



Tetra Magna™ Dryer WB (Wide Body)

Continuous dairy spray drying system



Highlights

- Flexibility in product range and powder functionalities
- Proven technology
- Long production runs due to controlled air flow
- Fully cleanable (Cleaning in Place)

Application

Tetra Magna Dryer WB provides a fully automatic and continuous spray drying system. The dryer is suitable for the production of the complete range of dairy products.

The system is customer specific designed, and therefore available for a wide range of product compositions and capacities.

Working principle

Tetra Magna Dryer WB is fed from the evaporator. From the feed tank product is preheated with concentrate heaters and pumped with a high pressure (HP) pump to the HP nozzles. Drying air is pre-filtered and heated by means of heater, using steam, natural gas, electricity or oil as energy source.

In the Sunflower air distributor drying air is guided in a controlled and well defined way via a venturie into the centre of the drying chamber. Product is sprayed in the airflow as fine droplets. If agglomeration is required, fines are fed into the flow as well.

In order to guarantee the optimal position of the nozzles, the lances are positioned on a swivel, wherewith we can adjust the nozzle orientation. If a non-agglomerated product is run, the fines returns to the shaking bed instead of the top of the dryer, and lances can be positioned in a more outward position.

The airflow inside the drying chamber follows a co-current reverse flow, which means air travels down with the product and in the cone product travels towards the cone outlet, whereas air leaves the drying at the top.

Product falls into the Tetra Magna Shaking bed, where it first enters the well-mixed section, whereby powder is dried to the final moisture content. Then it moves into the plug-flow section, whereby cooling air is used to fluidize product and to cool it. The sheet has a zig-zag pattern to ensure a well defined heat treatment and residence time.

Powder falls into a sifter to remove lumps, if any, ready to transport to silos and packing.

Exhaust air from dryer and shaking bed are fed to a CIP-able bagfilter to separate fines from the air.

A temperature controller in the exhaust air is used to set the speed of the HP pump.

Capacity

Capacity of the spray drying system depends on product range and milk intake. For example a system to produce 7,000 kg/hr whole milk powder could be as follows:

Scope of supply

- Feed system: feed tank (2x), feed pump and concentrate heater
- Tetra Alex pump and high pressure set

- Tetra Magna Dryer WB and Tetra Magna Shaking bed
- Air supply system, including filter, main air heater, fans and ducting
- Air exhaust system, including ducting, fan and CIP-able bagfilter
- Instrumentation and automation
- Documentation and engineering

Options

- CIP-able bagfilter or cyclone
- 24 hours a day operation
- Heat recovery

Consumptions

(using steam main air heater and CIP-able bagfilter)

Based on a capacity of 13,580 kg/hr whole milk from 50 to 97% and during normal production:

Steam	11,000 kg/hr
Electricity	570 kW (absorbed)
Ice water	11 m ³ /hr with 2°C in and 8°C out
Compressed air	170 m ³ /hr