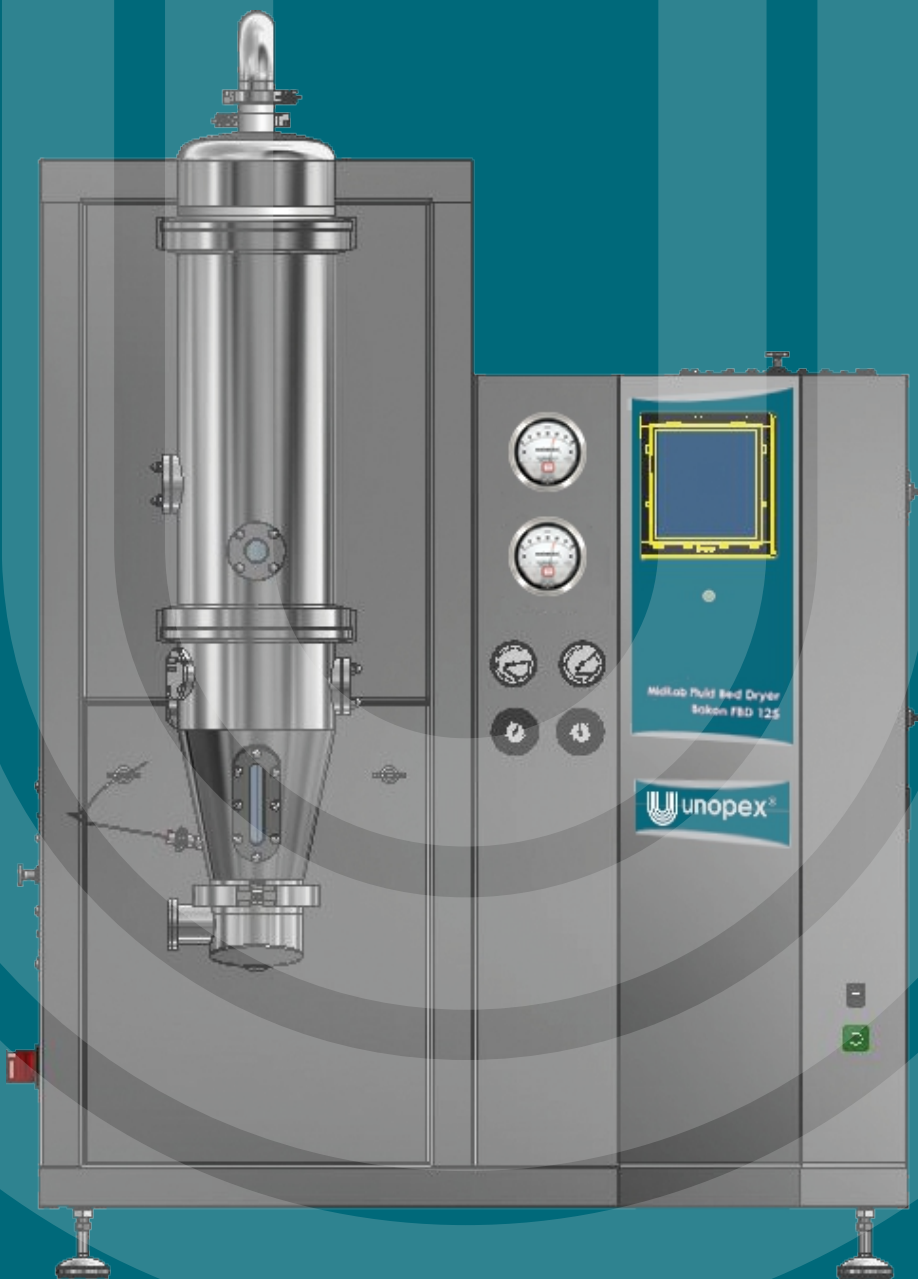


Fluid Bed Technology



Unopex Fluid Bed Systems

for drying, granulating/agglomerating and coating of powders and granules

Unopex is a leading manufacturer and supplier of process equipment systems to the food, pharmaceutical and chemical industries.

Unopex Fluid Bed Systems are ideal for drying, granulation/agglomeration and coating applications with top spray and bottom-spray (Wurster) configurations. They offer maximum performance to prepare formulations and to produce small product volumes.

The flexible multi-function Unopex Fluid Bed Systems offer three processing options in a single unit

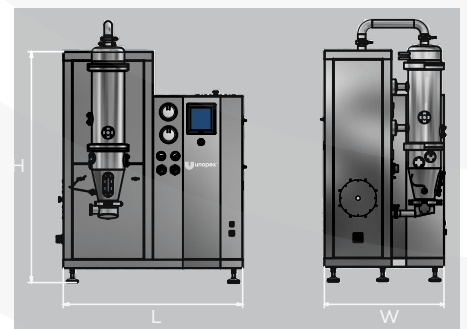
- Drying
- Granulation/Agglomeration
- Coating

Applications

- Pharmaceuticals
- Foodstuffs
- Chemicals
- Dairy Products
- Polymers

Features

- multifunctional operation includes drying, top spray granulation and bottom spray (Wurster) coating
- compact & modular & ergonomic design
- simple filling and discharging with easily removable product vessels
- precise air volume monitoring
- quick disconnect plugs for all utilities
- simple to operate
- simple cleaning due to easy-to-clean design
- special air distributor plate for homogenous product fluidization
- continuous blow-back filter cleaning without stopping the process
- equipped with PLC control and operator touch panel
- turnkey mobile system ready for connection
- no dead zones in the product container
- drying/granulating/coating with two exchangeable product vessels



Principle of Operation

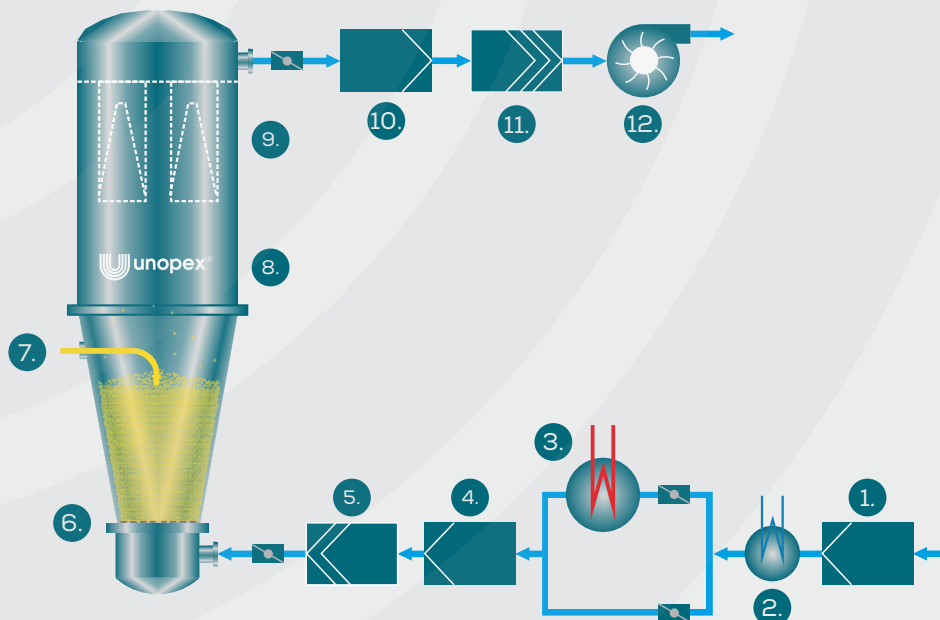
Purpose of Fluid Bed System is to suspend powders or granulates by supporting air stream, which at the same time dries the product.

During the fluidization, the entire surface area of the product to be dried is exposed to the air stream, thus effecting an optimal drying while spraying binders and active substances.

Simultaneously, an agglomeration is achieved, converting the powdery substances into granulates.

- The inlet air is sucked from the outside across prefilter and flows upwards through the machine tower.
- The prefilter cleans the fresh inlet air and the heater (steam or electric heating) preconditions the air to the desired air temperature.
- The heated air flows through the lower section across the mesh sieve of the product container.
- The spray liquid is injected into the fluid bed via a spray nozzle attached to the spray housing.
- A bag type filter integrated into the filter housing retains most of the suspended product particles.
- The process air flows across the exhaust air flap to the exhaust fan unit.

Flow Chart



- | | | | |
|-----------------|--------------------------|---------------------|-------------------|
| 1. inlet filter | 4. pre filter | 7. feed | 10. outlet filter |
| 2. dehumidifier | 5. hepa filter | 8. filter | 11. hepa filter |
| 3. heater | 6. air distributor plate | 9. blow-back filter | 12. fan |

Drying

Product container contains a moist product in either the granulated or powder form. The product particles are fluidized by means of an upward flowing hot air stream and are carefully dried until the required moisture content is reached.

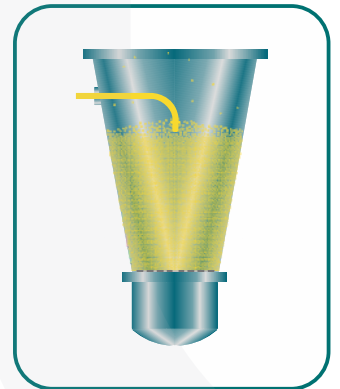
The retention time of the product in the fluid bed can be selected freely; this permits spray granulation of heat-sensitive products at very low temperatures. Residual moisture and particle size can be adjusted individually.



Granulation/Agglomeration

The aim in granulation/agglomeration is to produce dust-free and flowable granulates from powders. A granulate is obtained by agglomerating the fine particles with the help of a liquid binder, sprayed on to the fluid bed.

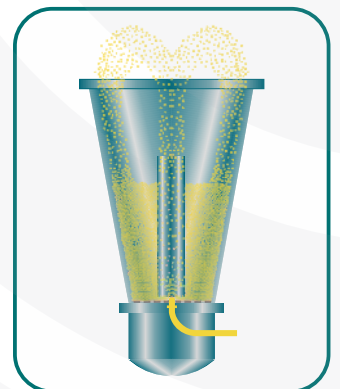
The top-spraying technique can be used for granulating/agglomerating or coating the particles.



Coating

The Wurster (bottom-spraying) technique produces a particularly uniform surface on the coated products.

By coating, protection of the active substances, controlled release or colouring can be achieved.



Instantization

Several different methods can be used for making instantly soluble powders with the Unopex Fluid Bed Processors, depending on the starting material and the requirements of the product.

When instantizing your products, it is important to work with suitable solubilizers and optimize the powder structure. The aim is to improve the wettability and dispersibility of your powdered substances or extracts and enhance their solubility and flow properties.

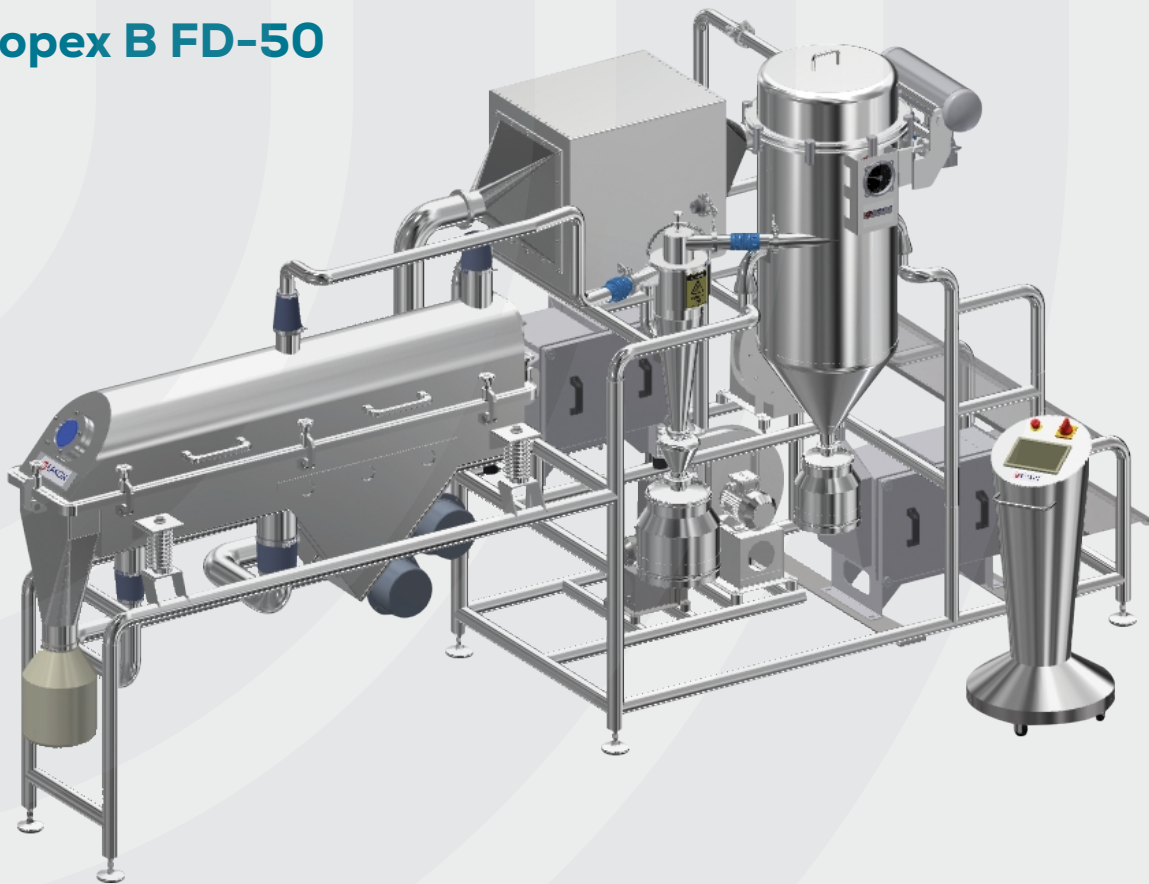
Continuous Fluid Bed

Unopex Pilot Scale Continuous Fluid Bed System has been designed for R&D projects as well as small scale productions. The system contains a specially designed air distributor plate and is successfully used with all types of powders, agglomerates and granulates.

Technical Specifications

- Type: continuous fluid bed (B FD-50)
- Bed area: 0,5 m²
- Air volume: 1000 kg/h
- Inlet temperature: 150-300 °C
- Air distributor: available with different perforation size
- Fines recovery: in cyclone collector and filter

Unopex B FD-50





We are thrilled to contribute to researchers and producers all over the world to easily realize their projects that protect nature and serve humanity with our expertise, experience, motivation, talent, product and services.

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- Izmir / Turkiye
- +90 232 479 80 17
- unopex@unopex.com
- www.unopex.com

