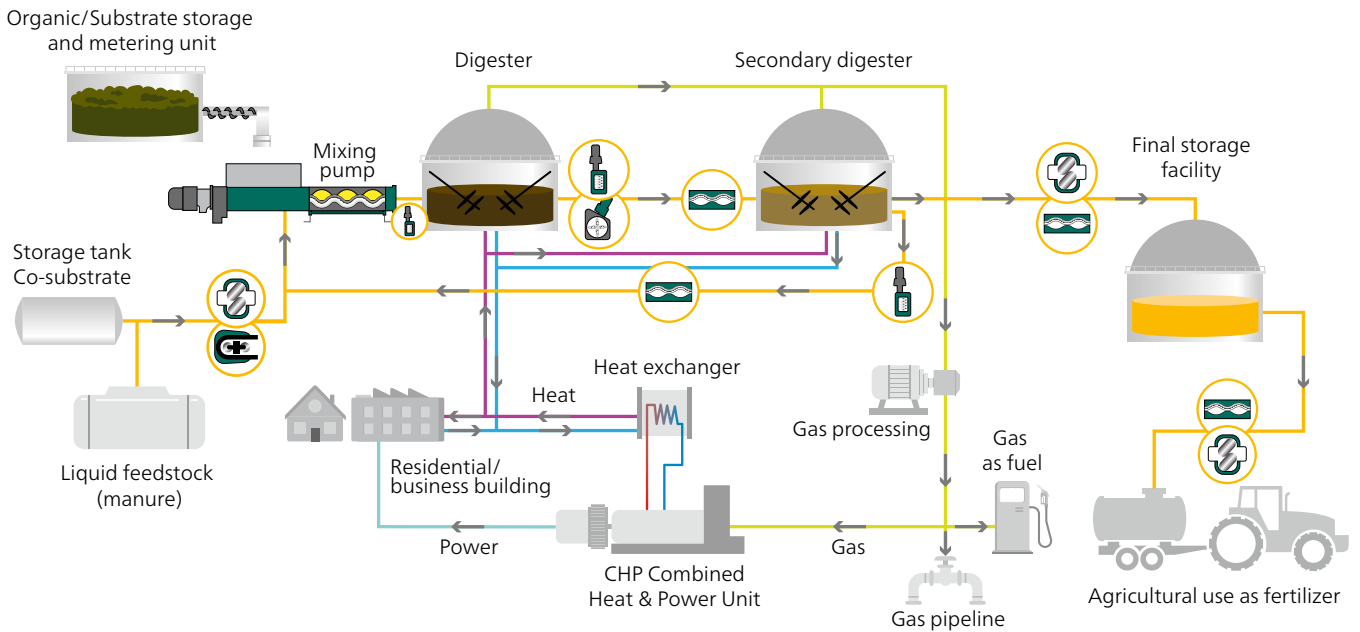
The **NEMO® B.Max® Mixing Pump** prepares the substrates that are fed in to create a homogeneous mass, which produces a higher level of gas yield in fermentation. Use of the **M-Ovas® Macerator** (with a stone-separation function) or an **N.Mac® Twin Shaft Grinder** in the process further increases the homogenization of the mass and the gas yield.

The **NEMO® Progressing Cavity Pump** and the **TORNADO® Rotary Lobe Pump** reliably convey recirculate for re-fermentation, even over long distances or different delivery heights up to 346 ft (105 m) or pressures to 150 psi (10 bar). The **PERIPRO® Peristaltic Pump**, our latest product in the biogas sector, with its very high suction capacity and its insensitivity to dry running, ability to meter, and offers a robust solution for the wide range of applications in a biogas plant.

NETZSCH PRODUCTS SUPPORT BIOGAS PROCESSES

Mixing - Conveying - Grinding

USE OF AGRICULTURAL SUBSTRATES (RENEWABLE RAW MATERIALS)



At the start of the process, the NEMO® B.Max mixing pump feeds the digester with a mix of dry and liquid substrates. Fermentation takes place with a dry matter content of approx. 5 - 15%. The pre-fermented substrate is then conveyed to the secondary digester which allows the output of additional biogas in the process as a result of the longer dwell time.

The NEMO® progressing cavity pump can contribute to the flexibility of the plant by reversing the direction of conveyance. It conveys substrates and recirculated substances reliably between the various containers, even with higher solid contents. An upstream grinding system enables an even higher gas yield to be achieved.

The methane gas obtained is, for example, fed into a combined heat and power plant to generate power or thermal energy. The remaining biomass, which still has a residue of organic contents, is dewatered. The substrates captured find supplementary reuse in agriculture.



TORNADO®



PERIPRO®



NEMO®

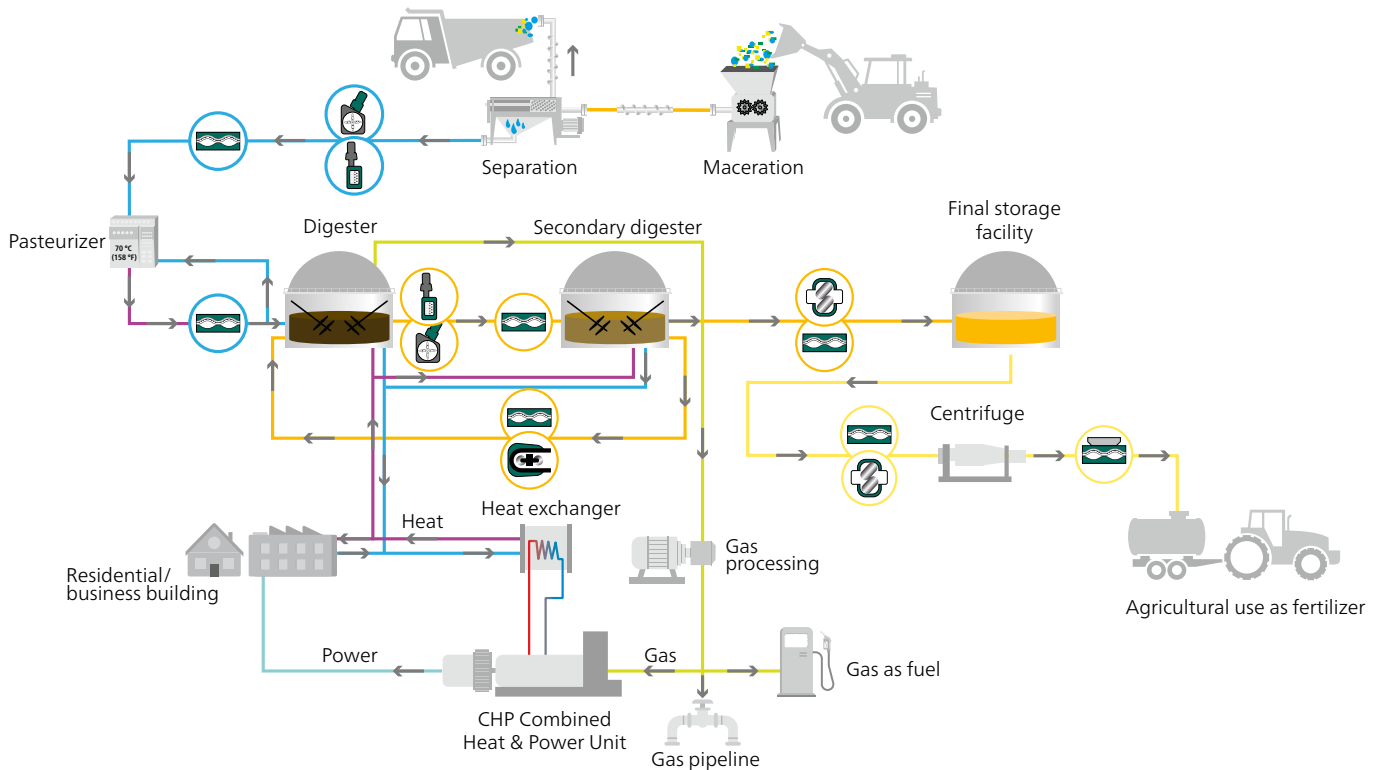


M-Ovas®



N.Mac®

USE OF ORGANIC WASTE



In a biogas plant with organic waste, the process begins with the grinding and subsequent separation of the input materials. The M-Ovas® or the N.Mac® from NETZSCH serve as a cutting tool and contribute significantly to process safety and to pump and system protection due to the improved homogenization of the medium. After hygienization at 158 °F (70 °C), the material is fed into the digester and then into the secondary digester, where biogas is produced.

NETZSCH pumps evenly convey product which improves the running behavior of the entire system. The gas produced is processed and used as fuel, for feeding into the gas grid or for electricity and heat generation in the biogas plant. At the end of the process, it is necessary to dewater the residual mass using a centrifuge or other dewatering device - here, too, NETZSCH pumps and grinding systems make a valuable contribution.

The M-Ovas® serves simultaneously as a cutting tool and stone separator and contributes positively to the running behavior of the system through the improved homogenization of the product. It has the capability of handling a wide array of organics. At the end of the process, dewatering of the residual mass is necessary as an additional step before disposal/reuse/recycling. Here, too, NETZSCH pumps and grinders can again make a valuable contribution.

NEMO[®] Progressing cavity pumps

NEMO[®] B.MAX

The NEMO[®] B.Max mixing pump sets new standards with maximized mixing and conveying of your wide range of organic substrates. It is an optimized feeding technology for your biogas application.

Wide range of applications

The NEMO[®] B.Max is particularly suitable for the following products:

- Fermented, renewable raw materials
- Liquid manure
- Process water
- Ground biowaste and food waste
- Pre-treated slaughterhouse waste
- Co-substrates
- Thickened substrate
- Silage
- And a wide range of other organics

Wide flow rate and pressure range

- Flow rates up to 600 gpm / 120 m³/h
- Pressures up to 350 psi / 24 bar

Further features

- Optimum feed and mixing of the substrates into the biomass thanks to the position-optimized feed nozzle on the hopper housing to force liquid toward the seal
- Pump housing with large, rectangular feed hopper and inspection opening
- Coupling rod with patented, position-optimized mixing auger for optimum product feed into the conveying elements and allows for additional mixing time

Advantages:

- Maximum homogenization of the substrates
- Increased gas production
- Continuous and low-pulsation conveying independent of pressure and viscosity
- High pressure capacity
- Robust shaft seal
- Low investment and operating costs
- High operational reliability



Technical
details

NEMO® BY PROGRESSING CAVITY PUMP IN FSIP® DESIGN

Type NEMO® BY in block design or NEMO® SY with bearing bracket and free shaft end.

Product

- Fermentation substrate and liquid manure
- High dry matter content
- Highly abrasive
- Low to high viscosity
- Lubricating and non-lubricating
- Dilatant, thixotropic or structurally viscous

Large flow rate and pressure range

- Flow rates up to 1,760 gpm / 400 m³/h
- Pressures up to 700 psi / 48 bar for standard models (Higher pressure capability if needed to 3,000 psi / 207 bar)

Optional

- With protective sleeve
- With inspection opening
- Heatable pump housing

Further features

- High suction capacity
- Direction of rotation and thus conveying direction reversible
- Installation in any position
- Smooth and quiet operation
- Temperatures from 32 to 212 °F (0 to 100 °C)

Advantages:

- Continuous and low-pulsation conveying independent of pressure and viscosity
- High suction and pressure capacity
- Low investment and operating costs
- High operational reliability
- Various installation variants



Technical details

TORNADO® Rotary lobe pumps

FOR ALL LIQUID SUBSTRATES

The self-priming valveless positive displacement pumps TORNADO® are powerful and are optimally adapted to the individual requirements. They are used for continuous and gentle conveying and speed-proportional metering of almost all products. Lobe pumps are perfect for high flow and up to medium pressures for conveyance.

Large flow rate and pressure range

- Flow rates up to 4,400 gpm / 1,000 m³/h
- Pressures up to 145 psi / 10 bar

Wide range of applications

The pumps are preferably used for media with the following properties:

- Liquid manure and fermentation substrate
- Solids-containing and solids-free
- Low viscosity
- Thixotropic and dilatant
- Shear-sensitive
- Abrasive
- Non-lubricating and lubricating

Advantages:

- High suction capacity
- Direction of rotation and conveying direction reversible
- Installation in any position
- Smooth and quiet running
- Low life cycle costs
- Full Service-in-Place®: Pump maintenance without dismantling the pipework or drive



Technical details

PERIPRO® Peristaltic pumps

BIG ROLLERS FOR A LONGER LIFE

Peristaltic pumps are particularly suitable for aggressive and abrasive product with a mineral solids content of up to 70 per cent. Additionally they can also meter chemicals for any process that requires precise flow rates. They offer an extremely high suction capacity (self-priming) with minimal maintenance requirements.

NETZSCH technology for peristaltic pumps

- Excellent abrasion resistance
- Extremely high suction capacity
- No valves and mechanical seals
- Metering accuracy $\pm 1\%$
- Flows to 172 gpm / 39 m³/h
- Pressures to 145 psi / 10 bar

Ideal for difficult product

- Abrasive media: fermentation substrate, sludge, etc.
- Corrosive or acidic product: Ferric Chloride, Hydrochloric acid, etc.
- Sensitive media: Polymers, flocculants, etc.

Advantages:

- Very long pump service life and excellent performance
- Robust pump technology
- Easy hose replacement
- Low starting torque
- Insensitive to dry running
- Lower energy costs
- Low quantity of lubricant



Technical details

Grinding systems

M-OVAS[®] CUTTING PLATE MACERATOR

The M-Ovas[®] cutting plate macerator is ideal for use in biogas plants where impurities in the product restrict process reliability. The solids in the product are reliably grinded or separated from the product (e.g. stones) to prevent clogging of pipework and damage to downstream units.

Design

- Compact design with high throughput capacity
- Integrated separator tank with separate cleaning and drain opening
- Mechanical seal with grease lubrication
- Optionally with reversing control

Wide range of applications

- Fermented, renewable raw materials
- Slurry
- Organic waste
- Slaughterhouse waste
- Liquid manure

Large throughput volumes

- Throughput rates of up to 1,320 gpm / 300 m³/h
- Substrates with 10-12 % dry solids content

Advantages:

- Quick and easy disassembly of the cutting plate
- Low energy requirement with high throughput rate
- Effortless disposal of sedimented materials thanks to easy access
- Easy maintenance on site
- Cutting plate can be used on both sides
- Different cutting plates depending on the application



Technical details

N.MAC® TWIN SHAFT GRINDER

The N.Mac® twin shaft grinder grinds coarse and solid impurities for either a liquid or dry media and impresses with its innovative FSIP® concept. It is ideal for substrates, biomass plants and even food and fruit waste. It prevents pipe blockages and protects downstream equipment such as pumps and heat exchangers.

Design

- Housing for pipework and duct installation
- Twin shaft technology for grinding solids
- Low blade speed with high torque (reduction ratio 1:29)
- Hexagonal shafts made from hardened steel
- Various blade configurations available
- Optional control with direction of rotation reversal for protection in the event of blockages
- Optional extended shaft for channel versions
- Cleaning combs
- Optionally with reversing control

Wide range of applications

- Biogas plants
- Agriculture
- Slaughterhouses and recycling centers
- Commercial kitchens
- Sugar factories

Large flow rates

- Throughput rates up to 1,541 gpm / 350 m³/h
- Substrates with a dry solids content of 50% or higher (note flow is reduced with higher solids %)

Advantages:

- Shock absorption technology
- Mechanical seal with quench
- Modular design of the knife blocks
- Easy maintenance on site
- Optional cleaning comb for fibrous materials
- Side rails for increased efficiency (flow and cutting performance)



Technical details

Service and Support

FOR US, PARTNERSHIP DOES NOT END WITH THE PURCHASE

We know no limits when it comes to offering our customers first rate service. Our promise is to deliver Proven Excellence – outstanding performance in all areas.



Personal support

Our experienced employees provide support and advice worldwide and around the clock, always tailored to your specific requirements. With our global network of service locations and warehouses, we guarantee prompt and efficient support, including on site and in person, so your pumps can always run smoothly.



Spare parts

NETZSCH original spare parts stand for the highest manufacturing quality. We ensure reliable quality through worldwide implementation of uniform standards as per ISO 9001. This enables reliable operation of your pumps with little downtime and low maintenance costs, and therefore continued optimum performance.



Technical training

The specialists from our Technical Service provide practical training for your employees at the NETZSCH training centers, online or at your facility. This allows you to benefit from cost savings and increased pump efficiency and to avoid mistakes during commissioning, maintenance or repairs.

More information on our service and support can be found here:





The owner-managed NETZSCH Group is a leading global technology company specializing in mechanical, plant and instrument engineering.

Under the management of Erich NETZSCH B.V. & Co. Holding KG, the company consists of the three business divisions Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, which are geared towards specific industries and products. A worldwide sales and service network has guaranteed customer proximity and competent service 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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