

NETZSCH

Proven Excellence.



Economic Dispersionizer *OMEGA*®

Taking Dispersion One Step Further

Business Unit
GRINDING & DISPERSING

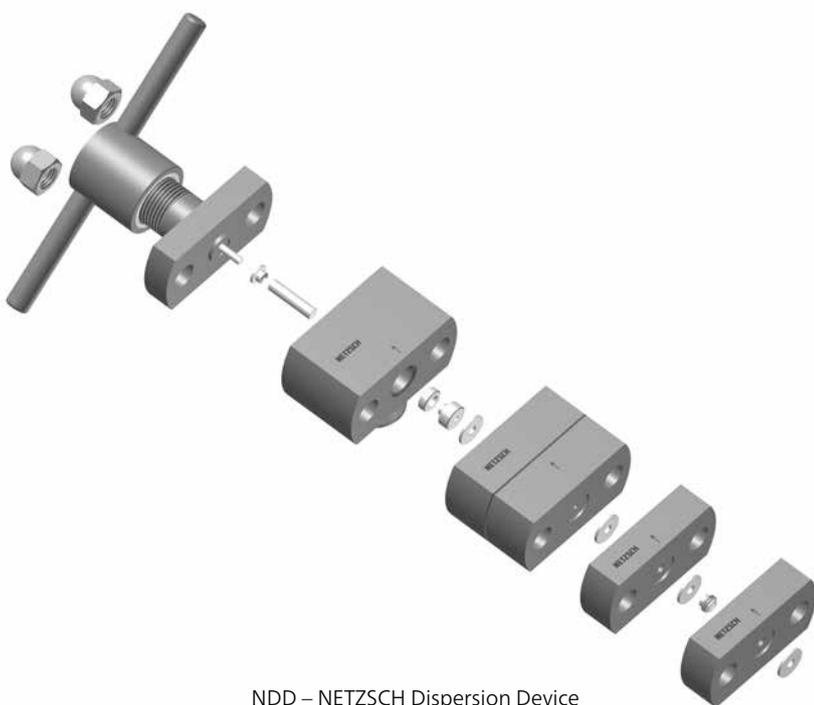
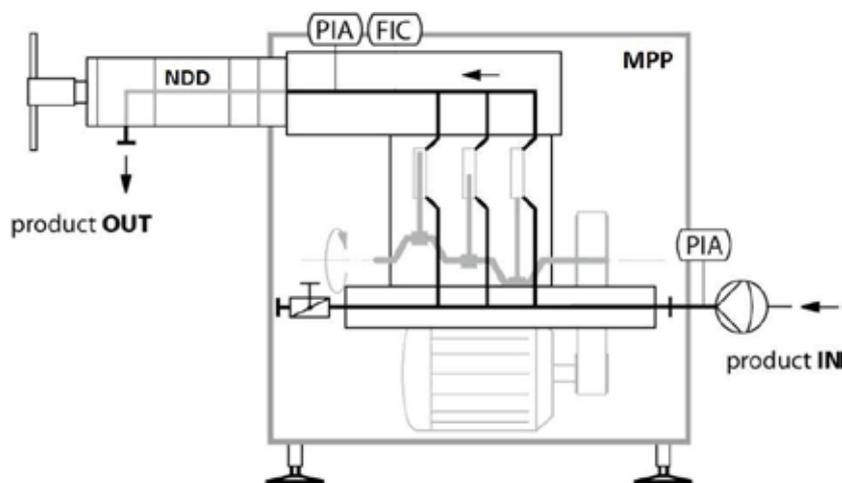
Economic Dispersionizer

Dispersion Process

Principles of Operation

Successful dispersion requires targeted force in order to separate agglomerated particles. The *OMEGA*[®] Economic Dispenser applies dispersive forces then and there, where they are especially effective: in the *OMEGA*[®] disperser body, energy is transformed into very high speeds under pressure. Turbulence and cavitation in perfect combination with specifically-applied shearing forces ensure maximum dispersion results. In addition, the system can be easily adapted to different operating conditions or formulations thanks to the *OMEGA*[®] disperser body, which consists of a nozzle with infinitely adjustable flow properties.

The optimum adaptation and increased efficiency not only lead to reduced energy consumption in the production process and thereby less heat development, but also to less wear as compared to traditional technologies.



NDD – NETZSCH Dispersion Device

Your advantage is our focus

With the *OMEGA*[®], product quality is improved and production expense is minimized. In particular, the exceptionally short processing times lead to considerable cost advantages. The use of an *OMEGA*[®] is especially economical compared to standard technologies.

- 1 The product is often pre-dispersed (e.g. in a dissolver) and brought to a certain degree of fineness. The *OMEGA*[®] can be connected easily at any preliminary stage and can replace other technologies; the entire process remains unaltered. The pre-treated product is directed through the feed tank into the *OMEGA*[®] by means of a feed pump.
- 2 The middle-pressure pump of the *OMEGA*[®] conveys the product into the disperser body at a constant volume flow rate. Due to special design features processing of higher viscosities is also trouble-free.
- 3 The innovative dispersion process takes place inside the *OMEGA*[®] disperser body. During this process, the product is subjected to mechanical forces required for particle reduction. The dispersion performance can be optimized independently through manual control of the volume flow-rate and pressure. High flow velocity and turbulences are the crucial parameters for the efficiency of the disperser body. Even with very abrasive substances, this sophisticated flow design leads to extremely low wear and tear and correspondingly low costs for expendable parts.
- 4 Due to its high efficiency, there is considerably less heat development than with other dispersion technologies. The treated product is discharged at the product outlet of the disperser body and can - if necessary - be recirculated or dispersed in several passes.



Models

| | <i>OMEGA</i> [®] 60 | <i>OMEGA</i> [®] 500 | <i>OMEGA</i> [®] 2000 |
|---|--|-------------------------------|--------------------------------|
| Flow rate (variable) [l/h] | 18 - 60 | 150 - 500 | 600 - 2,000 |
| Operating pressure (variable) [bar] | 10 - 700 | 10 - 700 | 10 - 700 |
| Nominal power [kW] | 4 | 15 | 55 |
| Number of pistons | 2 | 3 | 3 |
| Machine dimensions: Width x height x depth [mm]* | 800 x 1,300 x 1,200 | 1,200 x 1,500 x 1,600 | 1,400 x 1,800 x 1,800 |
| Weight [kg]* | 350 | 1,000 | 1,400 |
| Connections | DN25 | DN32 / 25 | DN50 / 25 |
| Viscosity [mPas] | low to high viscosity products, like printing inks | | |
| Hold-up [l] | 0.7 | 1.5 | 2.1 |
| Cleaning in place (CIP) | Yes | Yes | Yes |

*) subject to change

For all industrial models, machine parts such as packings, gaskets and valve components are made of extremely wear resistant materials. The standard industrial models are ATEX-compliant as delivered. The flow rate can be adjusted by means of a frequency converter. The *OMEGA*[®] disperser body can be adapted to particular product requirements by means of various nozzle modules and valve settings. Scale up from experimental results with the *OMEGA*[®] 60 is guaranteed.



OMEGA® 60

Due to its size, weight and throughput of 18 l/h to 60 l/h, the OMEGA® 60 is suitable for applications in a laboratory environment and in pilot plants. In production, it has proven its worth especially for smaller batches.

The standard OMEGA® 60 is a portable IP model. Optionally, an ATEX-compliant model is also available.



OMEGA® 500

With a throughput of 150 l/h to 500 l/h, the OMEGA® 500 is suited for standard industrial production. The OMEGA® 500 is offered in various configurations and is designed as a standard machine for industrial use. Typical batch sizes for batch production are from 1 m³ to 3 m³.



OMEGA® 2000

With a throughput of 600 l/h to 2,000 l/h, the OMEGA® 2000 is excellent for volume industrial applications. The OMEGA® 2000 is typically used for batch production of several tons or for continuous operation.



OMEGA® 4000

With a throughput of 1,200 l/h to 4,000 l/h, the OMEGA® 4000 is suitable as a production machine for large-scale industrial applications. The OMEGA® 4000 is designed as a standard machine for industrial use and is typically employed for batch production of several tons or for continuous operation.

Applications



The OMEGA® is perfectly suited for low and high viscosity products:

- Disagglomeration of micro- and nanoparticles
- Lacquer and varnish (water and solvent-based)
- Metal oxides and carbides (Ti, Zn, W, Fe, Co, Ni, ...)
- Pigment and color pastes
- Resin and wax dispersions, melt dispersions
- Carbon nanotubes
- Fiber dispersions
- Emulsion polymerization
- Emulsions (chemical, cosmetic, food and pharmaceutical)
- Polymer dispersions
- Cell disruption (algae)
- Cellulose
- Delamination (layered silicates)



Advantages at a glance

Technical advantages

- Effective dispersion of particle and pigment agglomerates
- Small particle sizes
- Noticeably reduced heat development during dispersion
- High efficiency, short pass-through times
- Reproducible product quality
- Narrow particle size distribution
- Easy cleaning and faster product change
- Gentle dispersing
- For low- and high viscosity products

Commercial advantages

- Simple integration into existing processes, no special adaptation necessary
- High throughput
- Low energy consumption
- Reduced maintenance costs
- Fewer passes for "difficult" dispersions
- Application for both standard and high tech products
- Compact construction (space-saving assembly possible)

Environmental advantages

- Reduced energy consumption compared to standard dispersion technologies
- Low cooling water consumption
- Minimal cleaning agent required for product change
- Increased dissolution of additives





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 4000 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

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