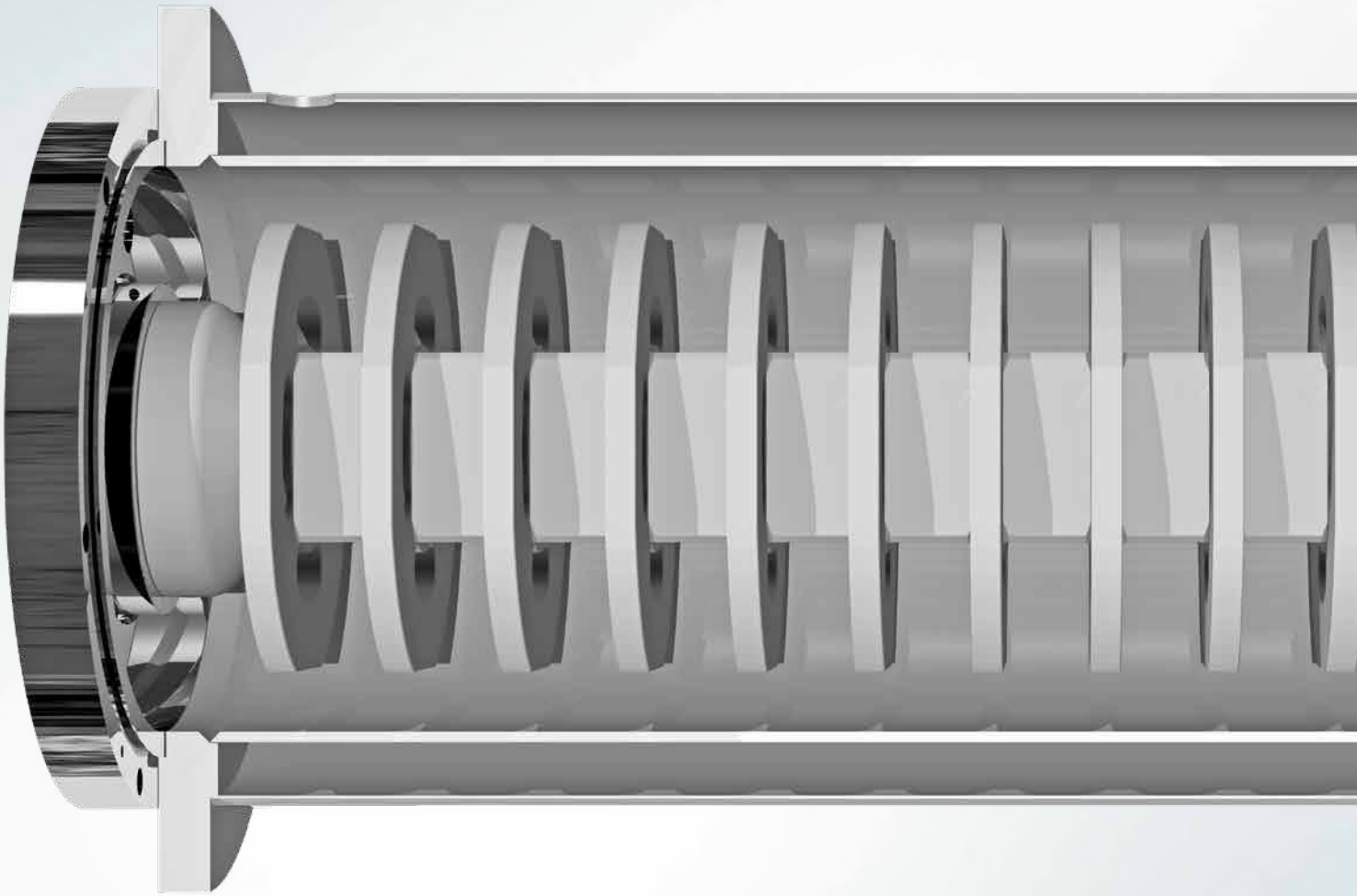


# NETZSCH

Proven Excellence.



## *DISCUS INTENSIVE* Grinding System

New innovation + proven technology = improved quality and productivity

Business Unit  
GRINDING & DISPERSING

# *DISCUS INTENSIVE* Grinding System



## Applications

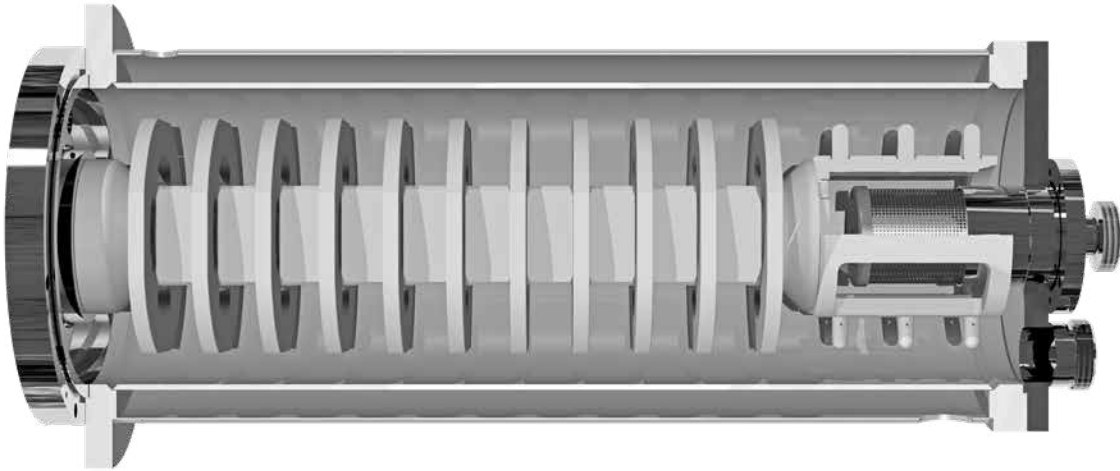
- Printing inks
- Coatings
- Pigments
- Textile dyes
- Magnetic coatings
- Paper coatings
- Fillers
- Pesticides
- Ores
- Minerals
- Technical and consumer ceramics
- Ceramic masses and glazes
- Pharmaceuticals
- Cosmetics
- Biotechnology: cell disruption

# Proven Technology

Our company represents competence in grinding technology, and the ability to meet demanding customer requirements. We are the only company to offer basket, pin, circulation and passage mills. We have been building horizontal disc mills for more than 50 years, and over 4,200 machines are in global use today. We are the only manufacturer in the world able to build them in size from 1 ltr to 15,000 ltr and from 3 kW to 4000 kW.

With the introduction of the new disc geometry *TETRA*NEX/*TETRA*NEX+, a significant increase in the efficiency of the grinding system was achieved. Now the grinding system has been modified again.

In this long history - marked by ideas and patents - a new milestone has been set with the *DISCUS INTENSIVE* Rotor.



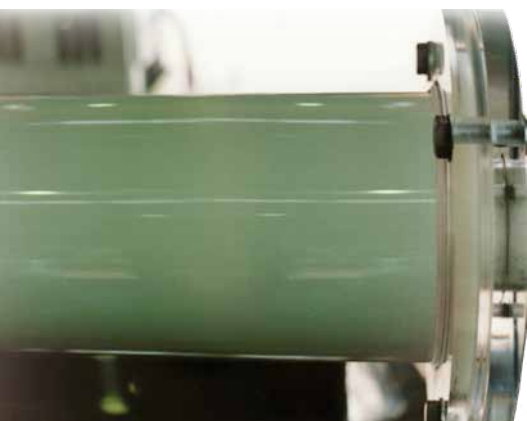
## Your Benefits

- **Highest productivity**
  - Low specific energy requirement
  - Significantly narrower residence time distribution
  - Highly-efficient grinding media separation system
  - Reliable scale-up
- **Optimum product cooling with an inner pipe of grinding tank made of NETZSCH-CERAM C**
- **Efficient recirculation is possible**
  - Highest throughput rates

# All advantages at a Glance

## More Capacity – More Beads

The highly efficient, dynamic centrifugal separation system facilitates the use of grinding beads of various densities, matched to the application. In addition, it allows the use of grinding beads from 0.3 mm in diameter. The separation system ensures that the mill can be operated far below the critical point of grinding bead compression, even for products with challenging rheological properties.

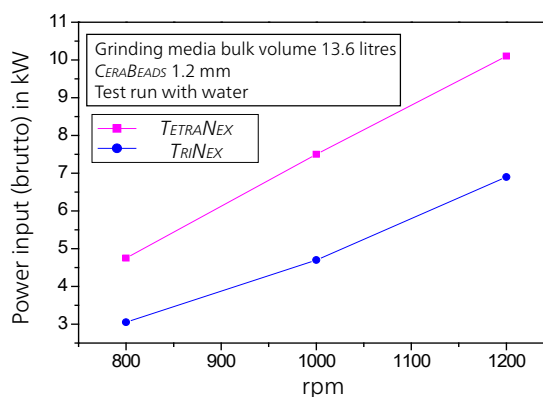


### Your Benefit

- Use of very small grinding media even with high product viscosities and throughput rates
- High reliability and elongated life

## Increased Power Input

The *DISCUS INTENSIVE* grinding system optimizes the movement of the grinding media so that higher power input and production output are achieved with a simultaneous increase in grinding efficiency.

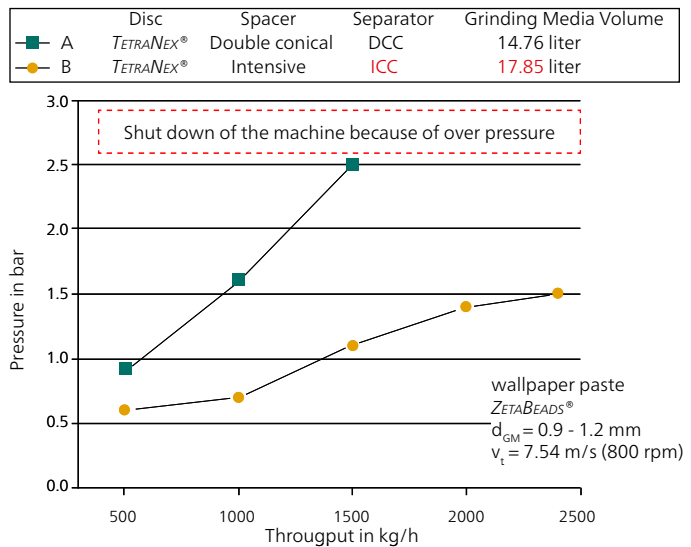


## Based on a Proven Concept

The *DISCUS INTENSIVE* Rotor is the latest development in a long history in grinding technology. Based on decades of research and development and technical competence, we developed *DISCUS*, an intensive rotor that shows again an impressive result in separation, flow and grinding efficiency.

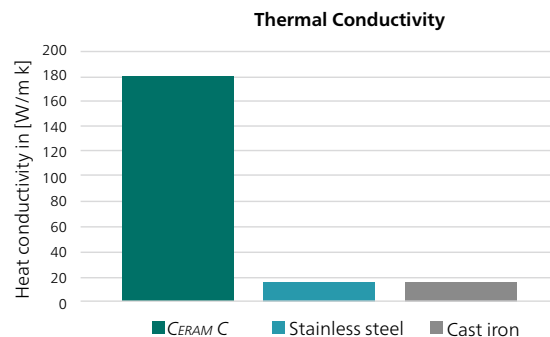
## We Increase Flow Rate

The *DISCUS INTENSIVE* Rotor allows much higher flow rates without reaching the maximum pressure. This helps run highly viscous product at high flow rates, and also allows running of an effective circulation operation for products that have specific energy requirements starting with, around, 100 kWh/t and higher



## We Keep Cool

The use of state-of-the-art high-performance ceramics with high thermal conductivity increases the cooling of the grinding chamber. It is also much more wear resistant than steel and increases the service life of the grinding chamber many times over.



# Improves Quality & Productivity

## Example: Water Based Paint

What we do, we do well. This success story is based on the trusting cooperation with a German customer who has been using an LME 20 in the standard version for his production since the beginning of the 1990s. It shows continuous improvement of the disc mill.

**1** The customer has to guarantee a shelf life of minimum one year, so he is running a second pass. When we changed to the *TETRA*NEX/*TETRA*NEX+ design and the conventional separation system, we were able to increase the productivity by 50% to 60 kg/h but still 2 passes are necessary. The temperature outlet was at the product limit.

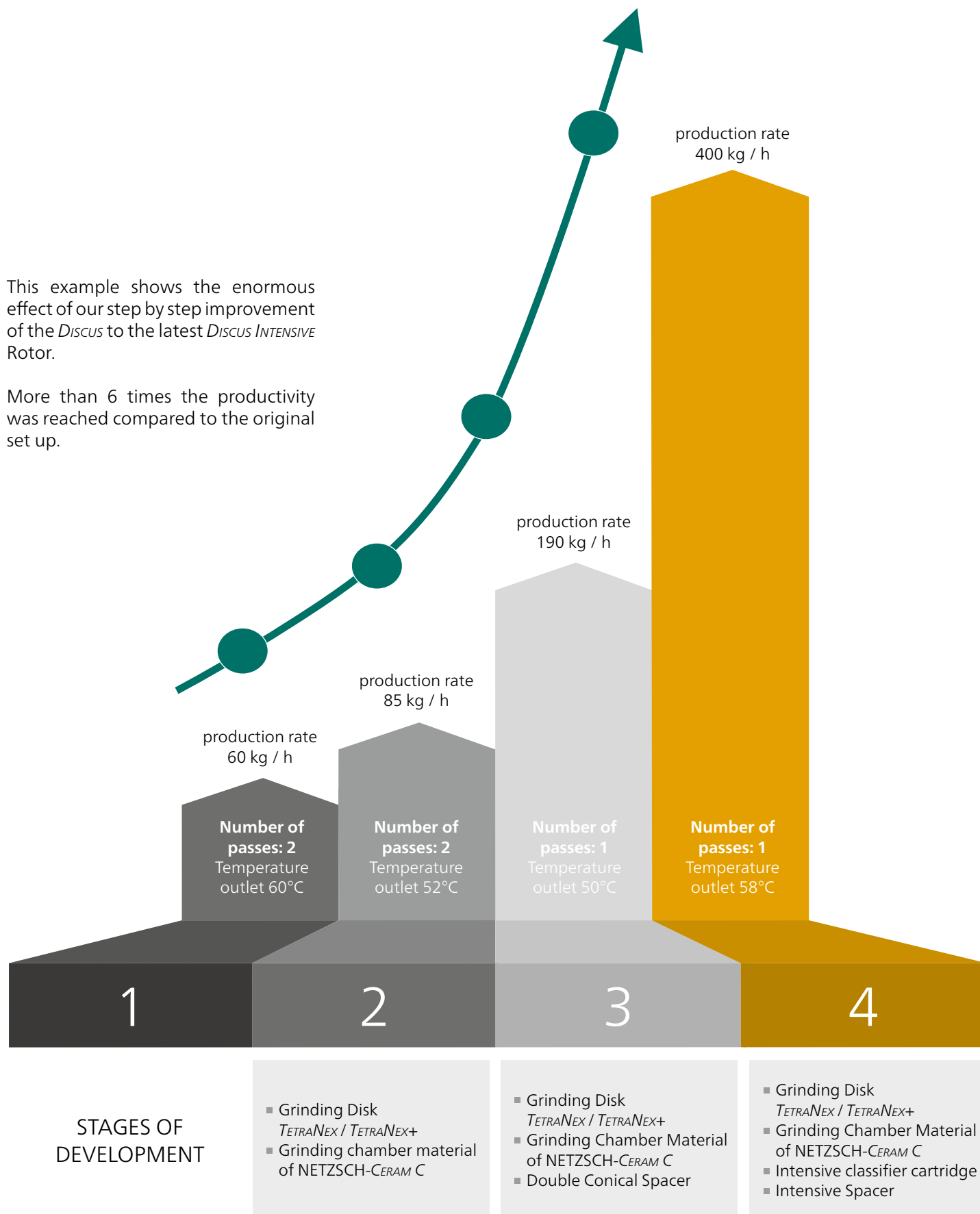
**2** For this reason we changed the liner material to NETZSCH-*CERAM* C so that we were able to increase agitator speed without reaching the maximum temperature. The production rate increased by another 40% to 85 kg/h but still a second pass was necessary.

**3** By installing the double conical spacers we were successful in getting a clean product and at a flow rate of 190 kg/h - this is roughly 4-6 fold increase.

**4** Through an additional modification of the grinding media separation and the complete use of the grinding chamber as a process volume, a further significant increase in product output to 400 kg/h in **one pass** was achieved.

This example shows the enormous effect of our step by step improvement of the *DISCUS* to the latest *DISCUS INTENSIVE* Rotor.

More than 6 times the productivity was reached compared to the original set up.



# Improves Quality & Productivity

## Example: Tinting Pastes

This example is from a customer in Germany producing tinting pastes for paints. They were testing the Intensive rotor for over one year.

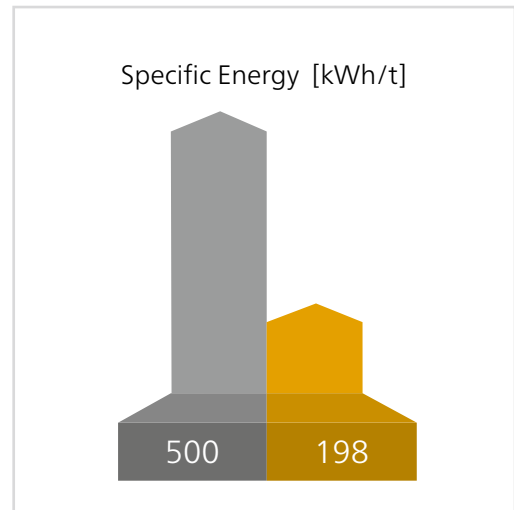
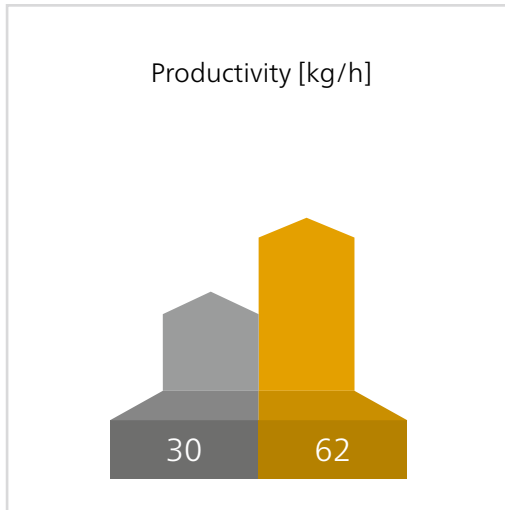
In the diagram the results for 4 different products are shown. The increase of productivity for the products is in the range of 40% to more than 100%.

Product		1	2	3	4
Productivity [kg/h]	conventional System	38	96	60.6	30
	<i>DISCUS INTENSIVE</i>	61	138	84	62
Specific Energy [kWh/t]	conventional System	371	148	215	500
	<i>DISCUS INTENSIVE</i>	270	135	180	198

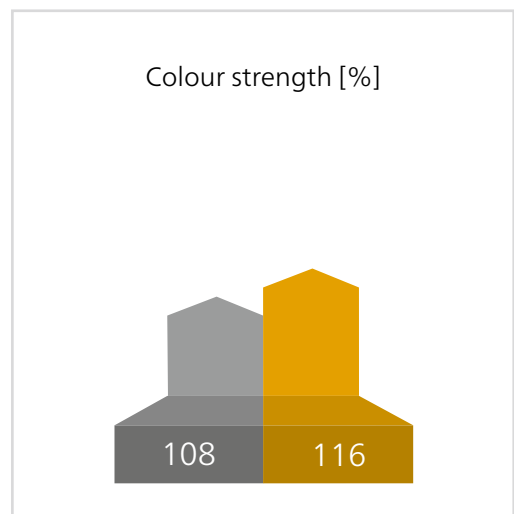
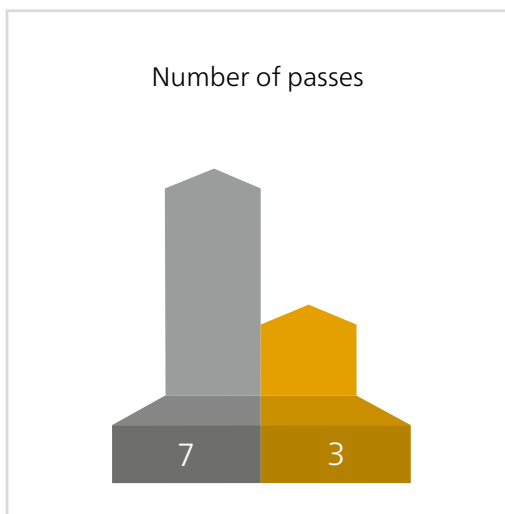




## Test Results for Product 4 in Detail



The increase of productivity is as a result of a reduction in the number of passes from 7 to 3. This also leads to a reduction of the energy requirement from 500 kWh/t to 198 kWh/t and still results in an increase of the colour strength of the mill base from 108% to 116%. The increase of productivity is even higher when we incorporate the colour strength.



# Sizes – from Lab to large-scale Production

	Grinding Chamber Volume [l]	Batch size [l]	Drive power [kW]	Typical throughput rate [kg/h]
<i>LABSTAR</i>	0.95	1.5 - 5	3	5 - 50
<i>Discus 4</i>	4	20 - 150	7.5	14 - 140
<i>Discus 15</i>	14	50 - 450	22	35 - 350
<i>Discus 30</i>	27	100 - 700	22 / 30	70 - 700
<i>Discus 60</i>	57	200 - 1 500	45 / 55	135 - 1 350
<i>Discus 150</i>	150	500 - 3 500	55 / 75	310 - 3 100
<i>Discus 200</i>	220	600 - 4 000	75 / 90	380 - 3 800
<i>Discus 300</i>	320	800 - 5 000	110 / 132	560 - 5 600
<i>Discus 500</i>	510	1500 - 10 000	160 / 200	850 - 8 500
<i>Discus 1000</i>	1 040	> 2 500	355 / 400	1 400 - 14 000
<i>Discus 1200</i>	1 170	> 2 500	400	1 400 - 14 000

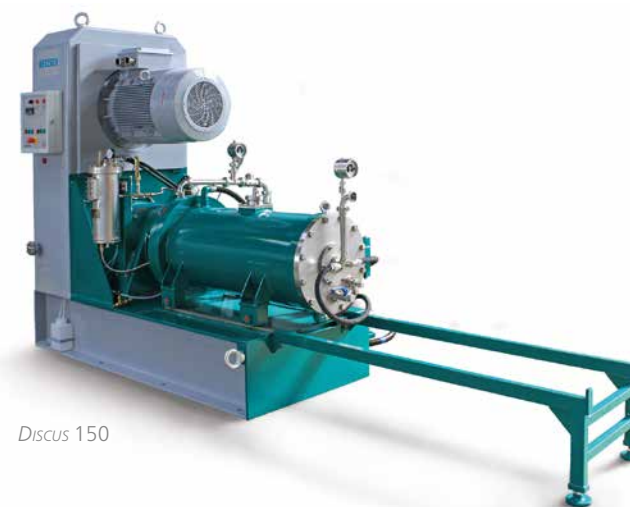
\*depending on viscosity, grinding media and pump design



*LABSTAR*



*Discus 30*



*Discus 150*

## Material options

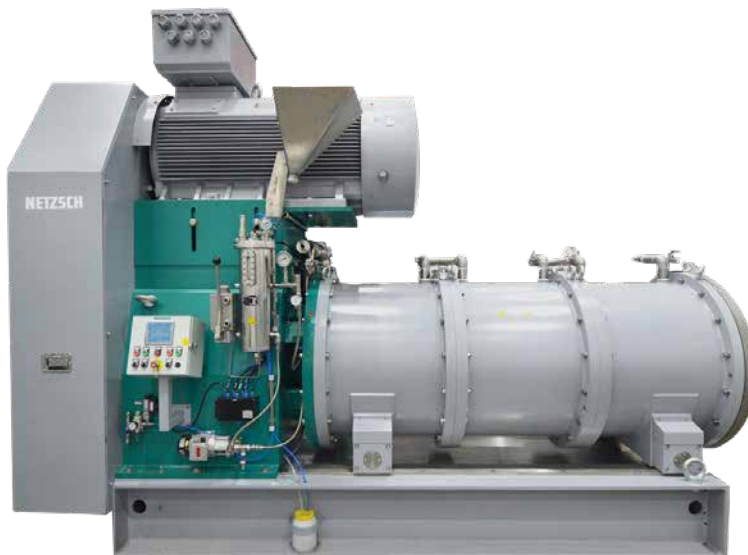
In order to satisfy the requirements of the broadest array of products and to guarantee product compatibility, we offer grinding tanks and agitator shafts made from a variety of materials. Matching the grinding system material to the product properties facilitates low-wear operation of the mill. Contamination of the product is thereby avoided. This leads to an enormous expansion of potential applications for the machine.

### Focus on your Benefit

- For every product requirement there is a suitable grinding chamber material.
- Selection criteria are: resistance to solvents, temperature sensitivity of the product and wear resistance or low-contamination processing
- Minimal maintenance costs

### Range of materials:

- Chilled cast iron
- Wear-resistant steel
- Stainless steel
- NETZSCH-CERAM Z
- NETZSCH-CERAM C
- NElast
- Rubber



*Discus 1200*

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

Under the management of Erich NETZSCH B.V. & Co. Holding KG, the company consists of the three business units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, which are geared towards specific industries and products. A worldwide sales and service network has guaranteed customer proximity and competent service since 1873.

# 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 Feinmahltechnik Polska | Poland  
NETZSCH Mastermix | Great Britain  
NETZSCH Broyage | France

NETZSCH España | Spain  
NETZSCH Machinery and Instruments | China  
NETZSCH India Grinding & Dispersing | India  
NETZSCH Tula | Russia  
NETZSCH Makine Sanayi ve Ticaret | Turkey  
NETZSCH Premier Technologies | USA  
NETZSCH Equipamentos de Moagem | Brazil

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