INGETECSA

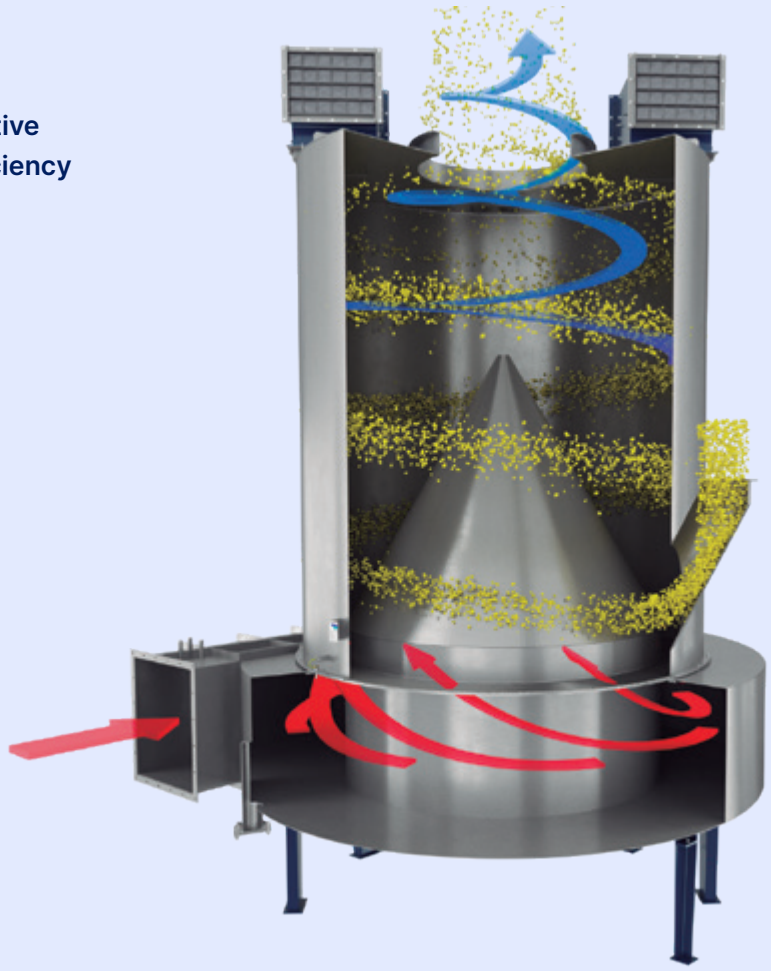
Spiral Flash Dryer

- Superior product quality
- Static technology, very high availability
- Lowest total cost of ownership

The Spiral Flash Dryer is a static technology that INGETECSA employs for drying or cooling. The efficiency is so high, that operating costs are lower, and product quality higher and safer than any other flash dryer.

The simplicity of the superb design makes the Spiral Flash Dryer unique. The entirely static drying room maximises the uptime. The extremely turbulent air handles even sticky products while the final product temperatures are lower than in other flash dryers. Installation is normally entirely indoors and quick as the dryer is most compact and self-supporting.

- **For processes that need superior product quality**
- **Products that are cost sensitive and require high energy efficiency**
- **Indoor installation possible**



Advantages

High product quality

- Total absence of moving parts and dead zones in the drying area.
- Bacteria build up or product hold up and overdrying/ burning are avoided.
- The lower product temperature improves product quality.

Energy saving

- More efficient water evaporation, reducing the heat requirement.
- When heated by steam, even more energy can be saved up to a guaranteed 25% reduction by reclaiming energy from condensates.

Entirely static drying process

No unexpected downtime, highest safety, excellent hygiene due to lack of dead zones. Static flash dryers offer unparalleled availabilities in its class.

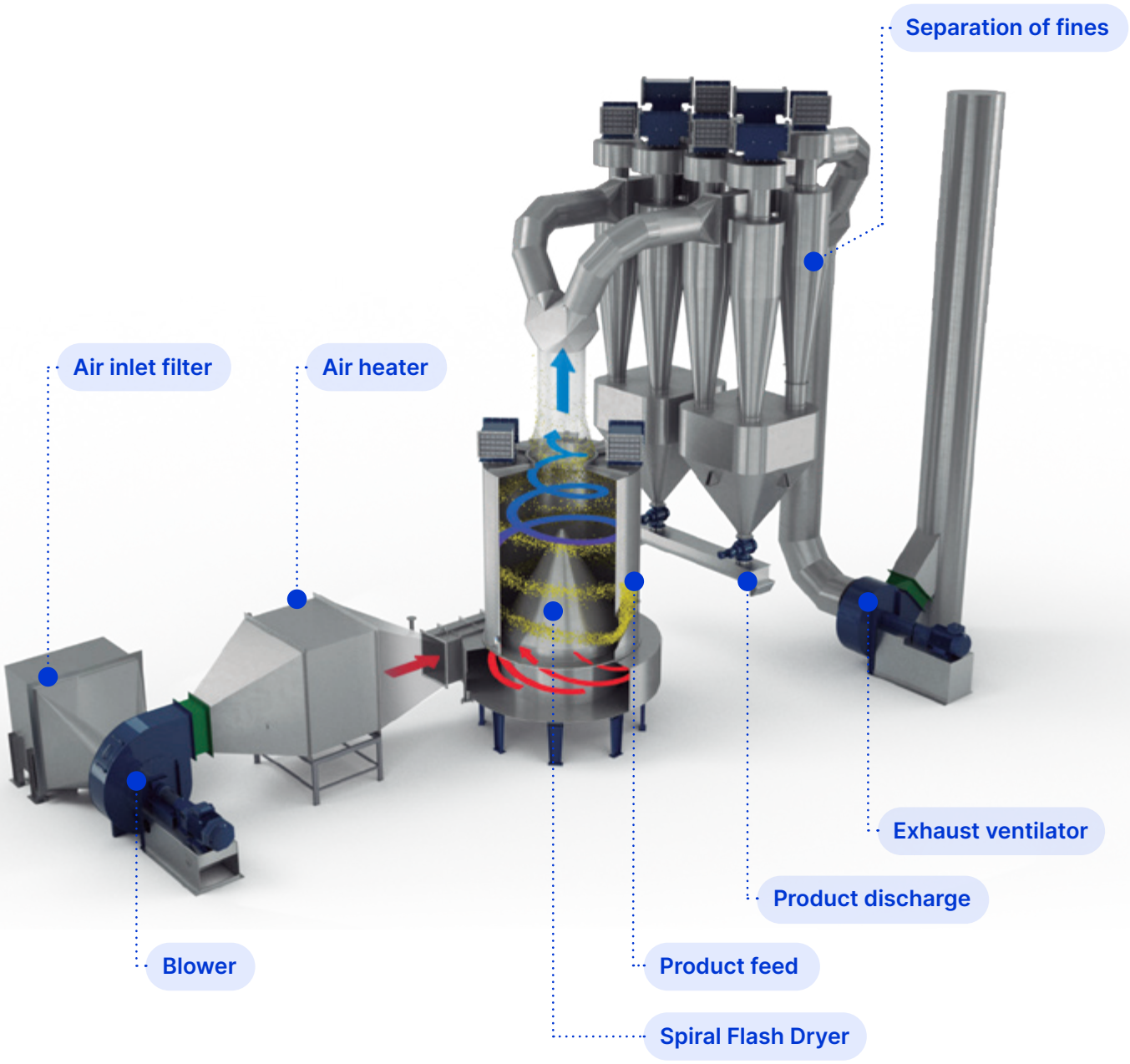
Floor space

The entire dryer can be installed indoors and is lower than a cyclone or bag filter house.

Maintenance requirement

The design is such that maintenance is reduced to a minimum and can be dealt with during scheduled shutdown periods. Full access inside is effortless.

“Static flash dryers offer unparalleled availabilities in its class.”


Separation of fines
Air inlet filter
Air heater
Exhaust ventilator
Product discharge
Blower
Product feed
Spiral Flash Dryer

Working principle

Hot, filtered air is pushed by a blower to the plenum of the Spiral Flash Dryer. From here, it flows upwards through a static blade ring. The blades have a fixed orientation. They are positioned in such a way that the highly turbulent air follows a spiral-shaped pattern towards the top of the drying chamber. In the centre of the blade ring is a cone with an opening that can be used to discharge heavy or off-spec particles.

Product is introduced just above the blade ring. As the product drops, it is instantly mixed in the hot turbulent air flow. In a matter of seconds, particles are dried to specification while they are making their way up to the dust collector for separation from the drying air.

The spiral flow pattern makes the dryer so compact that indoor installation has finally become possible. Because the **Spiral Flash Dryer is static, it provides maximum availability, ensures highest safety, and needs little care.**

Unique concept ↘

Unlike in any other flash dryer, the drying air in the Spiral Flash Dryer travels partly cross-current and partly co-current. It makes the evaporation rate constantly high across the entire dryer. This lowers the end temperature of the product. **It is why the heat requirement for drying is lower.**

In the drying chamber are no moving parts or dead zones where product or bacteria can hold up, overdry or burn. Breaking up of lumps or coarser particles occurs entirely pneumatically by the highly turbulent air. Coarser particles automatically recirculate more often by tumbling back in the gas stream on their way up. **For these reasons, the Spiral Flash Dryer is superior in product quality and hygiene.**

“There are no moving parts or dead zones where product or bacteria can hold up, overdry or burn.”

Typical applications

Food & Feed Products

Chemical Industry

Minerals & Metals

EXAMPLES

- Maize, wheat, rice and cereal products
- Potatoes, vegetables and fruit
- Pulps and fibres
- Minerals
- Intermediate and basicchemical industries
- Polymers
- Pigments
- Fertilisers
- Biotechnology
- Cosmetic and pharmaceutical
- Detergents

- **Products with a wider range of particle sizes**
- **Temperature sensitive products**
- **Processes that require maximum availability and reliability**

Typical applications

Food and feed applications ↘

The immense variety in composition, viscosity, and stickiness, requires a range of dryer capabilities. The Spiral Flash Dryer is a unique technology that excels in a rapid yet gentle drying methodology. Of paramount importance is always the retention of colour, functionality and organoleptic properties.

The Spiral Flash Dryer is ideal for drying proteins, fibres, and pasty products.

Superfoods and nutraceuticals ↘

Superfoods and nutraceuticals are high value products with stringent production requirements. In this segment, the Spiral Flash Dryer is in its element.

The Spiral Flash Dryer dries these products in a matter of seconds in a full continuous operation. With drying temperatures around 45°C, the Spiral Flash Dryer is able to compete with vacuum-drying technologies.

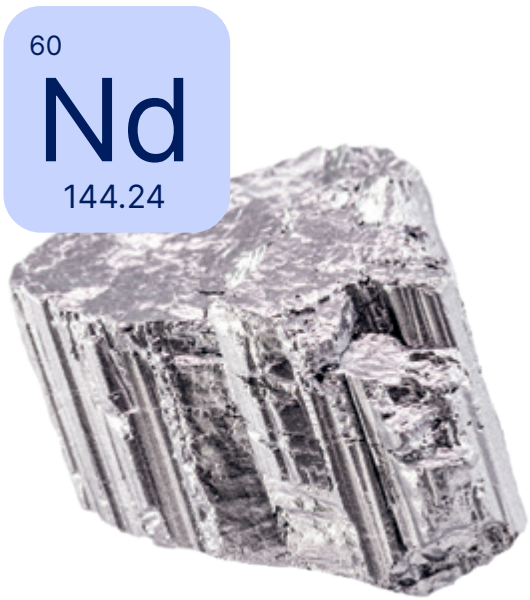
Its delicate drying regime preserves the high product functionality and captures value in this fast-growing product segment.

Mineral and chemical applications ↘

The Spiral Flash Dryer shows its strength when drying filter cakes, granules and powders. The static blade ring in the bottom of the dryer forms the heart of the installation. It creates such a turbulent and highly effective air flow that any feed is instantly dispersed without the aid of fast-rotating knives or blades.

Abrasive, corrosive, toxic, and radioactive products can all be processed in the Spiral Flash Dryer. The drying process takes place under a light vacuum. As a result of the static technology, cleaning is reduced to a minimum.

The Spiral Flash Dryer has proven to offer one of the highest efficiencies, availabilities and reliabilities in its class.



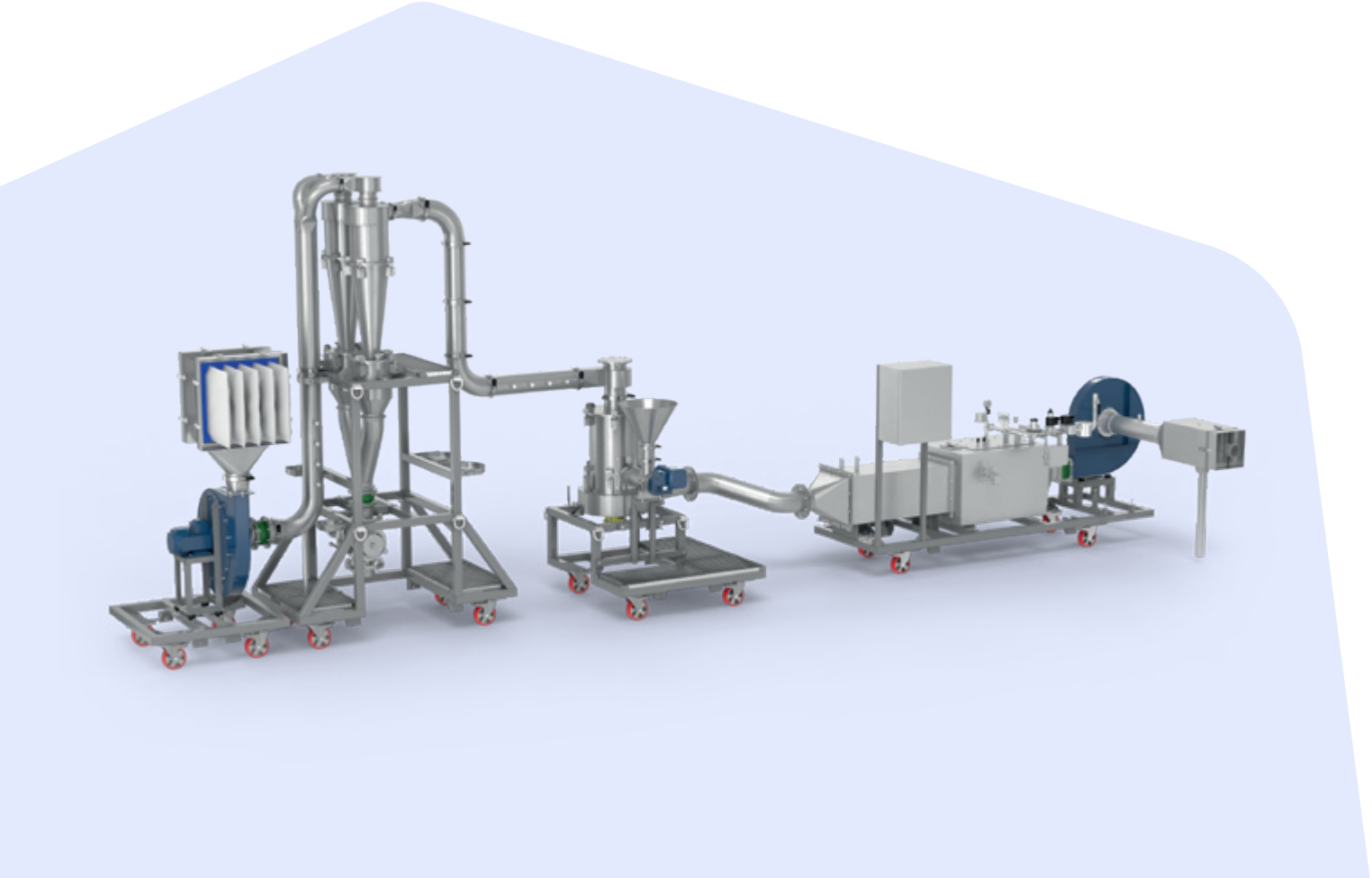
Processing Plant at a Lithium mine

Food grade pilot technology ↘

Ingetecsa maintains a pool of several pilot units. Pilot units are ideal for testing products, making samples, for process guarantee and scale up.

The latest Spiral Flash pilot unit comes in its own purpose-built 40 ft. shipping container and travels all over the world. It is flexible in set-up, and can be entirely dismantled for cleaning between runs. A fully-automated system logs all data for reporting.

The unit is a true asset for testing food products, but also chemical and mineral products. A compact bag house filter is optionally available in a separate container for testing sub-micronic products.



Let's test together ↘

INGETECSA's pilot plant and R&D centre, located in Barcelona, is available to our customers to simulate and optimise 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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