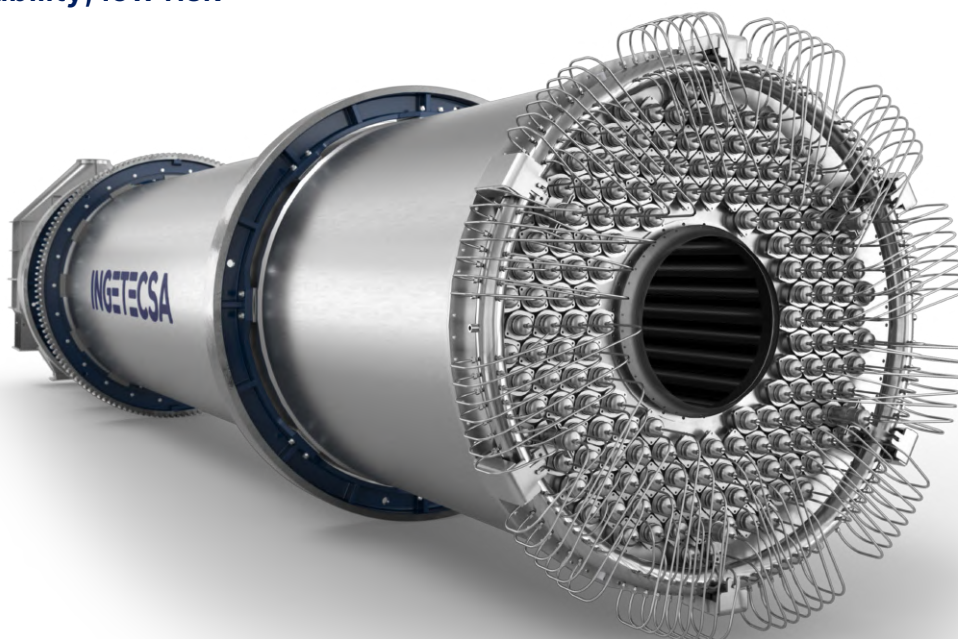


**INGETECSA**

# Rotary Tube Dryer

- Constant uniform product quality
- Lowest energy consumption
- Very high availability, low risk of breakdown

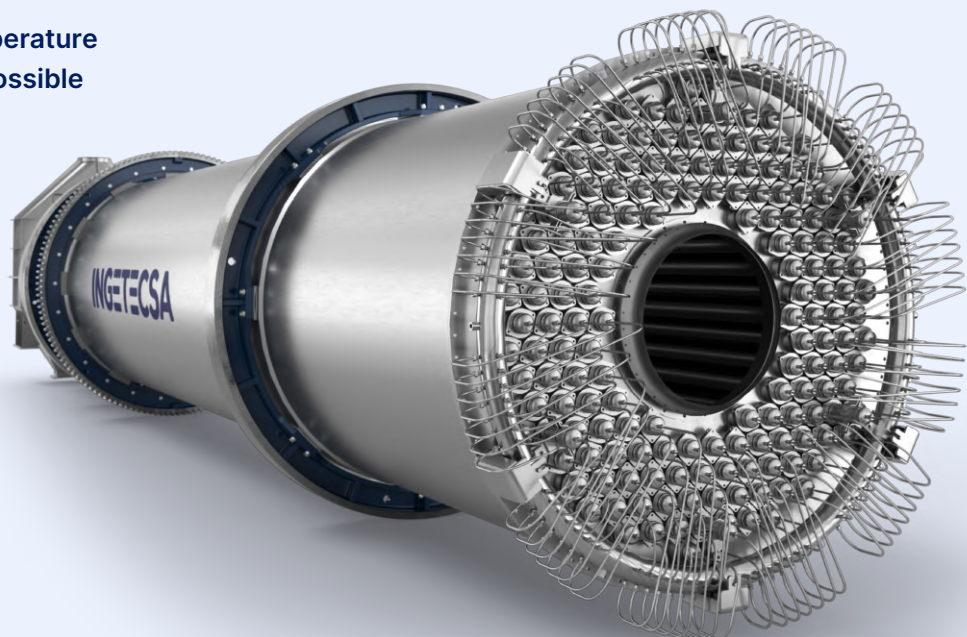


The Rotary Tube Dryer from INGETECSA is the ultimate choice for drying of granules, powders or cakes when constant product quality, lowest production cost and all-year-round availability are the highest priorities.

Steam or oil heated tubes are arranged in such a way within the slowly revolving drum that the product is **uniformly dried** to the required end moisture. Heating indirectly ensures **unparalleled high thermal efficiencies**.

The absence of hot air as a heating carrier results in a compact drying line with **virtually no emission**. Optionally, nitrogen blanketing or a vacuum can be applied to further protect the product.

- Processes that require accurate treatment even with varying feed conditions
- Capable of drying large flows, including erosive and corrosive
- Drying at high temperature or under vacuum possible



## Advantages



### High product quality

- ↳ No dust formation due to the lack of shear forces. As the drum also revolves, typical problems of condensation, cold spots, and the hold up of product and bacteria are avoided
- ↳ Effortless starting and stopping of the machine, even full with product



### Energy saving

The heating medium recirculates in a closed loop back to the boiler. Indirectly heating offers one of the highest energy efficiencies achievable.



### Let's keep it separate

There is no contact between product and heating medium. The heating system is a closed circuit



### Tougher than tough

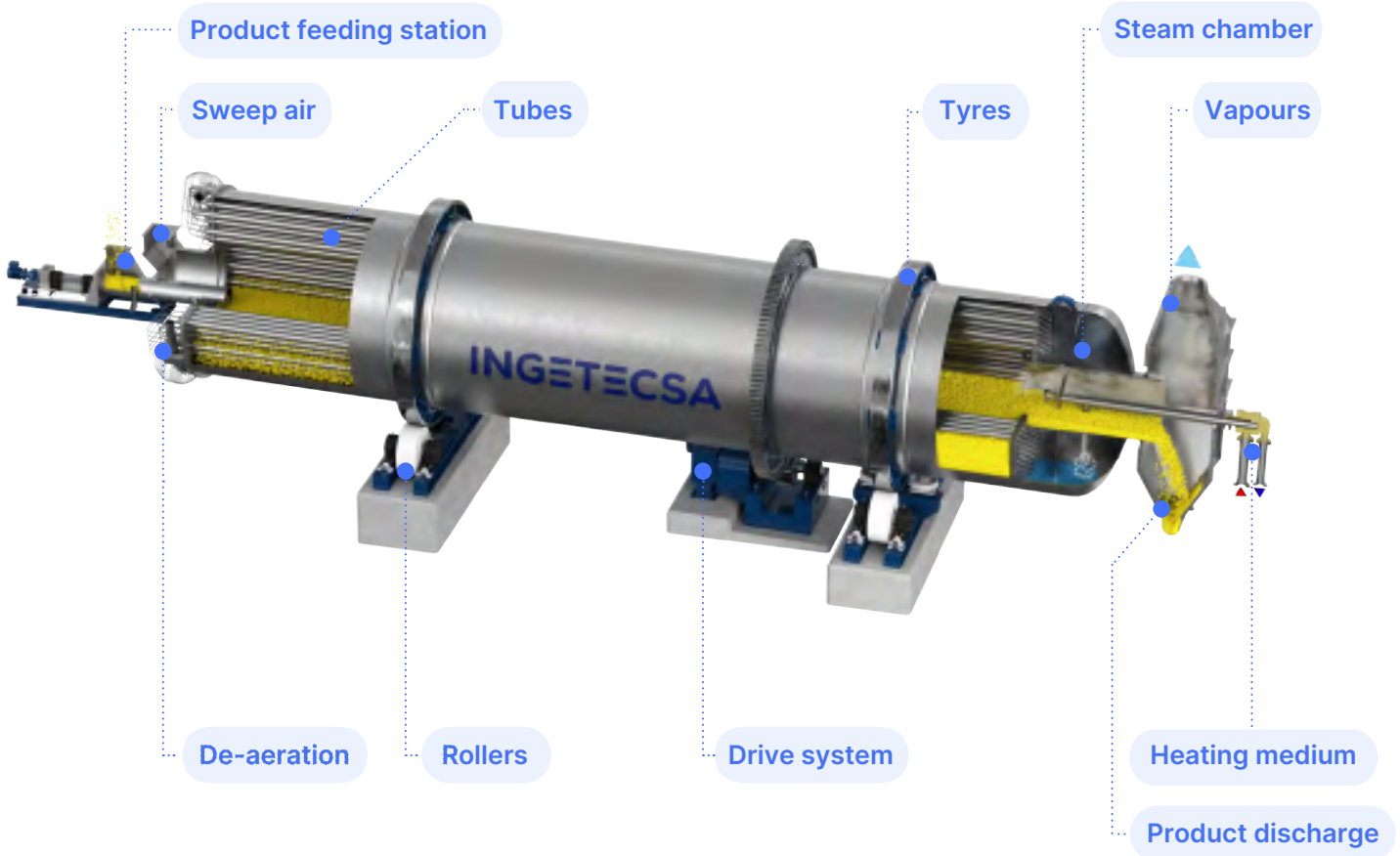
The absence of shear forces results in an erosion-free environment. The heavy-duty unit is designed to be operated non-stop all year round. Proven availability and reliability



### Maintenance requirement

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

“The heavy duty unit is designed to be operated non-stop all year round.”



## Working principle

Product enters the drying chamber through a central opening in the drum end. The product travels by gravity through the slightly inclined rotating drum to the opposite end. Product level is determined by the overflow height at the product discharge side.

Heating medium can be either steam, hot water or thermal oil and enters the dryer at the side where product is discharged. From a central chamber the heating medium distributes itself evenly over the tubes.

**Heat transfer is optimal** as the product layer on the outside of the tube is constantly refreshed. Air trapped in the saturated steam is automatically collected and de-aerated in the annular pipe at the product inlet side. After transferring its energy to the product, the heating medium flows back to the boiler via a separate circuit.

The evaporated water escapes with the product to the product outlet box. From here the product drops down while the vapours and air are discharged at the top to a small suction fan.

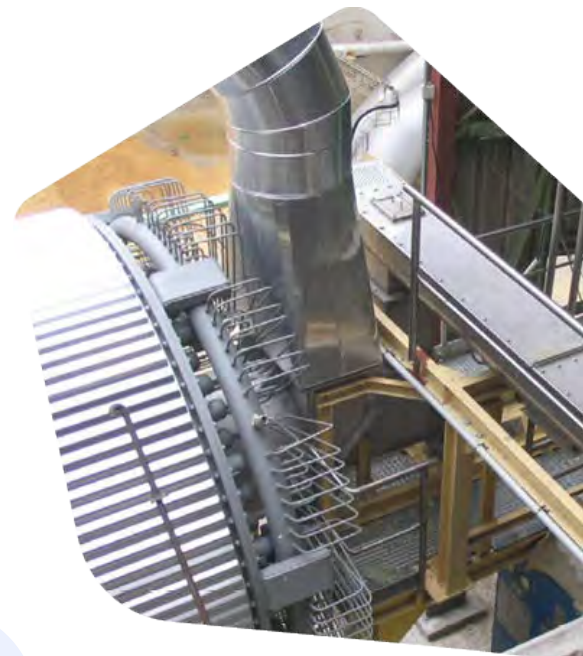
## Product quality ↘

As the drum is cylindrical, heating is perfectly uniform so there are **no cold or hot spots**.

The design has **no dead zones** where bacteria can hold up, particles can accumulate, and over dry or burn. Thanks to the proper distribution and mixture of the product as well as the plug flow mechanism of conveying, **the residence time between particles is extremely narrow**.

While travelling through the drum, the product flows freely around heated tubes. The tubes are positioned in such a way that the product can make intimate contact for heat transfer without being hindered.

As there are no shear forces between product and tubes, the **product is not damaged** nor will these abrade the tubes. Starting and stopping of the dryer, even full with product is effortless.



“As the drum also revolves, typical problems of condensation, hot spots, and the hold up of product and bacteria are avoided.”

## Typical applications



**Chemical industry**



**Food & Feed industry**



**Minerals & Metals**

### EXAMPLES

- Pulps, fibres, seeds
- Sludges and soils
- Filter cakes
- Intermediate and basic chemicals
- Minerals
- Fertilizers

➔ **Bulk flow products**

➔ **Erosive and corrosive 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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