Process Technology for Agrochemicals

Your Ideas grow with Us!
AGROCHEMICALS

Everything at a Glance

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For the formulation of plant protectants, fertilizers and seed treatments using the latest technology, NETZSCH offers sophisticated state-of-the-art machines and processes.

Our design and selection of the NETZSCH technology appropriate for your production process take the aspects of economic efficiency, reliability, quality and environmental protection into account.

We engage with our customers to develop solutions and implement them with service and process-related support.

Numerous references, from laboratory to production machines to complete turnkey systems show that many international customers have put their trust in us.
Fertilizers are all naturally- or chemically-produced substrates, which are used to deliver nutrients to the soil and to ensure good plant growth.

They are applied to the plants in solid or liquid form and are essentially based on the following primary macronutrients:
- Nitrogen
- Potassium
- Phosphorous

Factors like technological improvements, environmental restrictions, climate changes, etc., contribute to changes in nutrient management. This makes Specialities more and more important. Formulations with secondary macronutrients like magnesium, calcium, sulfur and micronutrients like boron, manganese, etc. applying exactly to the needs of each individual situation are futures solutions.

The effectiveness of the formulations will even be improved by the use of biostimulants, modifying plant physiologies.

NETZSCH Grinding & Dispersing provides you with the latest technologies for processes suitable for your application.
APPLICATION TASKS
which we have successfully mastered

DRY PROCESSING

<table>
<thead>
<tr>
<th>Product</th>
<th>Machine</th>
<th>Working capacity [kg/h]</th>
<th>Fineness [μm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen- and sulfur-based fertilizer</td>
<td>CHM 450 / 600</td>
<td>1,500</td>
<td>$d_{90} &lt; 500$</td>
</tr>
<tr>
<td>Nitrogen-based fertilizer</td>
<td>Condux® 680</td>
<td>6,000</td>
<td>$d_{90} &lt; 500$</td>
</tr>
<tr>
<td>Phosphorous-based fertilizer</td>
<td>CHM 1000/1000</td>
<td>7,400</td>
<td>$d_{50} = 1,400$</td>
</tr>
<tr>
<td>Dolomite-Shell limestone</td>
<td>CGS 71</td>
<td>2,200</td>
<td>$d_{99} = 32$</td>
</tr>
<tr>
<td>Potash- and sulfur-based fertilizer</td>
<td>Condux® 300</td>
<td>1,700</td>
<td>$d_{50} = 63$  $d_{90} = 500$</td>
</tr>
</tbody>
</table>

WET PROCESSING

<table>
<thead>
<tr>
<th>Product</th>
<th>Machine</th>
<th>Working capacity [kg/h]</th>
<th>Fineness [μm]</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium carbonate</td>
<td>DISCUS® 300</td>
<td>3,000</td>
<td>$d_{90} &lt; 10$</td>
<td>Pass process</td>
</tr>
<tr>
<td>Colemanite</td>
<td>ZETA® 60</td>
<td>2,000</td>
<td>$d_{50} = 2.6$ $d_{99} &lt; 10$</td>
<td>Circulation process</td>
</tr>
<tr>
<td>Sulfurous liquid fertilizer</td>
<td>ZETA® 60</td>
<td>400</td>
<td>$d_{90} &lt; 6$</td>
<td>Circulation process</td>
</tr>
</tbody>
</table>
Plant protectants are necessary to protect plants from pests that could compromise plant growth (insects, fungal diseases, viruses, bacteria and weeds). Apart from additives, plant protectants usually consist of one or more active substances which give them the desired properties.

Main Types
- **Fungicides** protect plants from diseases which affect production rate and quality or, in the worst case, could completely destroy the crop.
- **Herbicides** reduce the growth of weeds which affect the production rate and the quality of the crop.
- **Insecticides** protect plants against insects. Here, the pests can absorb the insecticide directly or indirectly through their food.

As a rule, plant protectants are extremely temperature-sensitive substances that place correspondingly high demands on machine and plant engineering. Factors like technological improvements, environmental restrictions, climate changes, etc., contribute to changes in pesticide management. This makes specialities more and more important. Formulations with **biopesticides** applying exactly to the needs of each individual situation are futures solutions. Their use with conventional registered pesticides will lead to pest management in an environmental friendly way.

For the industrial production of plant protectants NETZSCH Grinding & Dispersing provides you with the latest technologies and processes suitable for your application.
APPLYATION TASKS
which we have successfully mastered

**DRY PROCESSING**

<table>
<thead>
<tr>
<th>Product</th>
<th>Machine</th>
<th>Working capacity [kg/h]</th>
<th>Fineness [μm]</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbicide</td>
<td>CGS 16</td>
<td>2</td>
<td>d₅₀ = 2.3</td>
<td></td>
</tr>
<tr>
<td>Pesticide</td>
<td>CGS 71</td>
<td>620</td>
<td>d₅₀ = 5.5</td>
<td></td>
</tr>
<tr>
<td>Fungicide</td>
<td>CGS 16</td>
<td>6.5</td>
<td>d₅₀ = 2.2</td>
<td></td>
</tr>
<tr>
<td>Herbicide</td>
<td>CGS 50</td>
<td>248</td>
<td>d₅₀ = 2.7 d₉₉ = 18</td>
<td></td>
</tr>
<tr>
<td>Caolin</td>
<td>CSM 165</td>
<td>35</td>
<td>d₅₀ = 6</td>
<td></td>
</tr>
<tr>
<td>Insecticide</td>
<td>CSM 360</td>
<td>350</td>
<td>d₉₀ &lt; 45</td>
<td></td>
</tr>
</tbody>
</table>

**WET PROCESSING**

<table>
<thead>
<tr>
<th>Product</th>
<th>Machine</th>
<th>Working capacity [kg/h]</th>
<th>Fineness [μm]</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insecticide</td>
<td>ZETA® 60</td>
<td>4,400</td>
<td>d₅₀ &lt; 0.7 d₉₀ &lt; 1.2</td>
<td>Circulation process</td>
</tr>
<tr>
<td>Herbicide</td>
<td>Discus® 300</td>
<td>3,000</td>
<td>d₅₀ &lt; 4.9</td>
<td>Pass process</td>
</tr>
<tr>
<td>Fungicide</td>
<td>Discus® 150</td>
<td>1,600</td>
<td>d₉₀ &lt; 4.0</td>
<td>Pass process</td>
</tr>
<tr>
<td>Fungicide</td>
<td>2 x Discus® 300</td>
<td>2,000</td>
<td>d₉₀ &lt; 2.0</td>
<td>Pass process</td>
</tr>
<tr>
<td>Insecticide</td>
<td>Neos 20</td>
<td>1,420</td>
<td>d₅₀ &lt; 2.0 d₉₀ &lt; 10</td>
<td>Circulation process</td>
</tr>
<tr>
<td>Fungicide</td>
<td>Neos 20</td>
<td>730</td>
<td>d₅₀ &lt; 1.8 d₉₀ &lt; 4.7</td>
<td>Circulation process</td>
</tr>
</tbody>
</table>
In seed treatment, the grain is coated with targeted growth-enhancing substances and growth-protectants during the dressing process. Consequently, the seeds are protected from disease and their optimal growth is ensured from the moment they are sown.

Depending on pest species and nutrient requirements, various formulations exist to utilize the full yield potential. Various methods are used to apply the growth-enhancing substances, such as (micro)nutrients, crop regulators and growth modulators, as well as inoculants and other growth-protectant substances, to the seeds:

- **Encapsulation** with a thick layer to obtain an even shape
- **Pelletization** – coating with protective substances and nutrients
- **Coating** with a thin, polymer-based coating that is permeable to water.

Important steps in the production of the various formulations for supplying the seed treatment process are mixing, emulsifying, dispersing and fine grinding, for which NETZSCH offers you a tailor-made solution.
APPLICATION TASKS
which we have successfully mastered

WET PROCESSING

<table>
<thead>
<tr>
<th>Product</th>
<th>Scope of the System (primary components)</th>
<th>Working capacity [kg/h]</th>
<th>Fineness $[\mu m]$</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspension concentrate</td>
<td>Modular design ($\Psi$-Mix®, Zeta®)</td>
<td>1,000</td>
<td>$d_{50} &lt; 1.5$</td>
<td>Circulation process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$d_{99} &lt; 5$</td>
<td></td>
</tr>
<tr>
<td>Suspension concentrate</td>
<td>Modular design ($\Psi$-Mix®, Zeta®)</td>
<td>1,000</td>
<td>$d_{50} &lt; 1.5$</td>
<td>Pass process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$d_{99} &lt; 9$</td>
<td></td>
</tr>
<tr>
<td>Suspension concentrate</td>
<td>Modular design ($\Psi$-Mix®, Zeta®)</td>
<td>1,400</td>
<td>$d_{50} &lt; 2$</td>
<td>Circulation process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$d_{99} &lt; 10$</td>
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* Predisersion of the primary components with MasterMix®, critical special products are dosed with Epsilon

System module for seed treatment comprising: Big-Bag Feeder, $\Psi$-Mix® Disperser, Zeta® 25 Agitator Bead Mill and modular platform
MACHINES FOR AGROCHEMISTRY

The Business Unit NETZSCH Grinding & Dispersing offers an extensive machine program for process-engineering, providing solutions for wet and dry grinding, mixing, dispersing and deaeration.

Long-term experience, consistent development work, daily contact with our customers and developments with more than 100 patents ensure our technical competence and further attest to our quality-consciousness.

The bundling of process-engineering expertise and the extensive machine program, ranging from laboratory to production machines to complete production lines, is unique worldwide. Whether for dry or wet preparation, we offer the best machine solution, customized to suit your particular application.
<table>
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<tr>
<th>MasterMix® Dissolver</th>
<th>PMD-VC Intensive Mixer</th>
<th>MixShear Inline Disperser</th>
<th>Epsilon Inline Disperser</th>
<th>Ψ-Mix® Inline Disperser</th>
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<tr>
<td>Alpha® Discus® Intensive Agitator Bead Mill</td>
<td>Alpha® Zeta® Agitator Bead Mill</td>
<td>Alpha® Neos Agitator Bead Mill</td>
<td>Alpha® Lab Laboratory Mill</td>
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</table>
YOUR BENEFITS AT A GLANCE

Highest operation safety
- Digital process solutions for future tasks
- Highest degree of process reliability by implementation of latest process technology
- Elimination of operator and environmental risks by intelligent process design

Highest product quality
- 100% reproducible product quality and best production quality by processes of highest standards
- Elimination of oversized particles with a steep particle size distribution (for dry grinding)
- Gas free products of highest homogeneity by in-place technologies and smooth processes

Best service
- Fastest availability by global service network
- Professional global project management team with experience of more than 30 years
- Detailed process documentation as standards
- Easy service and maintenance by sophisticated process design
- Low maintenance cost due to wear gentle design
Dust free powder handling on different safety level (hermetically closed design by e.g. powder cabine)

Strict separation of process zones of dry and wet production area

No dust sticking on surfaces of process tanks

No vapours, no solvents in production area

Close-loop gas circulation solutions (for dry grinding)

Optimized Cleaning-In-Place solutions

Lowest consumption of cleansing agents (approx. 1/10 of cleaning amount compared to conventional process design)

Reduction of energy costs and production time by 20-30%, compared to standard process technology

Long production cycles by use of wear resistant materials and design ensures

Shortest return of payment

20-30% higher production capacity by newest machine designs

Gentle process technology without high impact forces avoids temperature issues

High efficient cooling solutions by using special materials

Easy to clean

Highest productivity

Dust- and emission free process

Best temperature control
MACHINES FOR MIXING & EMULSIFYING
Solids in Liquids

MaxShear Inline Disperser

The MaxShear is an inline mixer with a very high shearing effect for dispersing, emulsifying and homogenizing. It is equipped with a high-speed rotor, which rotates in close proximity to a precision-machined stator, thereby creating an intensive shearing zone through which the product flows and the solids are dispersed. Combined use with standard mixing and dispersing units reduces processing times and considerably improves the quality of agrochemical products. The product is processed in continuous flow or in a circulation loop with mobile or stationary mixing tanks. The rotor and stator can be changed very easily and quickly.

Epsilon Inline Disperser

With the Epsilon, we offer a new, compact solution for producing homogeneous dispersions as required in agrochemistry, in an inline process. Here, the dispersion process takes place in an atmospherically-sealed processing chamber and is thus dust and emission free. Because of the low shear rates, the energy input is significantly lower compared to conventional rotor-stator systems, which means that even shear- and temperature-sensitive agrochemical products can be optimally processed.

MasterMix® Dis

The MasterMix® dis solver provides the dispersion of solids in liquids. The mixing process takes place in batches in a stationary or mobile tank. The speed of the high-speed dispersion disk is infinitely adjustable via a frequency-controlled drive.

YOUR BENEFITS

- Compact design
- Self pumping for use as a low pressure transfer pump
- Extreme high shear performance and powerful dispersing
- High flexibility by changeable stator, for different requirements (e.g. mixing, homogenizing, emulsifying)
- Quick and easy to clean with lowest amount of cleaning liquids

- Totally enclosed and emission free dispersion
- Dust free and fast wetting of powders
- High quality homogenous pre-dispersion
- Gentle processing of sensitive components
- Self pumping for use as a low pressure transfer pump
- Thin-film de-aeration function
- Rework by micro-cavitation
- Minimal warming of product
- Quick and easy to clean with lowest amount of cleaning liquid
- Easy handling
- Intensive product cooling design
- Closed and emission free design
- Variable batch sizes
YOUR BENEFITS AT A GLANCE

MACHINES FOR MIXING & EMULSIFYING

Solids in Liquids

MasterMix® Dissolver

The MasterMix® dissolver is used for the dispersion of solids in liquids. The mixing process takes place in batches in a stationary or mobile tank. The speed of the high-speed dispersion disk is infinitely adjustable via a frequency-controlled drive.

PMD-VC Intensive Mixer

The PMD-VC intensive mixers are stationary mixing and dispersing units for the processing of large batches. Separation of the mixing and dispersion functions results in an extremely energy-efficient process that is especially useful for batches larger than 2,000 l. The compact and closed design of the intensive mixer facilitates integration into fully-automated plant designs and prevents exposure to gases and dust.

Ψ-Mix® Inline Disperser

The Ψ-Mix® inline disperser combines an alternative dispersion method, whereby the solid components are wetted on a large liquid surface, with emission and dust-free inline operation. With high productivity within a controlled process, the combination of vacuum dispersion, shearing, pressure wetting and microcavitation results in homogeneous, fine dispersions with very reproducible quality.

Ψ-Mix® Inline Disperser

- Easy handling
- Intensive product cooling design
- Closed and emission free design
- Variable batch sizes
- Totally enclosed and emission free dispersion
- Dust free and fast wetting of powders
- High quality homogenous pre-dispersion
- Controlled dosing of solids
- Gentle processing of sensitive components
- Thin-film de-aeration function
- Rework by micro-cavitation
- Minimal warming of product
- Quick and easy to clean with lowest amount of cleaning liquid
- Reduced power requirement due to functional separation of mixing and dispersing unit
- Minimal increase of product temperature
- Intensive product cooling design
- Easy to clean design
- Closed and emission free design
- Variable batch sizes
- Fast and efficient feeding of solids
The **NETZSCH AlPHA®** modular machine platform for customized solutions

The AlPHA® machine platform sets the standard in flexibility and handling and, thanks to its modularity, facilitates customer-specific solutions. One platform accepts different grinding systems – customized for the requirements of the product you will be processing.

The advantage this modular system brings you is cross-system standardization and thus the option to economically convert a machine to a new grinding system. In addition, the AlPHA® is also the platform for future NETZSCH technologies, which guarantees you long-term investment security.

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**The right grinding system for every application**

- Common platform for all grinding systems allows easy conversion to the specific optimum process conditions
- Spatial separation of rotating machine parts and fittings that carry media ensures a high level of operational safety and allows safe access, even during operation
- All supply lines feed into the machine from the top preventing obstructions at ground level
- Self-supporting grinding chamber for optimum accessibility to the grinding area during maintenance
- Easy handling and the highest level of flexibility
- Smooth surfaces for clean process conditions
With this technology, which is suitable for any viscosity and almost every product, you will achieve the highest product qualities and finenesses down to the nanometer range using a wide variety of grinding media from 0.2 mm to 3 mm in diameter. The enclosed horizontal agitator bead mill is designed for highest product throughput capacities and has a pin grinding system for the highest grinding intensity.

**Discus Intensive** Grinding System

The **Discus Intensive** grinding system represents a quantum leap in wet grinding technology with disk agitator bead mills. With the combination of the further-optimized Discus disk agitator and the NETZSCH **ICC** separator system, you are guaranteed the highest throughput rates with considerably narrower dwell time distribution and thus more intensive grinding with consistent stress intensity.

**Zeta**® Grinding System

With this technology, which is suitable for any viscosity and almost every product, you will achieve the highest product qualities and finenesses down to the nanometer range using a wide variety of grinding media from 0.2 mm to 3 mm in diameter. The enclosed horizontal agitator bead mill is designed for highest product throughput capacities and has a pin grinding system for the highest grinding intensity.

**Neos** Grinding System

The agitator bead mill with the newly-developed **Neos** grinding system stands for maximum performance, product quality and efficiency. Coupled with the reliable use of extremely small grinding media, you can achieve the required product quality with high production output and low specific energy consumption.

During the design phase, particular consideration was given to maximum cooling efficiency. As a result, it is possible to stay within the necessary temperature limits even with high power input. The optimal grinding media separation and maximum slotted pipe surface area ensure that even with small grinding beads (0.1 mm to 0.8 mm), the grinding process remains stable.

**Your Benefits at a Glance**

- Highest power input without product overheating
- Maximum volume throughput
- Highest cooling efficiency
- Use of extremely small grinding beads (0.1 to 0.8 mm)
- Highest productivity
- High reliability and elongated life
- Use of very small grinding media even with high product viscosities and throughput rates
## PRODUCTION MACHINES

### for Dry Fine Grinding of Powders

**ConJet® High-density Bed Jet Mill**

The ConJet® high-density bed jet mill combines a spiral jet mill with an integrated classifier wheel. With this combination, the highest fineness levels \( d_{97} \text{ 2,5 µm to 70 µm} \) are attained independent of the product load and as a consequence, throughput capacities are higher. Adjustment of the grinding fineness is now only carried out by setting the speed of the classifier wheel. Residue-free grinding and minimal product build-up inside the machine are additional features of the ConJet®. Thanks to the compact design, the machine is extremely easy to maintain and to clean completely when changing products.

### CSM Classifier Mill

Grinding in the CSM classifier mill, which combines a mechanical impact mill with an integrated air classifier, takes place between a peripheral grinding track and the rotating beater unit 8 (finenesses: \( d_{97} \text{ 20 µm to 150 µm} \)). With the aid of the integrated classifier wheel, final grain sizes free of oversized particles can be achieved, without the drawback of an external grinding/classifying cycle. The self-adjusting internal circulation of the coarse material in the classifier mill results in stable operation with the best possible utilization of energy.

### CHM Hammer

The CHM Hammer Mill is an impact mill with a rotating beater. It is used for crushing relatively brittle or fibrous products in the fertilizer sector. End finenesses of approx. \( 0,5 \text{ mm - 10 mm} \) are among the most common target requirements.

## YOUR BENEFITS

- Minimal warming of grinding product due to controlled air ventilation
- Fast and easy cleaning and maintenance due to optimal access to grinding chamber and classifier
- Highest fineness and steep particle size distribution
- Compact design
- For coarse grinding and pre-crushing
- Minimal warming due to controlled air ventilation
- Fast and easy cleaning and maintenance due to optimal access to process chamber
- Steep particle size distribution with precisely defined maximum particle size
**CGS Fluidized Bed Jet Mill**

Contamination-free fine grinding of dry products of any hardness is possible with the CGS fluidized bed jet mill with integrated classifier (finenesses of $d_{97} 2.5 \mu m$ to $120 \mu m$). Through the specialized milling principle, product grinding is entirely autogenous. Gas jets alone create the grinding energy, so there is no wear on the grinding tools. Even extremely temperature-sensitive products can be processed reliably under continuous operation.

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**Condux®/Condux® CP Fine Impact Mill**

The Condux® is a high-speed fine impact mill for the dry grinding of products with a Mohs hardness of up to 3 - 3.5 (Grinding finenesses from $d_{97} 50 \mu m$ to $600 \mu m$). Equipped with a variety of grinding tools, there is always a product-optimized mill available which can also be used in pressure-shock-resistant or pressure-gas-loaded systems. The redesigned model of the Condux® CP with an integrated classifier is used when the desired end fineness cannot be achieved with conventional pin- or blast mills. The grinding disk and classifier are joined with a torque-proof connection and are run by a common drive motor. By adjusting the height of the classifier wheel, it is possible to easily achieve variable adjustment of the separation limit.

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**AT A GLANCE**

- Minimal warming of grinding product due to controlled air ventilation
- No tool wear and no contamination due to entirely autogenous grinding
- Fast and easy cleaning and maintenance due to optimal access to grinding chamber and classifier
- Highest fineness and steep particle size distribution with precisely defined maximum particle size

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**Mill**

Mill is an impact mill unit. It is used for brittle or fibrous material sectors. End fineness of $0.5 \text{ mm - } 10 \text{ mm}$ is common target

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**CONUX® CHM Hammer Mill**

The CHM Hammer Mill is an impact mill with a rotating beater unit. It is used for crushing relatively brittle or fibrous products in the fertilizer sector. End finenesses of approx. $0.5 \text{ mm - } 10 \text{ mm}$ are among the most common target requirements.
For a customized solution to meet the requirements of your application in the fertilizer, plant protection or seed treatment sector, we stand ready to provide process-related consultation and to offer you the appropriate equipment.

Whether you need a complete turn-key solution or just advice on a particular aspect of process engineering and plant construction, we have the required know-how. For more than 100 years, NETZSCH has applied the latest machine and process technology for system design and construction. We take on and carry out projects for companies around the world.

From start to finish, you can depend on our professional project management. We have the means and the capabilities to manage even the most extensive project as a unit and we are committed to maintaining the highest standards at all times.

From the planning stage to commissioning and beyond, NETZSCH will always be there for you.
NETZSCH MODULAR PLANT DESIGN

The established modular design for NETZSCH Turn-Key-Production Plants for agrochemicals is a professional concept to bundle and structure complete and complex processes. For each process step the requested equipment will be installed in a functional group on a special defined and designed plant segment (module). According to the process design the modules will be arranged in such a way, that the defined media flows with its connection points will fit together. In this way a turn-key-production plant can be realized in a compact layout. By adopting the core features of standard container designs existing and proven logistic concepts can easily be used.

The single process modules are completely pre-assembled in our production facilities, fitted together to the complete modular plant in real size (scale 1:1) and finalized by FAT on a fully functional production plant. The single modules, including all its equipment, will be dis-assembled again and shipped by standard transports to our customers. On site the modules can be then moved quickly into the production facilities, where the re-assembly of the modular plant will be done under NETZSCH supervision. The Start-Up of the production will take place by a simple “Turn-Key”.

Advantages

- Complete production process on significantly less space
- Clear defined interfaces for media flow and data acquisition
- Resource savings (e.g. cleaning liquid off 90%) by logical functional groups and clear process design
- High flexibility in product portfolio and production capacity (Plug & Produce)
- Possibility of quick and easy conversion of the complete plant (Re-Plug & Produce)
- Easy and cheap transport by adopted design to standardized transport concepts (Ready to use transportation units)
- Fast operational readiness due to complete pre-installation (Ready to install production units)
- Shortened installation and commissioning time due to early acceptance test at NETZSCH

Example of a Skid turnkey production line, consisting of 9 process modules including 2 Premix modules, 2 Fine-grinding modules, 2 Pre-Gel modules, 1 additive dosing module and 2 let-down and formulation modul
MIXING, EMULSIFYING & WET GRINDING
for high levels of homogeneity and fineness

Mixing, emulsifying and deaeration are basic operations in mechanical process engineering. These are the means by which at least two starting substances are combined to form a new substance which must be as homogeneous as possible, with no air or gas pockets. The process takes place both in stand-alone machines for the production of small batches and on complete production lines with extensive peripherals for the production of large batches.

For the grinding of agrochemical material systems, NETZSCH offers a comprehensive machine program of laboratory and production machines up to complete production plants. Customized for every application, NETZSCH provides you with a wide range of machines and systems.
mixes into the nanometer range

System example with $\Psi$-Mix® Inline Disperser, DISCUS® Agitator Bead Mill and MAXSHEAR Inline Disperser

NETZSCH Technology	Plant Accessories
For the processing of dry and temperature-sensitive products by fine and ultra-fine grinding, NETZSCH has extensive experience and a diverse machine program for any desired end fineness. To complement our existing machine program, we also offer high-performance classifiers for the finest products and exact limitation of the upper particle size, which also guarantee sustainable reproducibility and high quality.

- From the single mill to the complete turn-key grinding system
- Pressureless or dust-ignition-proof systems with a pressure shock resistance of up to 10 bar (g) or even inert gas plants
- Varied range of materials including high-grade steels with polished surfaces or wear-protected concepts

NETZSCH can offer you the right solution!
Example of a circulating gas system with CSM classifier mill
Plant Engineering

Whether it is a turnkey solution you need or help on a particular aspect of plant engineering, we have the know-how. NETZSCH has been engineering manufacturing plants for over 100 years, using state-of-the-art production equipment and manufacturing techniques. We undertake projects for companies around the world, including:

- Plant design
- Process monitoring, control and automation
- Software development and real time application programming
- Mechanical engineering
- Electrical engineering
- Steelwork design
- Abatement systems
- Machinery and vessel manufacturing
- Extraction systems
Project Management

From start to finish, you can rely on professional project management. At NETZSCH we have the resources and capability to oversee the entire project, even the most complex ones. All projects are approached with a total commitment to maintaining the highest standards in all areas, including:

- Project planning
- Health and safety expertise including, full working experience of ATEX 94/9 and ATEX 100a
- Construction site supervision and management
- Machinery installation
- Installation and testing of instrumentation and control systems
- Machinery and plant commissioning
- Employee training
- Support throughout production ramp-up

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Our experience is your advantage
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 3,700 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.

Proven Excellence.

Business Unit Grinding & Dispersing – The World’s Leading Grinding Technology

NETZSCH-Feinmahltechnik – Germany
NETZSCH Trockenmahltechnik – Germany
NETZSCH Vakumix – Germany
NETZSCH Lohnmahltechnik – Germany
NETZSCH Mastermix – Great Britain
NETZSCH FRÈRES – France
NETZSCH España – Spain
ECUTEC – Spain

NETZSCH Machinery and Instruments – China
NETZSCH Technologies India Private – India
NETZSCH Tula – Russia
NETZSCH Makine Sanayi ve Ticaret – Turkey
NETZSCH Korea – Korea
NETZSCH Premier Technologies – USA
NETZSCH Equipamientos de Moagem – Brazil

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