

Particle and Product Design by Top-down Processes

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Abstract

The company NETZSCH-Feinmahltechnik GmbH is a renowned manufacturer of machines and plants for dry and wet grinding, dispersing and mixing of liquid and pasty products as well as classifying of powders.

Many quality criteria of products strongly depends on the particle size distribution of the active ingredients, pigments or fillers. Sometimes even the particle shape is essential for quality criteria like gloss, transparency, color strength, e.g. for paints coating and inks, solubility and shelf life e.g. for pharmaceuticals, emulsions and creams or the capacity, the conductivity and the electrical resistance e.g. for technical ceramic, microelectronics or batteries.

For real comminution or desagglomeration of solid particles or for emulsification and cell disruption different machines can be used. The most suitable equipment is dependent through the desired physical state and quality of the product, the properties of the raw materials.

Agitator bead mills or grinding media free homogenizer systems are the favored machines for manufacturing of many products. But the final product quality, production capacity as well as the energy demand depends on the complete process design from suspending and mixing over pre-grinding to the final grinding step.

The contribution discusses the differences between real comminution and desagglomeration processes. On real experimental results for production of different advanced materials like active pharmaceutical ingredients, textile inks or active

materials for batteries the basics of a good process design as well as the main parameters will be explained in a very clear form.

Biography

After his study of chemical engineering and mechanical engineering at the University in Halle and Freiberg between 1994 and 1999 Dr. Mende did his phd-study in Braunschweig at the Institute of Mechanical Process Engineering. Dr. Mende starts his job with NETZSCH 2004. The title of his phd-thesis is “Mechanical production of nanoparticles by comminution in stirred media mills”. As sales link between the engineering and marketing he supports the sales as specialist for nanotechnology, life science as well as for characterisation of dispersions. Between 2008 and 2015 Dr. Mende was Manager of Research and Development of the NETZSCH-Feinmahltechnik GmbH. Since 2015 Dr. Mende is Manager of Technical and Scientific Communications.

In this function he is responsible for internal and external laboratory trainings and the performance of NETZSCH seminars and workshops worldwide. Furthermore he is in charge of collaborations and networking between NETZSCH and Universities, Institutes or industrial partners.