Contract Manufacturing
Fluid Bed Technology

Drying.
Spray granulation.
Coating.
Agglomeration.
Instantization.
Our fluid bed processors: technology for innovative products

Drying, granulation, coating, agglomeration, instantization: with our fluid bed processors we make up individual products as powders or granulates - from very small trial amounts to large batches.

SternMaid - you partner for toll production by fluid bed technology

SternMaid is one of the leading contract manufacturers of food ingredients, excipients and food supplements in powder form. Our fluid bed processor qualified according to Part II of the EU GMP Guide guarantees gentle handling, especially of thermosensitive products.

With our laboratory-scale fluid bed unit for technical trials we develop tailor-made products in close collaboration with our customers. The sample batches produced there then constitute the basis for reproducible results on the commercial-scale production plant.

Product fields
- Pharmaceutical excipients
- Functional food
- Food supplements
- Food ingredients

Services offered
- Drying
- Spray granulation
- Agglomeration
- Instantization
- Coating
**State-of-the-art fluid bed technology for a diversity of applications**

Our multifunctional fluid bed processor offers a large number of technical options and was designed specially for the wide range of applications in contract manufacturing. The processor permits both batch and continuous operation. In the continuous process, components in powder and liquid form are added continually. The resulting product is run through a screen tower; the undersized material and the oversized particles ground down in-line are returned to the fluid bed process. After metal detection, the fraction with the desired particle size is packaged.

Comprehensive equipment is also available for the liquid phase; it includes cooling and heating chambers, melting grids, heated vessels with anchor mixers, jet mixers and a homogenizer.

Our process engineers and our equipment fulfill all the requirements for realizing your products with value-added.

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**Facts and figures**

<table>
<thead>
<tr>
<th><strong>Laboratory unit</strong></th>
<th><strong>Production unit</strong></th>
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<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Glatt Procell 5 with conventional bottom screen and spouted bed</td>
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<tr>
<td></td>
<td>Glatt AGT 1600 T with 1.60 m bottom screen diameter and insertable spouted bed</td>
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<tr>
<td><strong>Production method</strong></td>
<td>Batch or continuous operation</td>
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<tr>
<td></td>
<td>Batch or continuous operation</td>
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<tr>
<td><strong>Batch size</strong></td>
<td>0.5–1.0 kg</td>
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<td></td>
<td>250–500 kg</td>
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<tr>
<td><strong>Evaporation speed</strong></td>
<td>Up to 5 l/h</td>
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<td></td>
<td>Up to 500 l/h</td>
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<tr>
<td><strong>Process air</strong></td>
<td>20–130 °C, up to 250 m³/h filter class F9</td>
</tr>
<tr>
<td></td>
<td>20–130 °C, up to 14,000 m³/h filter class H13, demoisturing &lt;8g/kg air</td>
</tr>
<tr>
<td><strong>Nozzle arrangement</strong></td>
<td>Top and bottom</td>
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<td></td>
<td>Top and bottom</td>
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<tr>
<td><strong>Inserts</strong></td>
<td>Optional Wurster insert</td>
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<tr>
<td><strong>Piping</strong></td>
<td>Heated for fat coating etc.</td>
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<tr>
<td><strong>Particle size definition</strong></td>
<td>Windsifter + screen tower</td>
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<tr>
<td></td>
<td>Windsifter principle + screen tower and pin mill for the continuous process</td>
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</tbody>
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Spray granulation.
Gentle drying, layer by layer.

In the drying / spray granulation process, powders or granulates are produced from liquids.

In the fluid bed, a liquid (solution, suspension) is sprayed onto the starter seeds and the moisture evaporated with the variable heating system. In this way, layer after layer forms and results in a compact, spherical onion structure.

In contrast to the spray drying process, the retention time of the product in the fluid bed can be selected freely; this permits spray granulation of heat-sensitive products at very low temperatures. Residual moisture and particle size can be adjusted individually.

Product attributes
- High level of final activity through minimal heat damage
- Excellent dispersibility in liquids
- Very good flow properties and accurate dosing
- Better tabletting
- No separation of the individual components
- No dust or abrasion
- Narrow range of particle sizes
- High bulk density

Examples of products
- Excipients
- Enzymes
- Vitamins
- Omega-3
- Natural and synthetic colourants
- Plant extracts
- Protein hydrolyzates
- Fermentation products
Coating.
Perfect protection of the core.

In the coating process, one or more layers or films are applied to particles already in place

In the fluid bed the particles are kept separate and suspended. This creates optimum conditions for the even application of 100% complete layers. Various materials can be used for the protective layers. Active ingredients can be encapsulated safely with waxes or fats by the hot melt method.

For film coating, too, there are a great many materials available. They include maltodextrin, celluloses and shellac, which are sprayed on as a solution and subsequently dried. In this way, protection of the active substances, controlled release or colouring can be achieved.

Product attributes
- Masking of unpleasant tastes or odours
- Protection against moisture, acids (gastro-resistance) or oxidation
- Controlled release of active ingredients (retarded delivery)
- Defined solubility
- Very good flow properties and accurate dosing
- Dust-free
- Narrow range of particle sizes
- Prolonged shelf-life

Examples of products
- Excipients
- Extrudates
- Flavourings
- Colourants
- Enzymes
- Vitamins
- Omega-3
- Food acids
- Amino acids
- Minerals and trace elements
Agglomeration.
The ideal way to a stable mixture.

In the agglomeration process, particles are stuck together to form a “blackberry” structure.

The fluid bed is the ideal mixer. But it has another major advantage, too: the state of the homogeneous mixture can be “frozen”. The individual components in powder form are stuck together to form larger particles. In the simplest case the adhesive used is water or a bridge-forming solution, for example sugar.

In contrast to mixtures of powders only, with their strong tendency to separate, it is possible to ensure homogeneous distribution of the active ingredients. And of course other attributes of such compounds are optimized at the same time.

Product attributes
- Less tendency to separate
- Optimized instantizing properties
- Good flow properties and accurate dosing
- Smaller proportion of fine dust
- Better tabletting
- Defined particle size distribution
- Low bulk density

Examples of products
- Excipients
- Vitamins and premixes
- Plant extracts
- Proteins
- Dry beverage bases
- Enzymes
- Dried milk
- Hydrocolloids
- Flours and starches
- Stabilising systems
- Salts and acids
Instantization.
Combined processes for instantly soluble powders.

Several different methods can be used for making instantly soluble powders with the fluid bed processor, depending on the starting material and the requirements of the product.

When instantizing your products we work with suitable solubilizers and optimize the powder structure. The aim is to improve the wettability and dispersibility of your powdered substances and extracts and enhance their solubility and flow properties. Thanks to the many possibilities offered by fluid bed technology, several different methods can be combined. In order to meet our customers’ requirements in every respect, we develop sample products on our laboratory-scale fluid bed unit and test these thoroughly before starting commercial production.

Product attributes
- Better dispersibility
- Enhanced wetting properties
- Better flow properties
- Rapid solubility

Examples of products
- Excipients
- Powders for beverages and use in dispensers
- Baby food
- Sugar replacers
- Soups and sauces
- Dried milk
- Whey proteins
- Food supplements
- Hydrocolloids

Year of establishment
• 1996

Number of employees
• 200

Location
• Wittenburg (Mecklenburg-West Pomerania)
• Direct connection to the A 24 motorway
• 1 hour by car from Hamburg

Business fields
• Toll production of premixes, food ingredients, food supplements and pharmaceutical active ingredients and excipients
• Co-packing

Range of services
• Drying
• Spray granulation
• Coating
• Agglomeration
• Instantization
• Blending
• Milling
• Fractionation
• Co-packing

Process technology
• 1 pilot fluid bed processor
• 1 qualified fluid bed processor
• 3 fully automated, multifunctional blending lines
• 4 semi-automated multifunctional blending lines
• 1 qualified counter-current container blending unit
• 3 blending lines for liquids
• 1 fractionation plant
• Various packaging lines

Certifications
• GMP certification
• ISO 9001:2008
• IFS Higher Level
• BRC Grade A
• HACCP system
• Allergen management
• EU health mark for dairy products
• Licence for the production of dietetic foods
• Organic Products Seal
• Kosher and halal management

Filling into industrial packs
• Fibreboard boxes, drums, sacks, FIBCs, cans, IBCs

Filling into consumer packs
• Cans, tubular and block-bottom bags, folding boxes

Logistics
• Barcode-controlled high-bay and wide-aisle warehouse with space for 20,000 pallets
• Computer-aided real-time recording of all movements of goods

Area of the site
• 60,000 m²

Built-over area
• 20,000 m²

Production capacities
• Fluid bed processor: between 1,000 and 3,000 tonnes p.a., depending on the processing method
• Blending technology: 40,000 tonnes p.a.

Silo capacity
• 280 m³

Come and see our modern production plant in Wittenburg!
We are looking forward to a visit from you.