



PROCESSES FOR YOUR OSD BATCH-PRODUCTION

Product Portfolio

L.B. BOHLE – INNOVATIVE MACHINES AND PROCESSES FOR THE PHARMACEUTICAL INDUSTRY



WEIGHING & DOSING

Accurate weighing helps manage raw materials, meet regulatory requirements and improve product quality.



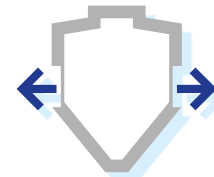
GRINDING & SIEVING

Worldwide, L.B. Bohle's grinding and sieving machines are recognized as the most advanced for precision particle size reduction according to industry standards.



TABLET COATING

The technology-leading coaters from L.B. Bohle guarantee first-class product processing with high profitability.



HANDLING

Perfect handling is a key factor in optimizing production processes.

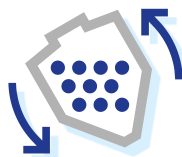
GRANULATION

L.B. Bohle offers a comprehensive range of wet and dry granulation systems for the pharmaceutical industry.



BLENDING

L.B. Bohle pharmaceutical blenders feature homogeneous product blending and flexible pick-up systems for different containers.



CONTINUOUS MANUFACTURING

In the sector of Continuous Manufacturing L.B. Bohle offers components and complete solutions of the QbCon® series. QbCon® enables continuous production by direct compression, wet or dry granulation.



HANDLING AND CONTAINER

Safe and versatile

Perfect handling is critical to optimizing your production processes: Whenever raw materials must be supplied, products transported, safely packaged or stored, a wide variety of containers and lifting systems are used. L.B. Bohle has developed a variety of optimized handling solutions for the sensitive handling of pharmaceutical products. Our wide range of (individual) solutions for storage or transport enables optimal coordination or interlinking of individual process steps.



Container (round and rectangle)



Mobile lifter



PEB Container



Washing and Cleaning Systems



Lifting columns

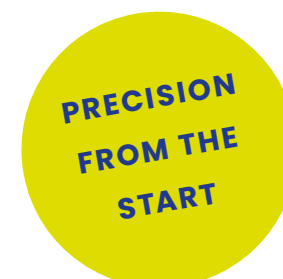
DISPENSING

Precision from the start

L.B. Bohle weighing and dispensing systems are modular and economic solutions, designed to dispense amounts of pharmaceutical powders. To handle active pharmaceutical ingredients (API's) or highly active substances, which require special safety and environmental measures, isolators, and laminar flow cabins are available as integrated solutions. By using L.B. Bohle high containment equipment at critical transfer interfaces, the best human and environmental safety is provided.

Advantages:

- ✓ High-precision weighing application
- ✓ Smart and ergonomic handling technology
- ✓ Highest accuracy even with large weighing ranges - especially with fully automatic systems
- ✓ Optional containment equipment



GRANULATION

BFS Fluid Bed Granulation and Drying



L.B. Bohle has developed fluid bed systems with tangentially mounted spray nozzles and the Bohle Uni Cone BUC®. The innovative Bohle Uni Cone BUC® technology ensures complete fluidization, resulting in uniform granulation and coating results. Due to the absence of twin formation during particle coating, the system offers high product yields.

With significant advantages in process optimization, ergonomics and cleaning, the fluid bed system stands out from other products on the market. L.B. Bohle offers fluid bed systems from laboratory scale up to batch sizes of 960 liters.



GMA

High-Shear Granulator

The GMA high-shear granulator is a granulation system specially optimized for pharmaceutical applications. The impeller with high shear and compaction effect guarantees effective granulation. The chopper prevents excessive granule growth and distributes the granulating liquid in the product.

Advantages:

- ✓ Low liquid consumption
- ✓ Closed system
- ✓ Granulation can be controlled according to time, quantity or torque
- ✓ Easy discharge
- ✓ Effective cleaning and complete discharge of water



VMA

Single-Pot Granulator

The VMA single-pot granulator is a granulation system optimized for pharmaceutical applications. The three process steps blending, high-shear wet granulation and drying (vacuum drying, carrier gas drying or drying by microwave heat) are realized in a closed process vessel. The VMA allows batch sizes from 20 to 960 liters.

Advantages:

- ✓ Small footprint
- ✓ Simple through-the-wall mounting
- ✓ Easy handling and cleaning
- ✓ Installation in hazardous areas

COMPACT GRANULATION MODULE

Small footprint, highest quality

The compact module is the effective solution for optimizing classical wet granulation and drying in an economical and ergonomic way. The individual components - GMA high-shear granulator, BTS wet screen, BFS fluid bed, Bohle Uni Cone BUC®, cyclone separator and BTS wet screen - are optimally combined in a single unit. Process, cleaning, control, explosion protection, zone concept and qualification are perfectly matched.

Advantages:

- ✓ Small footprint and minimal height
- ✓ Multipurpose use for multiple processes
- ✓ One control panel for both systems
- ✓ WIP cleaning ensures fast and effective cleaning



ROLLER COMPACTOR BRC

L.B. Bohle meets the increasing market demand for continuous processes with the BRC 25 and the BRC 100, an innovative dry granulator with gap control. The BRC enables high production capacity with minimal material loss.

This is achieved by fast and precise force control of the compacting rolls with a purely electromechanical roll drive. The BRC's innovative gap control ensures uniform compaction of the material over a wide production range from 1 to 400 kg/h.

Advantages:

- ✓ Hygienic design and effective cleaning through integrated WIP nozzles
- ✓ Versatile and gentle particle size calibration
- ✓ Integrated conical sieve (BTS) - optional oscillating sieve (BRS)
- ✓ PAT integration optional
- ✓ Optional containment equipment



QbCon® 1 – CONTINUOUS WET GRANULATION AND DRYING

With the QbCon® 1, we offer the optimal entry into continuous production. Our truly continuous wet granulator and dryer for research and development ensures improved product quality while increasing flexibility and operator safety.

Advantages:

- ✓ Material flow from raw material to dried granules in a truly continuous process
- ✓ Fully automatic filter cleaning during the drying process with unprecedented consistency
- ✓ Uniform pellet transport from feeding to discharge
- ✓ Very short residence time and narrow residence time distribution
- ✓ Easy scale-up for new product development

OUTPUT
0.5 – 2.5 kg/h



MILLING & SIEVING *Flexible & productive*

BTM HAMMER MILL

The user-friendly, modular and compact GMP-compliant design of the BTM Bohle Turbo Mill guarantees excellent grinding results even for extremely complex products. Easy transport on a mobile chassis and height adjustment ensures flexible use.

Advantages:

- ✓ Particle size < 100 µm
- ✓ Sieve size from 0.1 to 4 mm
- ✓ Speed ranges from 600 – 6,000 rpm
- ✓ Comfortable operation via 7" touch panel
- ✓ User and recipe management, PDF batch print function via USB interface



**WITH
HMI**

BTS SIEVING MACHINE

The patented Bohle Turbo Sieve BTS is used for the calibration of particle sizes of dry or wet products and guarantees an optimal particle size distribution. The BTS allows a production capacity of 2 to 3 tons/hour. On request, the BTS is also available in an explosion-proof version according to ATEX directives and with RFID technology.

The screening system is conveniently operated via a 7" touch panel.



**WITH
HMI**

BLENDING TECHNOLOGY

Market-leading and highly flexible

CONTAINER BLENDER – PM

With the patented blending elements on the inside of the container lid, the L.B. Bohle container blenders ensure homogeneous blending of dry powder batches. The blending process can be scaled for volumes from 4 to 12,000 liters. For optimum flexibility, blending containers with different capacities are available. The patented L.B. Bohle blending process allows effective blending at a loading of between 20 and 85 % with a density of 0.2 to 1.2 kg/l.

Control:

- ✓ PLC of the latest generation
- ✓ Design: reduced, rotatable, hygienic design
- ✓ USB connection as standard
- ✓ Operation via a 15" HMI



Advantages:

- ✓ Fast, simple, and cost-effective installation and low maintenance requirements
- ✓ Significantly smaller footprint than comparable blenders
- ✓ Quick product changeover by exchanging the blending containers
- ✓ The PM is also used as a grinding station for container-to-container transport
- ✓ Containment execution optional
- ✓ Chopper as option

TABLET COATING

The technological leader

BFC FILM COATER

The high-end version of the L.B. Bohle coater has been specially designed for fast and trouble-free coating and ensures unparalleled uniformity and efficiency of tablet coating. A high containment version is also available. The different L.B. Bohle Coaters allow batch sizes from 50 to 980 liters.

Advantages:

- ✓ Best coating uniformity RSD < 2 %
- ✓ Patented spirals: excellent blending and gentle product agitation
- ✓ Minimal spray losses < 5 %
- ✓ Up to 35 % reduction in process time due to high number of nozzles and efficient airflow
- ✓ Geometrically similar pans for easy scale-up
- ✓ Quick and easy cleaning
- ✓ Sophisticated control system



BTC TABLET COATER

Compared to conventional tablet coating systems, the BTC offers up to 35 % faster process times for pharmaceutical and nutraceutical products, giving you a cost-saving system for more efficient and longer-lasting processes.

Advantages:

- ✓ Homogeneous blending
- ✓ Gentle, continuous tablet guidance: no tablet breakage or twinning
- ✓ Nozzles with anti-bearding caps
- ✓ Minimization of spray losses
- ✓ Fast and complete discharge
- ✓ Secured scale-up



BFC 5 LABORATORY COATER



The BFC 5 is the optimal system for research and development and for process optimization.

Designed as a stand-alone unit, the air, electrical and control technology are integrated in the system.

Advantages:

- ✓ Batch sizes from 2 - 13 liters
- ✓ BFC 5 can be operated with one of two different pan sizes. Pans are changed manually
- ✓ The capacity of the smaller pan can be reduced with a divider plate
- ✓ Extensive batch management tools and a broad range of tools for preparing recipes
- ✓ Multipanel visualization with touch panel
- ✓ Manual cleaning

TABLET CHECK & SORTING

KA TABLET CHECKER

The KA inspection machine is used for mechanical control of the thickness of sugar- or film-coated pills, capsules, or tablets. The KA has a capacity of up to 1,000,000 tablets/hour.

Advantages:

- ✓ Reproducible settings
- ✓ Precise calibration
- ✓ Valid process
- ✓ Low maintenance and easy cleaning
- ✓ Versatile integration into production process





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