

NETZSCH

Proven Excellence.



Process Technology for Agrochemicals

Your Ideas grow with Us!

Business Unit
GRINDING & DISPERSING

AGROCHEMICALS

Everything at a Glance

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When you want a little more ...

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.

Proven Excellence.■



A hand holding blue fertilizer granules next to a young green plant. The background is a soft-focus green field.

FERTILIZER

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

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



CONDUX® Fine Impact Mill

WET PROCESSING


Product	Machine	Working capacity [kg/h]	Fineness [μm]	Process
Magnesium carbonate	DISCUS® 300	3,000	$d_{90} < 10$	Pass process
Colemanite	ZETA® 60	2,000	$d_{50} = 2.6$ $d_{99} < 10$	Circulation process
Sulfurous liquid fertilizer	ZETA® 60	400	$d_{90} < 6$	Circulation process



ALPHA® Agitator Bead Mill



PLANT PROTECTION



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 **bio pesticides** applying exactly to the needs of each individual situation are futures solutions. Their use with conventual 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.

APPLICATION TASKS

which we have successfully mastered

DRY PROCESSING

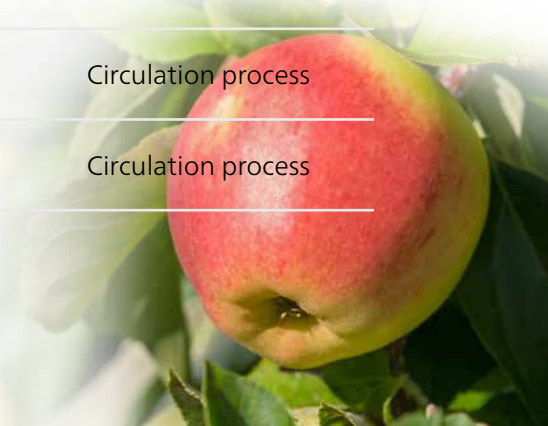
Product	Machine	Working capacity [kg/h]	Fineness [μm]
Herbicide	CGS 16	2	$d_{50} = 2.3$ $d_{99} = 6.8$
Pesticide	CGS 71	620	$d_{50} = 5.5$ $d_{99} = 23.8$
Fungicide	CGS 16	6.5	$d_{50} = 2.2$ $d_{99} = 8.2$
Herbicide	CGS 50	248	$d_{50} = 2.7$ $d_{99} = 18$
Caolin	CSM 165	35	$d_{50} = 6$ $d_{99} = 17$
Insecticide	CSM 360	350	$d_{99} < 45$



Fluidized Bed Jet Mill CGS

WET PROCESSING

Product	Machine	Working capacity [kg/h]	Fineness [μm]	Process
Insecticide	ZETA® 60	4,400	$d_{50} < 0.7$ $d_{90} < 1.2$	Circulation process
Herbicide	DISCUS® 300	3,000	$d_{50} < 4.9$	Pass process
Fungicide	DISCUS® 150	1,600	$d_{90} < 4.0$	Pass process
Fungicide	2 x DISCUS® 300	2,000	$d_{90} < 2.0$	Pass process
Insecticide	NEOS 20	1,420	$d_{50} < 2.0$ $d_{90} < 10$	Circulation process
Fungicide	NEOS 20	730	$d_{50} < 1.8$ $d_{90} < 4.7$	Circulation process





SEED TREATMENT

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

Product	Scope of the System (primary components)	Working capacity [kg/h]	Fineness [μm]	Process
Suspension concentrate	Modular design (<i>Ψ-Mix</i> ®, <i>ZETA</i> ®)	1,000	$d_{50} < 1.5$ $d_{99} < 5$	Circulation process
Suspension concentrate	Modular design (<i>EPSILON</i> , <i>MASTERMix</i> ®, <i>DISCUS</i>) [*]	1,000	$d_{50} < 1.5$ $d_{99} < 9$	Pass process
Suspension concentrate	Modular design (<i>Ψ-Mix</i> ®, <i>ZETA</i> ®)	1,400	$d_{50} < 2$ $d_{99} < 10$	Circulation process

^{*} Predisposition of the primary components with *MASTERMix*®, critical special products are dosed with *EPSILON*



System module for seed treatment comprising: Big-Bag Feeder, *Ψ-Mix*® Dispenser, *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.

	  			
	FERTILIZER	PLANT PROTECTION	SEED TREATMENT	
MASTERMIX® Dissolver	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mixing & Emulsifying
PMD-VC Intensive Mixer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
MAXSHEAR Inline Dispenser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
EPSILON Inline Dispenser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Ψ-MIX® Inline Dispenser	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
ALPHA® DISCUS® INTENSIVE Agitator Bead Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wet Grinding
ALPHA® ZETA® Agitator Bead Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
ALPHA® NEOS Agitator Bead Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
ALPHA® LAB Laboratory Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
CHM Hammer Mill	<input checked="" type="checkbox"/>			Dry Grinding
CONDUX® / CONDUX® CP Fine Impact Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
CSM Classifier Mill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
CONJET® High-density Bed Jet Mill		<input checked="" type="checkbox"/>		
CGS Fluidized Bed Jet Mill		<input checked="" type="checkbox"/>		

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



Easy to clean

- Optimized Cleaning-In-Place solutions
- Lowest consumption of cleansing agents (approx. 1/10 of cleaning amount compared to conventional process design)



Highest productivity

- 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



Dust- and emission free process

- 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)



Best temperature control

- Gentle process technology without high impact forces avoids temperature issues
- High efficient cooling solutions by using special materials



MACHINES FOR MIXING & EMULSIFYING



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®

The *MASTERMIX*® dissolves solids in liquids. The dispersion process takes place in a **stationary or mobile** processing chamber. The high-speed dispersion is infinitely adjustable and controlled by a controlled drive.

YOUR BENEFITS AT A GLANCE

- 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 homogeneous 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
- Closed and emission free
- Variable batch size

for Solids in Liquids



Dissolver

Dissolver is used for the mixing of solids in liquids. The mixing is done in **batches** in a **large tank**. The speed of the mixing disk is controlled via a frequency-



Ψ-Mix® Inline Dispenser

The Ψ-Mix® **inline dispenser** 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.



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.

Intensive product cooling design
Emission free design
Easy to clean

- Totally enclosed and emission free dispersion
- Dust free and fast wetting of powders
- High quality homogeneous 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

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.

The right grinding system for every application

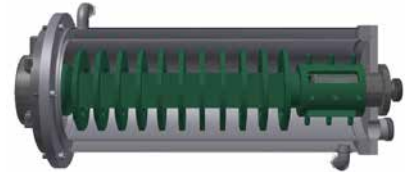
- Common platform for all grinding systems allows easy conversion to the specific optimum process conditions
- Spatial separation of rotating machine parts and fittings that carry media ensures a high level of operational safety and allows safe access, even during operation
- All supply lines feed into 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



TECHNOLOGIES FOR WET GRINDING OF SUSPENSIONS

DISCUS INTENSIVE Grinding System

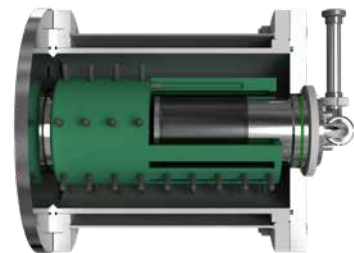
The *DISCUS INTENSIVE* grinding system represents a quantum leap in wet grinding technology with disk agitator bead mills. With the combination of the **further-optimized Discus disk agitator** and the **NETZSCH /CC® separator system**, you are guaranteed the highest throughput rates with considerably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



DISCUS INTENSIVE Grinding System for Single- and Multi-pass Operation

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.

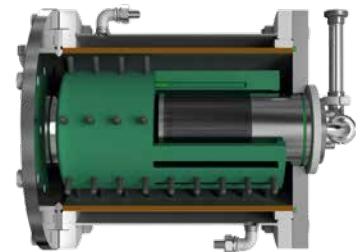


ZETA® Grinding System for Circulation Operation

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 smallest **grinding beads (0.1 mm to 0.8 mm)**, the grinding process remains stable.

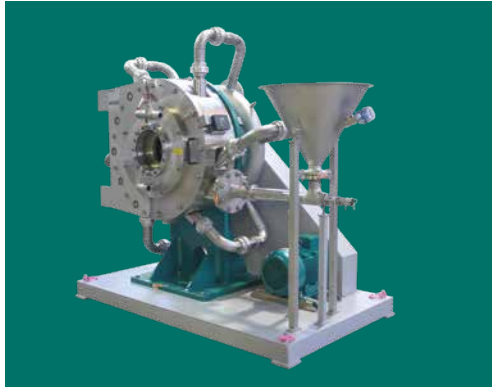


NEOS Grinding System for Circulation Operation at very high circulation rates

Your Benefits at a Glance

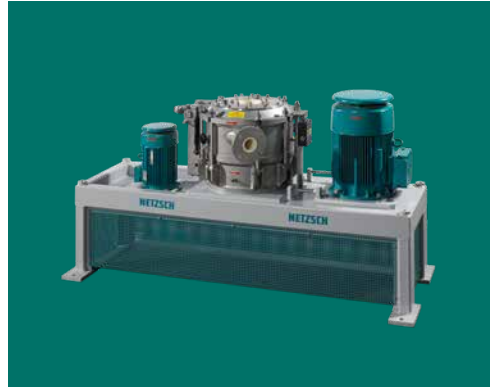
- Highest power input without product overheating
- Maximum volume throughput
- Highest cooling efficiency
- Use of extremely small grinding beads (0,1 to 0,8 mm)
- Highest productivity
- High reliability and elongated life
- Use of very small grinding media even with high product viscosities and throughput rates

PRODUCTION MACHINES for Dry Fine Grinding



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 (**d₉₇ 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 (finenesses: **d₉₇ 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 Mill

The CHM Hammer Mill combines a mechanical impact mill with a rotating beater. The crushing of relatively brittle products in the fertiliser industry with finenesses of approximately 150 µm are among the most common requirements.

- 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

- 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
- Compact design
- Steep particle size distribution with precisely defined maximum particle size

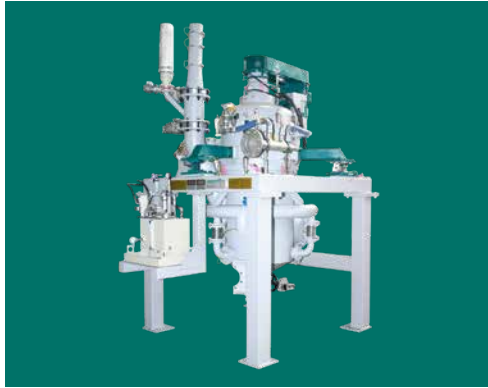
- For coarse grinding
- Minimal warming of grinding product due to controlled air ventilation
- Fast and easy cleaning and maintenance due to optimal access to process chamber

ing of Powders



hammer Mill

Mill is an impact mill
er unit. It is used for
rittle or fibrous
izer sector. End
k. **0.5 mm - 10 mm**
common target



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 μm to 120 μm**). 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.



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 μm to 600 μm**). 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.

g and pre crushing
of grinding product
air ventilation
ning and mainte-
mal access to

- 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

- 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
- Compact design
- Defined particle size distribution and maximum particle size by integrated classifier

The background image shows a complex industrial setup for agrochemical processes. It features large stainless steel vessels, including a prominent horizontal tank and a vertical one, connected by a network of pipes and blue hoses. The equipment is mounted on a sturdy blue metal frame. The setting appears to be a clean, well-lit industrial facility with a concrete floor and overhead structural elements.

PLANT ENGINEERING FOR AGROCHEMICAL PROCESSES

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.

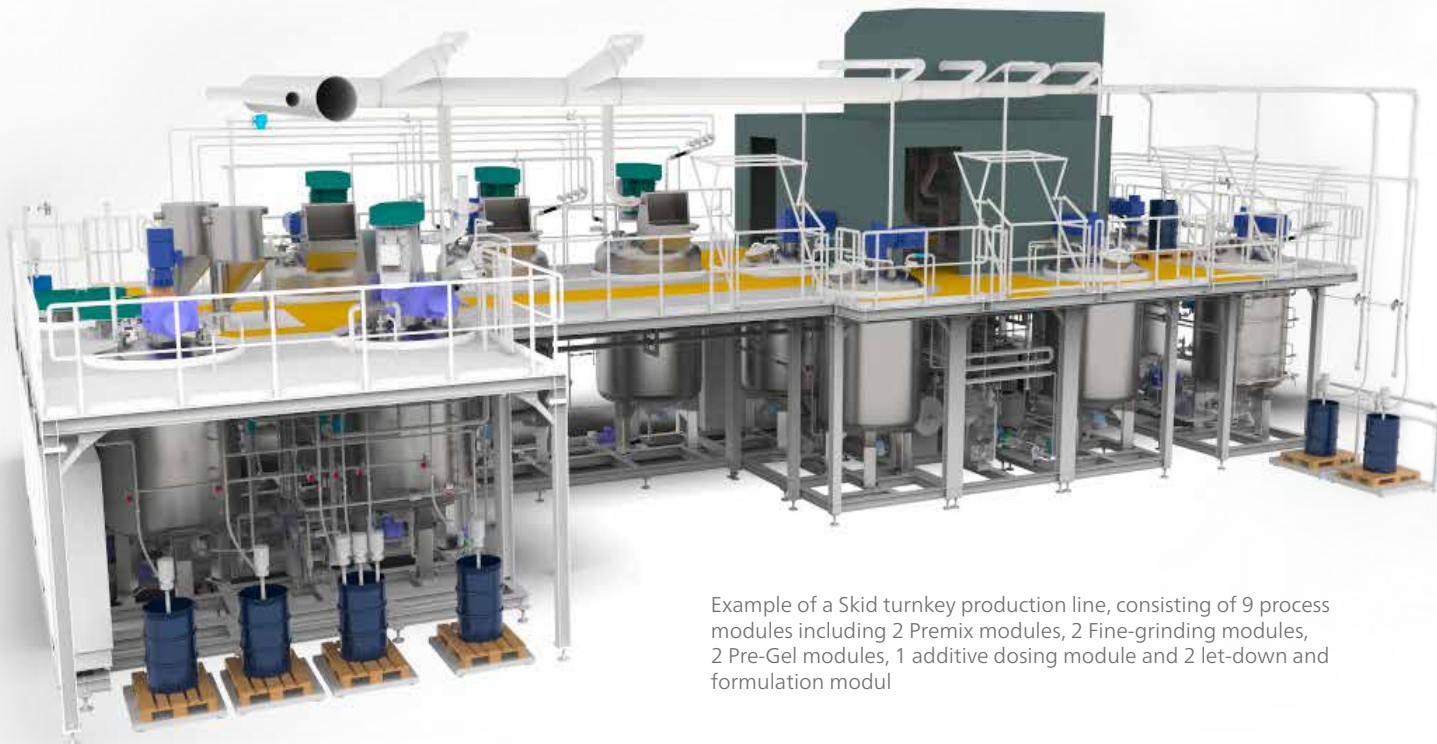
NETZSCH MODULAR PLANT DESIGN

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

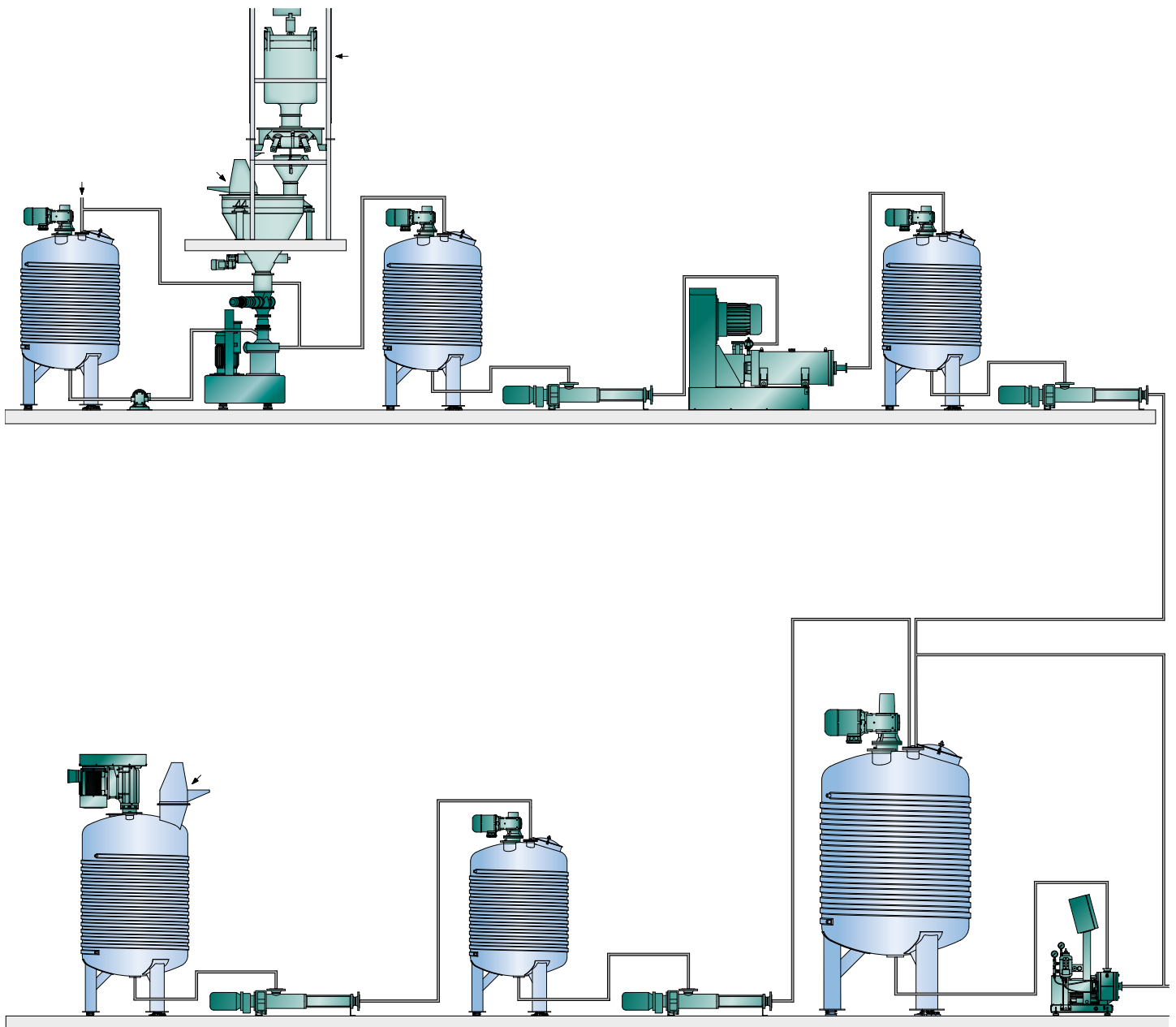
Mixing, emulsifying and deaeration are basic operations in mechanical process engineering. These are the means by which at least two starting substances are combined to form a new substance which must be as homogeneous as possible, with no air or gas pockets. The process takes place both in stand-alone 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



es into the nanometer range

System example with Ψ -MIX[®] Inline Disperser, DISCUS[®] Agitator Bead Mill and MAXSHEAR[®] Inline Disperser



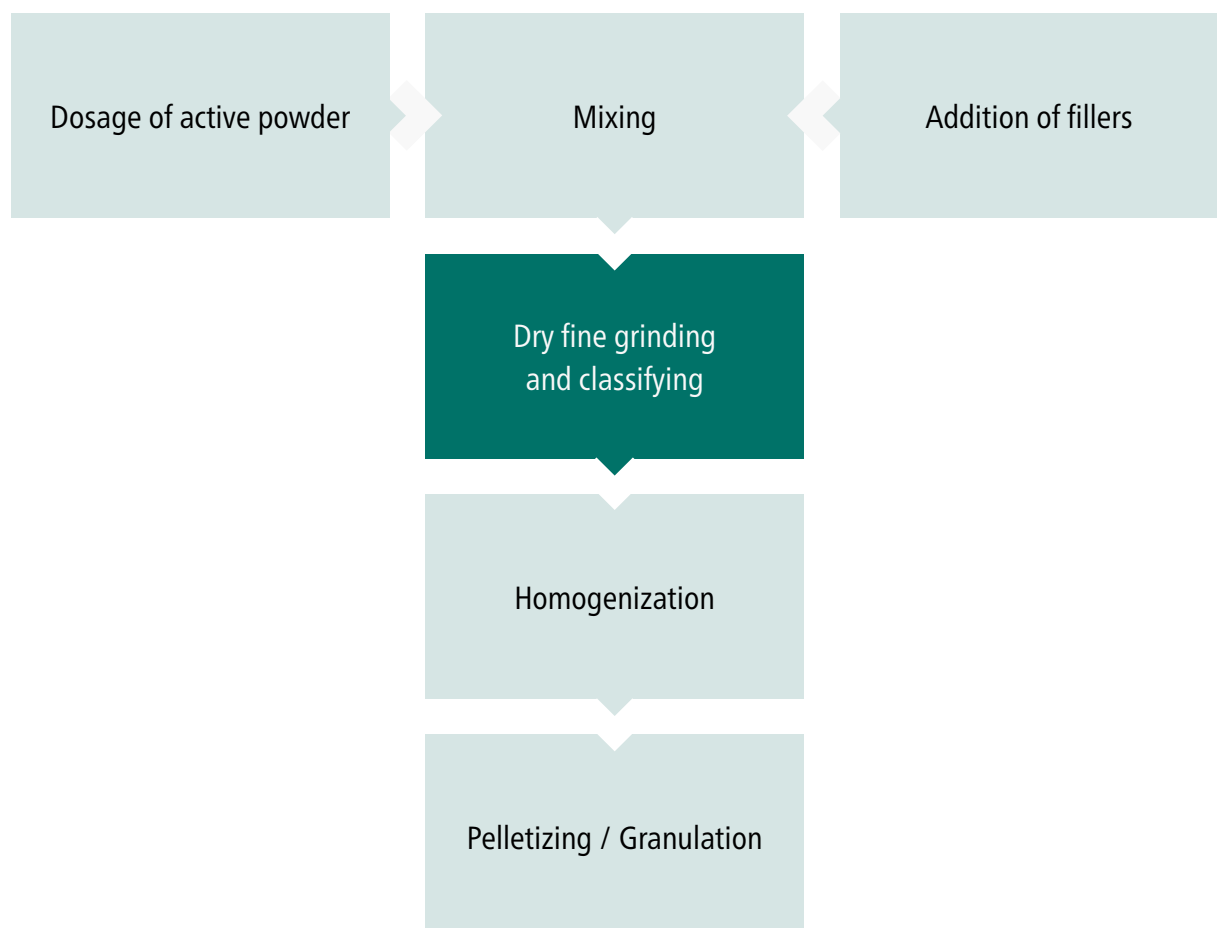
DRY GRINDING

with exact upper particle size limitation

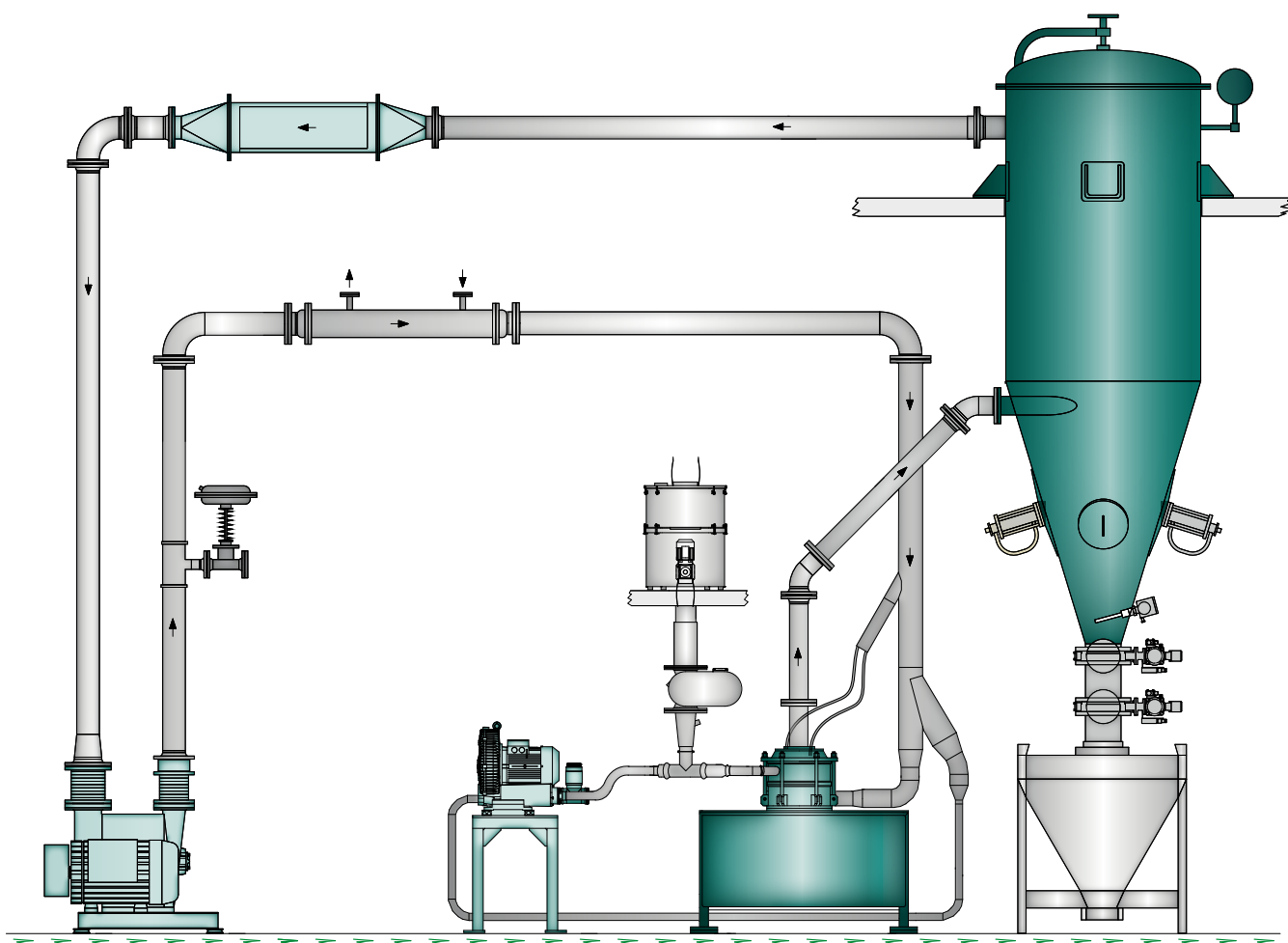
For the processing of dry and temperature-sensitive products by fine and ultra-fine grinding, NETZSCH has extensive experience and a diverse machine program for any desired end fineness. To complement our existing machine program, we also offer high-performance classifiers for the finest products and 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



■ NETZSCH Technology

■ Plant Accessories

PROCESS- AND PLANT ENGINEERING

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

CLIENT RESPONSIBILITY

ENGINEERING

NETZ

Establish
projects targets

- What is to be made today and in the future
- How much output is required
- What are the environmental regulations

Test & evaluate
available
technology

- Test current and traditional process methods
- Compare effects on the product and other process stages
- Guarantee plant deliverables

Produce initial
process & budgets

- Determine equipment costs
- Determine support equipment specifications
- Estimate the total cost including running costs

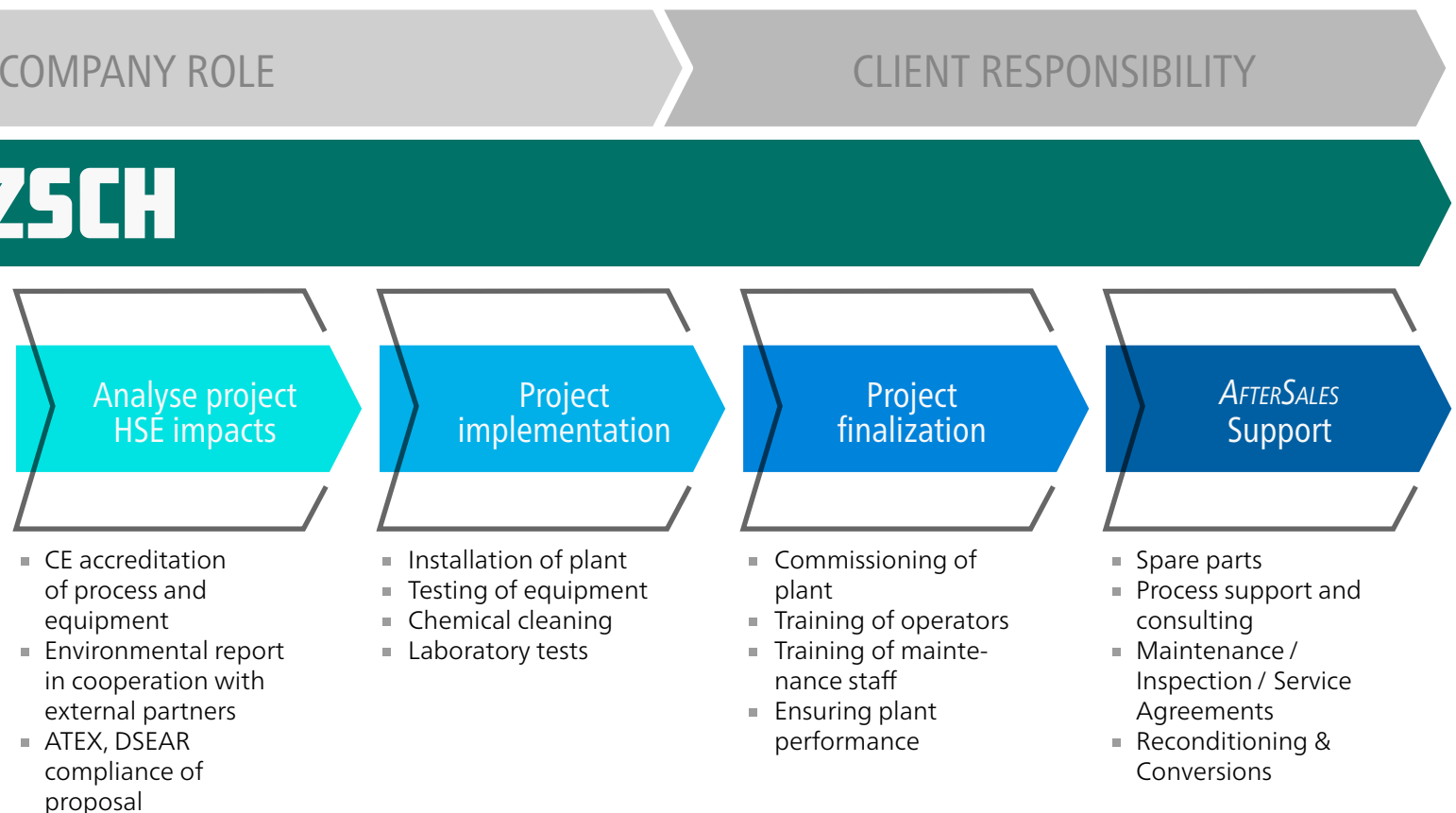
Develop
project details

- Design plant process and layout
- Establish final price and scope
- Detailed design of plant equipment
- Produce detailed programme of works


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



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 4 600 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 India Grinding & Dispersing | India
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NETZSCH Makine Sanayi ve Ticaret | Turkey
NETZSCH Korea | Korea
NETZSCH Premier Technologies | USA
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NETZSCH-Feinmahltechnik GmbH
Sedanstraße 70
95100 Selb
Germany
Tel.: +49 9287 797 0
Fax: +49 9287 797 149
info.nft@netzsch.com

NETZSCH®
www.netzsch.com