

## NETZSCH Grinding & Dispersing

An Introduction to the Business Unit



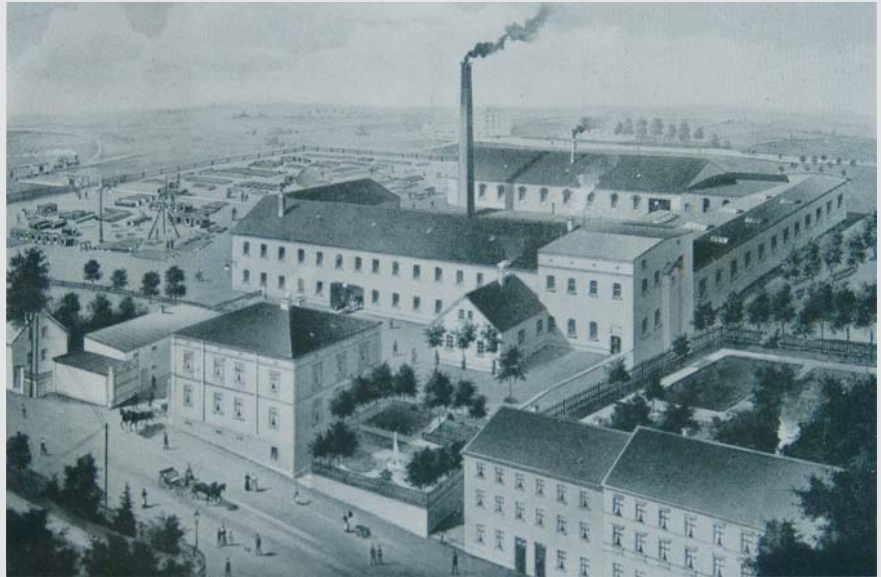
# The NETZSCH Group

## NETZSCH Group

The Gebrüder NETZSCH Maschinenfabrik (NETZSCH Brothers Machine Works), founded in Selb, Germany in 1873, was the starting point for today's NETZSCH Group, which has since become an international family-owned enterprise with 125 locations in 23 countries on three continents.

The three Business Units, Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, operate independently with the goal to offer the customer the best solution for his particular application. The result of over 130 years of engineering experience is both technological and market leadership.

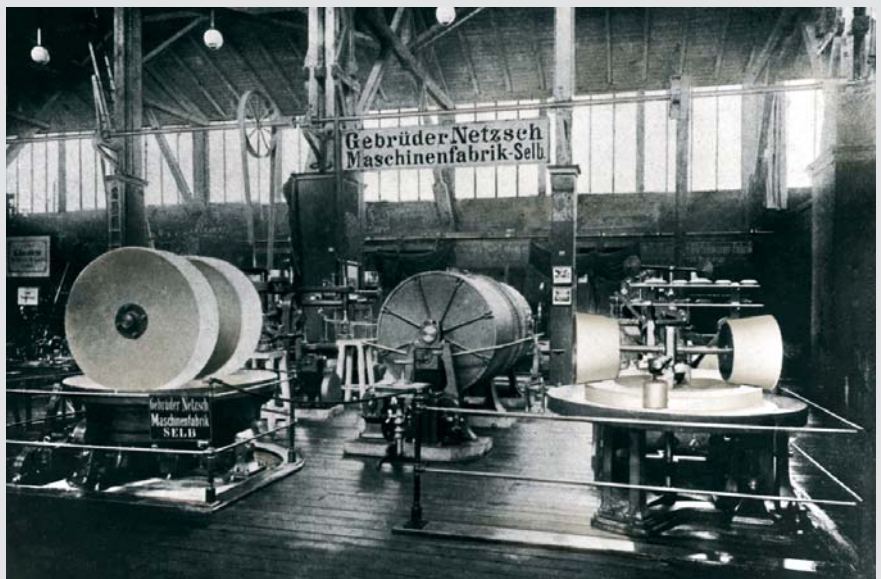
Under the umbrella of the Erich NETZSCH GmbH & Co. Holding KG, the synergies between the Business Units are ensured through worldwide communication.



Factory in Selb in 1911



Headquarters of NETZSCH Holding



Machine exhibition in Nuremberg in 1896

## Business Unit Grinding & Dispersing

Paint and dyes make our lives more colorful, chocolate melts in your mouth and the perfect make-up gives you a radiant complexion - the Business Unit Grinding & Dispersing offers a comprehensive program for the many challenges in mechanical process engineering. Here the Business Unit is primarily involved in the areas of wet and dry grinding, mixing, dispersing, de-aeration and classifying. The laboratory and production-scale machines, as well as complete production plants, are



used in almost all areas of industry, such as the forward-looking nanotechnology, the production of ink, minerals or foods. The bundling of processing know-how, our extensive machine program, solutions for customer-specific problems

and our global presence are unique and hence the strength of the business unit.

## Business Unit Analyzing & Testing

Space exploration, the use of fuel cells or the car that runs on hydrogen - before technical advancement can begin there must be research, analysis, measurements and optimization. Basic knowledge about the physical and chemical properties such as phase transition temperatures and melting points, expansion behavior or thermal conductivity of solids and liquids can be quickly and easily determined with the methods of thermal analysis. The



Business Unit "Analyzing & Testing" develops and manufactures a broad spectrum of instruments for temperatures ranging from -260 to 2800°C. These thermal analysis instruments

are employed worldwide in research, development and quality control.

## Business Unit Pumps & Systems

Yogurt with whole fruit, paint and lacquer, oils and every kind of sludge. These and many other raw materials and products which are part of our everyday lives are conveyed with NETZSCH pumps & systems in all parts of the world. NETZSCH ensures that these extremely diverse media - from liquid to viscous - are pumped gently. Specialists from the seven business sectors Environmental & Energy, Chemical, Pulp & Paper, Food & Pharmaceutical,



Oil & Gas Upstream, Oil & Gas Downstream and Systems can advise you on the many applications for NETZSCH pumps & systems. Experience and innovation, quality and service as well

as a worldwide production, sales and service network provide the basis for our leadership in technology on the world market.



# History of the Business Unit Grinding & Dispersing

## Development of the Business Unit

- 1873** Founding of the **Gebrüder NETZSCH Maschinenfabrik** in Selb, Germany by **Thomas and Christian Netzsch**
- 1931** Relocation of the headquarters to Asch, Czech Republic
- 1946** Rebuilding of the business in Selb, Germany following WWII
- 1969** Establishment of **NETZSCH Inc.**, Exton, PA, USA
- 1973** Founding of **NETZSCH do Brasil Ltda.**, Pomerode - SC, Brazil
- 1974** Establishment of **NETZSCH-Feinmahltechnik GmbH** through relocation of the **Abteilung „MOLI-NEX“** from Gebrüder NETZSCH GmbH to a newly-acquired production facility in Tirschenreuth
- 1979** Expansion of the existing production facility in Tirschenreuth
- 1986** Acquisition of Mastermix (Aldridge, England) to add mixing and dispersing technology to the machine program and renaming of the company to **NETZSCH Mastermix Ltd.**
- 1989** Further expansion of the production facility in Tirschenreuth  
New construction of state-of-the-art application laboratory for grinding and dispersing technology in Selb
- 1990** Founding of **NETZSCH España, S.A.**, Terrassa/Barcelona, Spain  
New construction of headquarters in Selb
- 1995** Acquisition of CONDUX Maschinenbau (Hanau, Germany) to expand the product line with dry grinding and fine classification and renaming of the company to **NETZSCH-CONDUX Mahltechnik GmbH**
- 1997** Acquisition of Dieter Werner Maschinen- und Anlagenbau (Mannheim, Germany) to add planetary mixing and kneading machines to the product line
- 2000** Establishment of **NETZSCH (Shanghai) Machinery and Instruments Co., Ltd.** in China  
DIN EN ISO 9001 certification
- 2003** Founding of **ZAO NETZSCH TULA**, Russia
- 2009** Relocation of Final Assembly from Tirschenreuth to Selb (Breslau Street factory)
- 2010** NETZSCH Fine Particle Technology, LLC. acquires Premier Mill to become **NETZSCH Premier Technologies, LLC.**



1873

1969

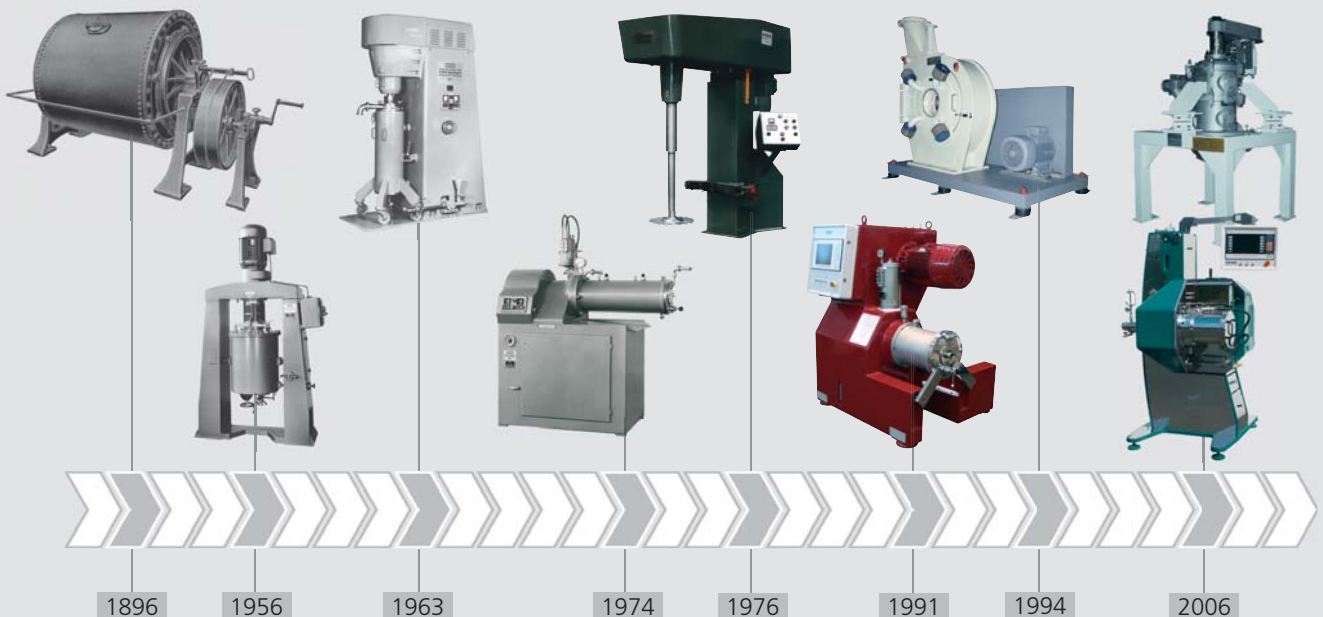
1974

1995

2000

## Development of the Product Line

- 1896** Presentation of the first **ball mill**. ball mills for wet and dry grinding were employed in processing raw materials containing silicates and in paint and printing ink factories
- 1956** Acquisition of license to manufacture batch mills
- 1963** Development of the first continuous **agitator bead mill**, the *MoliNEX System*
- 1969** Development of the John System, the world's first annular chamber mill with a peg/counterpeg system
- 1974** Construction of the first **horizontal bead mill**
- 1976** NETZSCH-Feinmahltechnik GmbH builds its first dissolver
- 1990** First Module 2000 – mobile industrial-scale grinding and dispersing unit  
Construction of the first **CGS Fluidized Bed Jet Mill (CONDUX)**
- 1991** Construction of the world's first **LMZ ZETA® Circulation Mill**
- 1993** Construction of the first IsaMill: horizontal agitator bead mill with a grinding chamber capacity of 3,000 l
- 1994** Construction of the first CFS/HD-S High-efficiency Fine Classifier (CONDUX)
- 1997** Development of the *LABSTAR* Laboratory Mill
- 2002** Development of the new energy-saving *e-JET®* grinding process for jet mills
- 2003** Construction of the largest horizontal disk mill in the world to date, with a grinding chamber capacity of 10,000 l and a drive capacity of 2.6 MW  
Development and construction of the *CHOCO EASY®* compact plant for chocolate production
- 2006** Development of the **Nanomühle ZETA® RS Nano Mill**  
Development of the *s-JET®* process for operation of counter-jet mills with steam



# The Companies of the Business Unit Grinding & Dispersing

## **NETZSCH-Feinmahltechnik GmbH** **Specialist for Wet Grinding and Mixing**

NETZSCH-Feinmahltechnik GmbH is the world's leader in wet grinding, mixing and kneading. The product line encompasses a comprehensive laboratory program, production machines in various sizes and complete plants. The

company headquarters is located in Selb. Machines and plants are manufactured in facilities in Selb and Tirschenreuth. NETZSCH-Feinmahltechnik GmbH is equipped with a state-of-the-art applications laboratory and

leads the world in the development of grinding and dispersing technology.



## **NETZSCH-CONDUX Mahltechnik GmbH** **Specialist for Dry Grinding and Classifying**

NETZSCH-CONDUX Mahltechnik GmbH is the world's leader in the processing of dry materials. The product line spans machines and plants for fine grinding and fine classification of solids of every hardness, for any required end

fineness. In addition to development, the engineering, sales, assembly and administration departments are located at the headquarters in Hanau. The well-appointed laboratory offers the most up-to-date equipment for

comprehensive customer-specific tests in the area of dry fine grinding and classifying. As an additional service, toll grinding is carried out in Hanau.



## NETZSCH Premier Technologies, LLC.

NETZSCH Premier Technologies, LLC, located in Exton, PA, USA, is the specialist within the Business Unit for pharmaceutical applications. In addition to the production facilities, engineering

and administration departments, the company has a modern applications laboratory and final assembly facility, as well as a US-wide sales and service network.



## NETZSCH Indústria e Comércio de Equipamentos de Moagem Ltda.

“NETZSCH Equipamentos de Moagem” manufactures and sells mills and plants for fine grinding and dispersing. They are the specialists within the Business Unit for chocolate and chocolate

compound applications. The production facility, as well as a research and development laboratory, is located in Pomerode, Santa Catarina, Brazil.



## NETZSCH (Shanghai) Machinery and Instruments Co., Ltd.

The headquarters of NETZSCH (Shanghai) Machinery and Instruments Co., Ltd. in Shanghai, China, houses a production facility and the administrative offices and is the home of a broad

sales and service network. In addition, there is an applications laboratory for grinding and dispersing trials.



## ZAO NETZSCH Tula

ZAO NETZSCH Tula is based in Tula, south of Moscow. This location boasts a final assembly facility and an experimental laboratory. The central sales

office for Russia and the CIS states is in Moscow, while service is based in Tula.



Two additional companies of the Grinding & Dispersing Business Unit are **NETZSCH Mastermix Ltd.**, a company specializing in engineering

and plant construction located in Lichfield, England, and **NETZSCH España, S.A.**, with its principle office in Terrassa near Barcelona, Spain, where sales and

service are coordinated for the markets in Spain and Portugal.



# The Products of the Business Unit

## Wet Grinding

NETZSCH-Feinmahltechnik GmbH is the world's market leader in wet grinding technology. Tailormade for every application, there is a wide variety of

wet-grinding units available for ultra-fine dispersion and grinding down to the nanometer range.



## Dry Grinding

For the fine grinding of dry products we possess a wealth of know-how and a versatile range of mills for any end fineness required, down into the submicron range. Systematic continuing

development of the applied grinding principles ensures our technological advantage in the market.



## Mixing

Pre-dispersion, suspension, emulsification and homogenization are only a few of the tasks that our mixing, kneading and dispersing machines can handle.

Our mixing technology program covers the entire spectrum of applications, from low- to high-viscosity products.



## Fine Classifying

Both the separation of coarse grit and the reduction of fine particles (de-dusting) are typical applications for our dynamic air classifiers. Finenesses for which screening machines are no

longer sufficient can be perfectly achieved with our fine classifiers. There are various models available, depending on the target particle size or application.





## Laboratory machines

Initial feasibility studies, formulation development, very small batches of a high-tech product, quality control and assurance as well as process optimization - all applications for which

you need a flexible, easy-to-operate laboratory machine that also guarantees exact reproducibility and scale-up to production machines.



## Systems & Plants

The machine alone doesn't finish the job. As one of the leading suppliers of machines for wet and dry processing of products in many branches of industry, we support our customers in project implementation and are happy to carry

out the planning and realization of complete plants. In plant construction, our customers profit from our extensive experience and outstanding machine technology combined with state-of-the-art components from our suppliers.



## Service

We see ourselves not only as the technological leader in our core areas worldwide, but also as a qualified consultant with a comprehensive range of services. In order to strengthen the competitive ability of our customers, to design

smooth and efficient processes and to ensure maximum machine availability, we offer an array of services that make us a capable and reliable service partner.



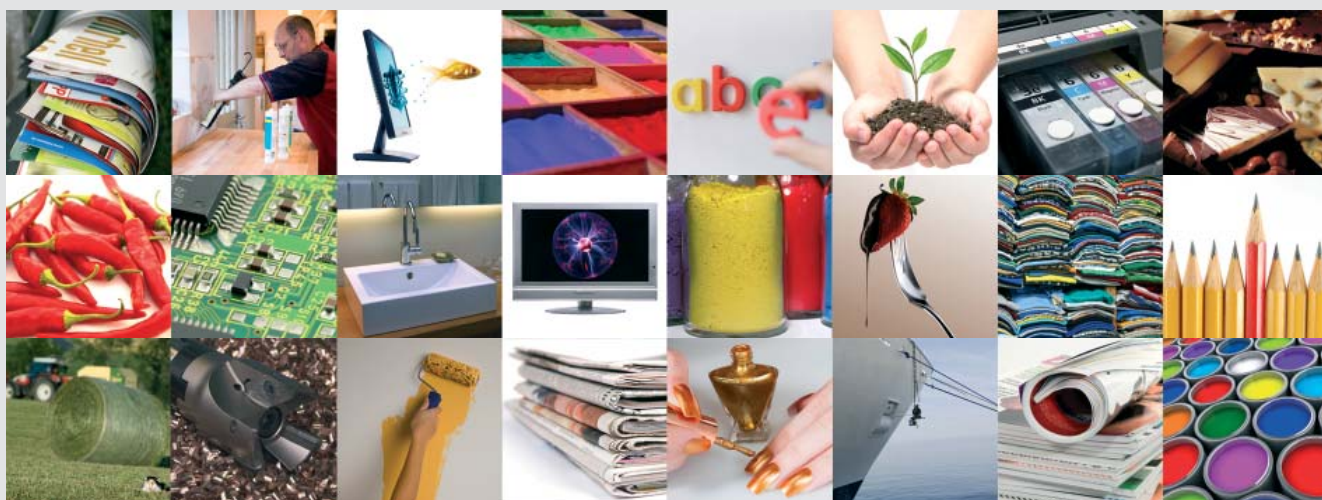
# The Applications Our Strengths

## Our Wide Range of Applications

The machines and plants manufactured by the Business Unit Grinding & Dispersing are employed in almost every industry. This demonstrates our extremely broad range of applications, primarily in the areas of:



- Research & Development
- Ores / Minerals / Metals
- Paint
- Pigments / Dyes
- Printing Inks
- Life Science
- Food
- Ceramics / Glass
- Agrochemistry
- Nano Applications
- Adhesives / Sealants
- Cellulose / Pulp



## Technology

For us, commitment to market and technology leadership worldwide is the driving force. We focus on the needs of our customers and, with machines and plants we have developed in Germany,

establish the perfect basis for providing the quality our customers demand.

## Global Presence

Our global network of sales offices guarantees that trained and experienced specialists are always nearby to provide support to our customers. Modern

applications laboratories are located in Germany, the USA, Brazil, China and Russia.



## Quality

In all of our locations, we manufacture our products and do business in accordance with internationally-certified quality standards in order to satisfy

our customers over the long term that smooth business transactions and competitiveness are guaranteed.

## Customer Satisfaction

Customer satisfaction is our primary goal. Our know-how is specifically directed toward fulfilling the needs of our customers and offering tailor-made

solutions for every application. We respond to the individual wishes of our customers with the utmost flexibility!



## Service

Customer satisfaction and trust guarantee commercial success. With the many services that we offer, we aim to meet all of our customers' demands for quality and value. Our network of service centers guarantees fast availability of spare parts and dependability anywhere in the world. In addition, our

machines in the applications laboratory and pilot plant are available to our customers for toll grinding. With our many years of experience in processing a wide variety of products we are also happy to provide support.

our technology  
**YOUR SUCCESS**

## The World's Leading Grinding Technology

### The Companies of the Business Unit Grinding & Dispersing

NETZSCH-Feinmahltechnik GmbH, Selb, Germany

NETZSCH-CONDUX Mahltechnik GmbH, Hanau, Germany

NETZSCH Premier Technologies, LLC., Exton PA, USA

NETZSCH Indústria e Comércio de Equipamentos de Moagem Ltda., Pomerode, Brazil

NETZSCH (Shanghai) Machinery and Instruments Co., Ltd., Shanghai, China

NETZSCH Mastermix Ltd., Lichfield, Great Britain

NETZSCH-España, S.A., Terrassa/Barcelona, Spain

ZAO NETZSCH Tula, Tula, Russia

The Business Unit Grinding & Dispersing is part of the NETZSCH Group.

The NETZSCH Group is an owner-managed, internationally operating technology company headquartered in Germany. Three Business Units – Analyzing & Testing, Grinding & Dispersing, and Pumps & Systems – provide tailored solutions for highest-level needs. Over 2200 employees at 125 sales and production centers in 23 countries across the globe guarantee that expert service is never far from our customers.

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