

# NETZSCH

Proven Excellence.



## Process Technology for Paints & Coatings

We bring Colors in your Life!

Business Unit  
GRINDING & DISPERSING



# PAINTS AND COATINGS

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# *When you want a little more ...*

Over the decades, paint and coating formulations have become more and more complex. In addition to the new functions required of paints and coatings today, production costs play a significant role for continued market success.

Savings on raw materials, on the one hand, as well as an increase in batch sizes along with a fully-automatic plant design on the other hand offer great potential for sustained market success with consistent quality.

Numerous customers around the world trust NETZSCH for their production of paints and coatings.

## Proven Excellence.■



# Process- and Plant Engineering

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

## 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



### Analyse project HSE impacts

- CE accreditation of process and equipment
- Environmental report in cooperation with external partners
- ATEX, DSEAR compliance of proposal

### Project implementation

- Installation of plant
- Testing of equipment
- Chemical cleaning
- Laboratory tests

### Project finalization

- Commissioning of plant
- Training of operators
- Training of maintenance staff
- Ensuring plant performance

### AFTERSALES Support

- Spare parts
- Process support and consulting
- Maintenance / Inspection / Service Agreements
- Reconditioning & Conversions

*Our experience is your advantage*



# RAW MATERIAL HANDLING

*For Wet and Dry Materials*



With the infeed swaging process the raw material is fed into the paint production system. The chosen pulping systems determine the frequency of material input which can vary from continuous or periodic input. Typically, a distinction is made between conveying and handling systems for wet and dry materials and recovered dispersing systems. With regard to these specifications the infeed systems, or respectively, the pulping systems are designed to be able to fit a range of machines and measuring systems.

Due to several successfully realized projects and our profound know-how we can equip your paint plant with the optimal handling system for:



Silo Systems



Tank Farms

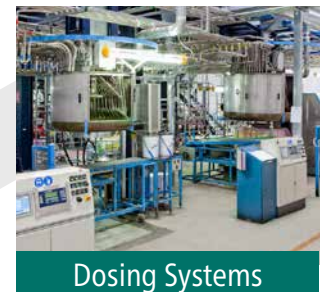


Big Bags



Mini/Medi Bulks

AUTO  
FEED



Dosing Systems

LIQUID DISPERSING SYSTEMS

*SOLUTIONS FOR  
LARGE BATCHES*

# *DECORATIVE PAINT*





HANDLING RAW  
MATERIAL  
DRY AND WET

DISPERSE  
Create an  
individual slurry

TINTING PASTE

Color concentration  
from outside supplier  
or secondary process

## PMD-VC – Intensive Mixers

The PMD-VC intensive mixers are stationary mixing and dispersing units for processing large batches. Separation of the mixing and dispersing operations provides an extremely energy-efficient process that is especially useful for batches over 2 000 l. The compact enclosed design of the intensive mixer allows the integration into fully-automatic plants and prevents contamination from gases and dust.



## MEGA Ψ-MIX® – Inline Disperser

The MEGA Ψ-MIX® inline disperser combines a new dispersion method in which the solid components are wetted on a large liquid surface with emission-free and dust-free inline operation. The combination of vacuum dispersion, micro-cavitation and pressure wetting results in homogeneous, fine dispersions with reproducible quality – all at high efficiency levels in a controlled process.



Examples	PMD-VC		MEGA Ψ-MIX®	
	Working capacity [l]	Total manufacturing time [min]	Working capacity [l]	Total manufacturing time [min]
Interior paint	5 000 - 20 000	45 - 60	80 000	240
Exterior paint				
Wall paint				
Emulsion paint				
Water based paint				

HANDLING RAW  
MATERIAL  
DRY AND WET

DISPERSE  
  
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individual slurry

TINTING PASTE

Color concentration  
from outside supplier  
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### ALPHA® System ZETA®

Suitable for every viscosity and almost any product, with this technology you will achieve the highest product qualities and fineness's down into the nanometer range. The closed horizontal agitator bead mill is designed for the highest product throughput rates and has a peg grinding system with extremely high grinding intensity.



### ALPHA® System DISCUS

The NETZSCH ALPHA® DISCUS system is the quantum leap in disk grinding technology. The further optimized DISCUS® disk agitator combined with the NETZSCH DCC® separation system guarantees you extremely high throughput rates with significantly narrower dwell time distributions and therefore more intensive grinding with uniform impact intensity.

### MASTERMILL – Submersible Basket Mill

The MASTERMILL is an exceptionally versatile dispersion system that can be applied to a wide range of processing industries. This basket mill has redefined batch dispersion systems. This design ensures that your materials pass through the high density dispersion zone within the milling chamber at a high frequency.



Pigment pastes	Our machines	Working capacity [kg/h]	Batch size [kg]	Dispersing time [min]
Blue	ALPHA® ZETA®	130	400	180
Red	ALPHA® ZETA®	200	1000	300
Yellow	ALPHA® DISCUS	110	1500	780
Green	MASTERMILL 30	80	800	600



## *Successfully Implemented* Decorative Paint Plant

NETZSCH manufactures world class grinding and dispersion equipment with a wide range of applications in the decorative paint industry which, combined with solids and liquid handling, are used to accomplish complete turnkey projects, using well proven software to provide fully automatic plants. If large batch production is required NETZSCH has a number of solutions including the PMD-VC which can produce batches up to 25,000 l in volume and can accept solids feeding at rates of 90 t/hour using the patented "sound system" which ensures the dispersing tool is always in the correct position to accept solids. For inline dispersion for "high velocity" plants NETZSCH has the patented  $\Psi$ -Mix<sup>®</sup> mixer which can accept solids at a similar rate but in a continuous manner.

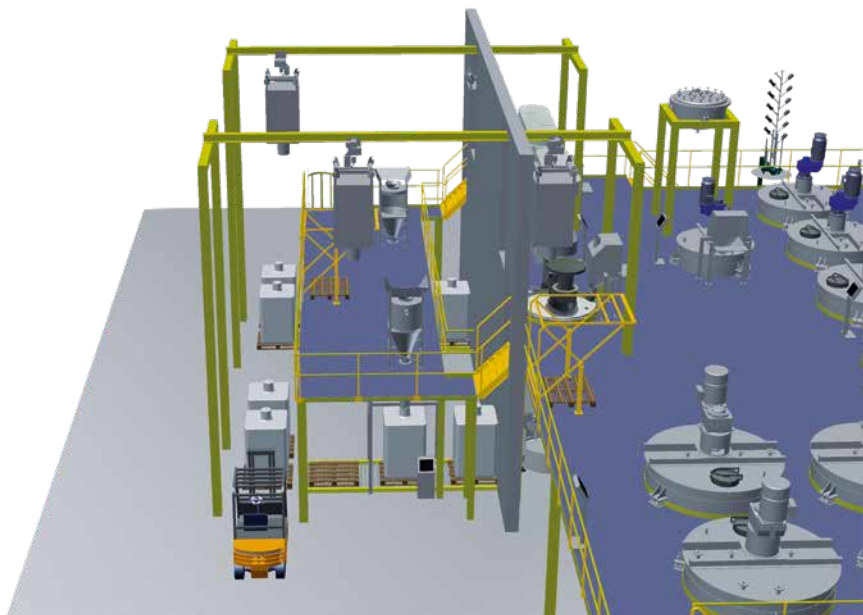
### Note

bead size 0.1 - 0.4, circulation process

bead size 0.4 - 0.5, circulation process

bead size 0.6 -0.8, 2-passes process

batch process





A high-angle, close-up view of the Golden Gate Bridge's iconic orange-red steel tower and suspension cables. The bridge spans a body of water, with a city skyline visible in the distance under a clear sky. The bridge's structure is the primary focus, with the suspension cables fanning out from the tower.

*SOLUTIONS FOR SMALL  
AND MEDIUM BATCHES*

# *INDUSTRIAL PAINT*

## Examples

- Construction paint
- Protection coating
- Marine coating
- Antifouling coating
- Coil coating

HANDLING RAW  
MATERIAL  
DRY AND WET

DISPERSE  
Create an  
individual slurry

FINE GRINDING

### MASTERMIX® – Dissolver

The MASTERMIX® dissolver is used for dispersing solids in liquids. The product is mixed in batches in an exchangeable tank. The speed of the dispersion disk is adjusted via a frequency-controlled drive.



### PMD-VC – Intensive Mixers

The PMD-VC intensive mixers are stationary mixing and dispersing units for processing large batches. Separation of the mixing and dispersing operations provides for an extremely energy-efficient process that is especially useful for batches over 2000 l. The compact enclosed design of the intensive mixer allows for integration into fully-automatic plants and prevents contamination from gases and dust.





HANDLING RAW  
MATERIAL  
DRY AND WET

DISPERSE

Create an  
individual slurry

FINE GRINDING

### *EPSILON*

The *EPSILON* is used as an inline disperser in circulation mode, whereby the powder can be fed from a bag via suction lance, big bag, bag feeding station or silo. The liquid is circulated with the aid of a powerful rotor, creating a negative pressure in the process housing.

This negative pressure is used to draw in and wet the powder, with powder delivery occurring without the introduction of external air. Here, the wetting process is not based on the classic rotor-stator principle, but rather on physical factors such as pressure differentials and micro-cavitation.



### *ALPHA® System ZETA®*

Suitable for every viscosity and almost any product, with this technology you will achieve the highest product qualities and fineness's down into the nanometer range. The closed horizontal agitator bead mill is designed for the highest product throughput rates and has a peg grinding system with extremely high grinding intensity.

### *ALPHA® System DISCUS*

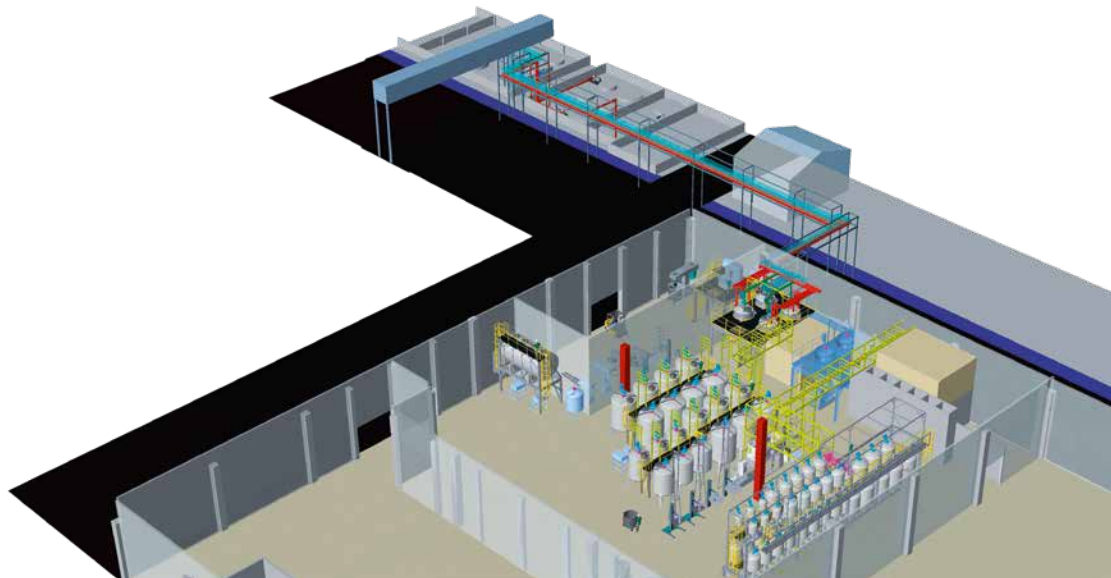
The NETZSCH *ALPHA® DISCUS* system is the quantum leap in disk grinding technology. The further optimized Discus disk agitator combined with the NETZSCH DCC® separation system guarantees you extremely high throughput rates with significantly narrower dwell time distributions and therefore more intensive grinding with uniform impact intensity.





## *Successfully Implemented* Industrial Paint Plant

The industrial paint industry is characterized by a huge variety of products, finishes, textures and applications. NETZSCH has a complete range of grinding and dispersion equipment which enables production of the smallest through to the largest batches. By incorporating the specific needs of each industry into the machines, NETZSCH is able to supply customized solutions to specialty areas such as coil coatings, marine paints and high build protective coatings.





A grayscale photograph of an automotive manufacturing plant. In the center, a car body is positioned on a conveyor system, moving through a paint booth. The car's interior and engine compartment are visible. The surrounding environment is filled with industrial machinery, overhead lights, and structural beams, creating a sense of a large-scale production facility.

# *AUTOMOTIVE PAINT*

*SOLUTIONS FOR SMALL,  
MEDIUM AND LARGE BATCHES*

Source: BASF

Examples for automotive paint	Machine
Top coat acrylic black	<i>ALPHA® ZETA®</i>
Filler	<i>ALPHA® DISCUS</i>
Dip coating	<i>ALPHA® DISCUS</i>
Primer	<i>MASTERMILL® 50</i>
Automotive refinishing paste	<i>ALPHA® ZETA®</i>

## CATHODIC PAINT

Protection against corrosion

## FILLER

Compensation of unevenness, Protection against highway stones and UV radiation

## BASIC PAINT

Compound of different pigments and materials

## CLEAR COAT

Protection against environmental influence

### MASTERMILL – Submersible Basket Mill

The *MASTERMILL* is an exceptionally versatile dispersion system that can be applied to a wide range of processing industries. This basket mill has redefined batch dispersion systems. This design ensures that your materials pass through the high density dispersion zone within the milling chamber at a high frequency.



### ALPHA® System ZETA®

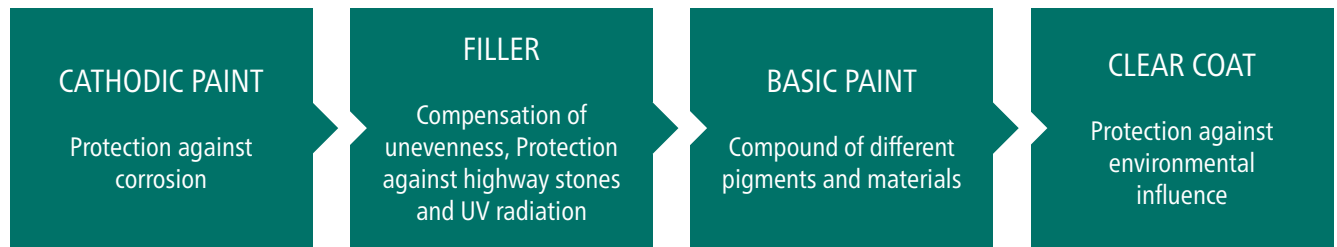
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### ALPHA® System DISCUS

The NETZSCH *ALPHA® DISCUS* system is the quantum leap in disk grinding technology. The further optimized *DISCUS* disk agitator combined with the NETZSCH *DCC®* separation system guarantees you extremely high throughput rates with significantly narrower dwell time distributions and therefore more intensive grinding with uniform impact intensity.



Working capacity [kg/h]	Batch size [kg]	Dispersing time [min]	Note
85	750	540	pre-dispersing with <i>MAXSHEAR</i>
580	4 500	420	single-pass, predispersing with <i>MASTERMIX® 110</i>
250	2 000	480	2-passes a 500 kg, pre-dispersing with <i>MASTERMIX® 55</i>
250	2 250	540	batch process
50	400	480	circulation, pre-dispersing with <i>MAXSHEAR</i>



### MAXSHEAR – Inline Disperser

Compact enough to be included at virtually any point in your process. The self-pumping portable unit features rotor/stator based technology with multiple stator configurations available. Manufactured to extremely precise tolerances to eliminate product bypassing typical of other single stage dispersers. Exceptional high shear performance and powerful pumping action makes the MAXSHEAR ideal for emulsifying and processing hard-to-wet materials.



### MASTERMIX® – Dissolver

In industry dissolvers are the most versatile and most frequently used machines for the mixing of solids in liquids. The NETZSCH MASTERMIX® high speed mixer is suitable for processing batches with a volume of up to 1500 l in exchangeable tanks. For larger batches of up to about 10 000 l our mezzanine mounted units with stationary tanks can be used. While the speed of the mixing tool is infinitely variable via a frequency controlled drive, its working height inside the mixing tank can be adjusted as required via the hydraulically actuated lifting column. A vessel wall scraper is available as an option for improving the mixing and dispersing process for high viscosity products.








## *Successfully Implemented* Automotive Paint Plant

NETZSCH is one of the main suppliers with a proven knowledge and expertise in automotive paint both in OEM and refinish production. NETZSCH has a full range of dispersion and grinding equipment to suit all batch sizes and inline processes to produce the quality requirements needed in the field. NETZSCH has the technology and knowledge to respond to the special requirements for metallic paint coatings as well as paint applied to interior and exterior plastics either with single machines or complete turnkey solutions.



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  
NETZSCH Tula | Russia  
NETZSCH Makine Sanayi ve Ticaret | Turkey  
NETZSCH Korea | Korea  
NETZSCH Premier Technologies | USA  
NETZSCH Equipamentos de Moagem | Brazil

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