INGETECSA

Fluidized Bed Technology

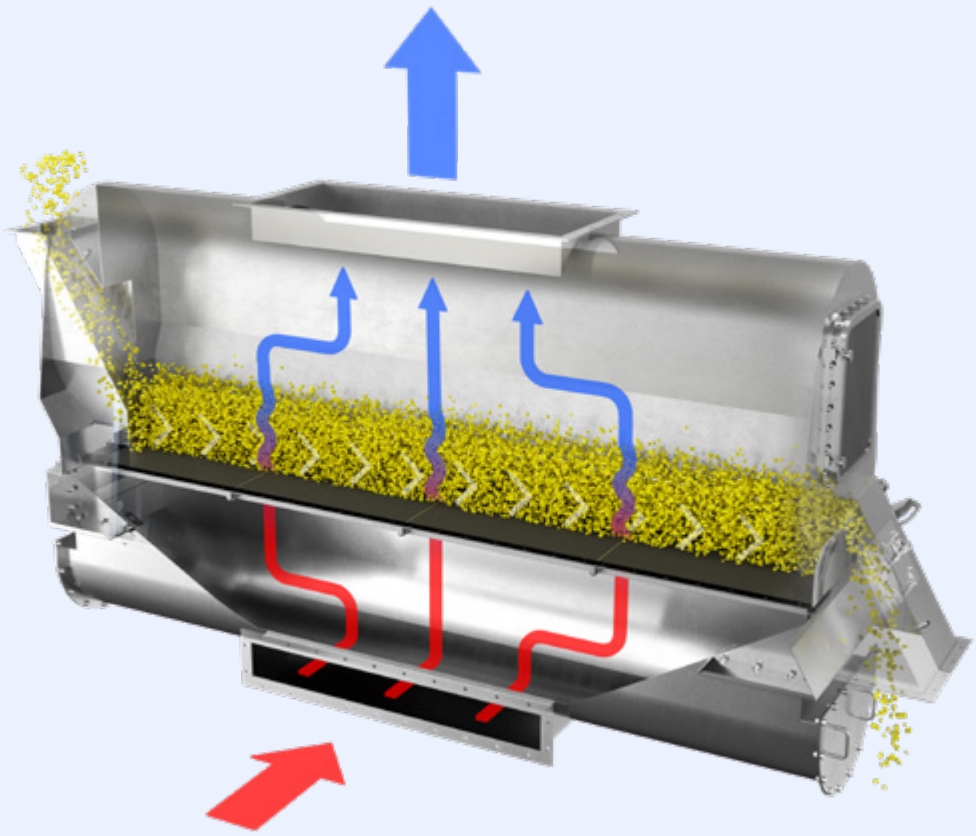
- Static technology: highest availabilities
- Most careful product treatment
- Substantial energy cost savings possible

INGETECSA's fluidized bed design is built on the principle of static technology. The absence of moving parts results in unrivalled uptimes.

Advanced air distribution ensures a very intensive yet careful fluidization of the product to minimize possible particle damage, but **maximises drying efficiency.**

Accurate process control guarantees a **constant product quality**, even when a wide range of particle sizes are dried. **Substantial energy savings** are achieved by reclaiming energy from steam or waste heat to further reduce operational costs.

- **Products that require longer residence times**
- **Processes that require careful product treatment**
- **Drying processes at lower temperatures**



Advantages

Entirely static drying process

No moving parts. Therefore, no equipment failure due to cracking of nozzle plates or their frames. Ingetecsa Static fluidized beds offer unparalleled availabilities against its peers.

Process control and floor space

Static fluidized beds use higher air speeds for the fluidization. It makes the process easier and more accurate to control and therefore use less floor space.

Maintenance requirement

The absence of moving parts in the fluidized bed results in an absolute minimum of maintenance. A comforting thought.

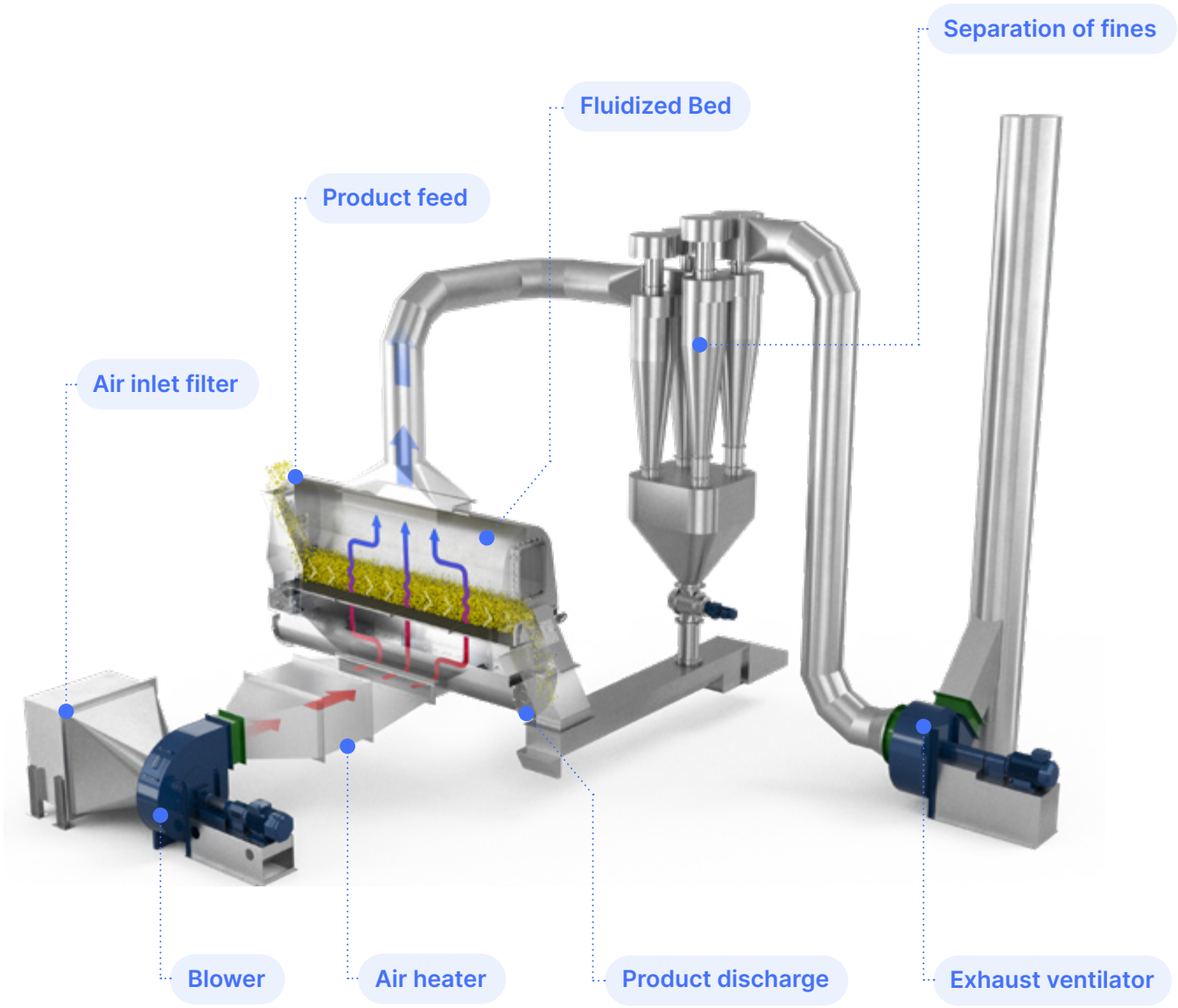
Gentle product treatment

Product is always surrounded by air cushions so the process is as gentle as possible. This minimizes product erosion, so dust formation is slim compared to other technologies.

Energy saving

When heated by steam, energy can be saved up to a guaranteed 25% by reclaiming energy from condensates. This has a substantial impact on the operational expenditures.

"Fluidization is entirely based on air pressure, not on vibration."


Separation of fines
Fluidized Bed
Product feed
Air inlet filter
Blower
Air heater
Product discharge
Exhaust ventilator

Working Principle

Filtered air is pushed by a blower through a heater to the wind box. The wind box is a largely dimensioned space where air distributes itself uniformly before it flows upwards through the fluidization plate. Speed and pressure are automatically equalized in the nozzles of the fluidization plate. The nozzles are oriented towards the weir. Air speeds are sufficiently high thus avoiding blockages occurring in the nozzles.

Product is introduced at one side of the unit on the fluidization plate. At the opposite end is the weir where the product overflows. Despite the high turbulence around the particles, the mechanical treatment is very gentle both from a mechanical and from a thermal viewpoint as particles are lifted by the air and float on the resulting air cushions.

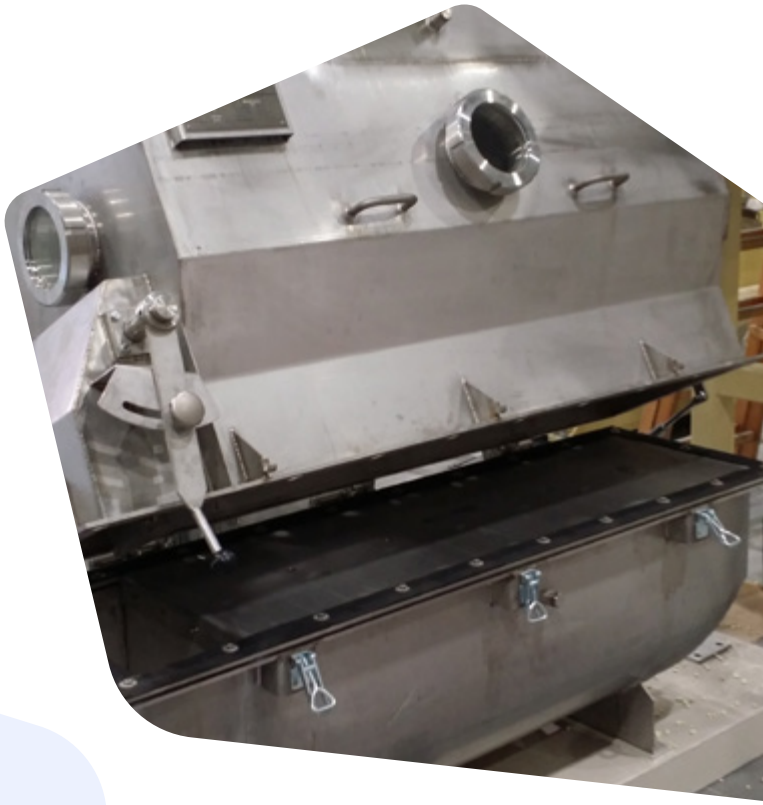
Product travels from one end to the opposite end in a plug flow motion. **Fluidization is entirely based on the product lift by the air flow through the product layer. Since there is no vibration used for the fluidization, there is virtually no dust formation.** So, any dust that may have come with the product is evacuated to a dust collector such as a cyclone or bag filter house.

Flexibility ↘

The feed rate, density of the product bed and the weir height determine the residence time of the product in the dryer. Emptying of the unit is by lowering or opening of the weir. **As the product fluidizes like a boiling liquid, it empties in a matter of only seconds.**

Multiple temperature zones in the unit are possible by segregating the wind box. For that, each section is fed with air at different temperatures. This way, **drying and cooling of particles is possible in the same unit.** The exhausted air flows can be combinedly or separately evacuated.

Other combinations such as explosion tight, internal heat exchangers, self-emptying, expanded bed, solvent recovery, multi-stages, can be integrated into the design.



"Product is surrounded by air cushions so there is virtually no dust formation."

Typical Applications

Chemical Industry

Food Industry

Minerals

EXAMPLES

- Maize, wheat, rice and cereal products
- Potatoes, vegetables and fruit
- Pulps and fibres
- Intermediate and basic chemical industries
- Polymers
- Resins and ureas
- Fertilizers
- Biotechnology
- Cosmetic and pharmaceutical
- Detergents
- Minerals

- **Products that need accurate processing**
- **Brittle products**
- **Processes that require maximum availability and reliability**

Let's test together ↘

INGETECSA's pilot plant and R&D centre, located in Barcelona, is available to our customers to simulate and optimize production processes, test our technology and define the ideal configuration of the customers' required industrial equipment.

Apart from the continuous tests with the pilot units, INGETECSA also has a laboratory where it is possible to analyse the results obtained and carry out small-scale simulations.

Test rigs are also available for test work at the client's premises in the event that longer duration tests are required, or if the product can't be transported to our test centre. Our engineers assemble the equipment, conduct the tests or instruct the client's personnel on the correct operation of the machine.

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