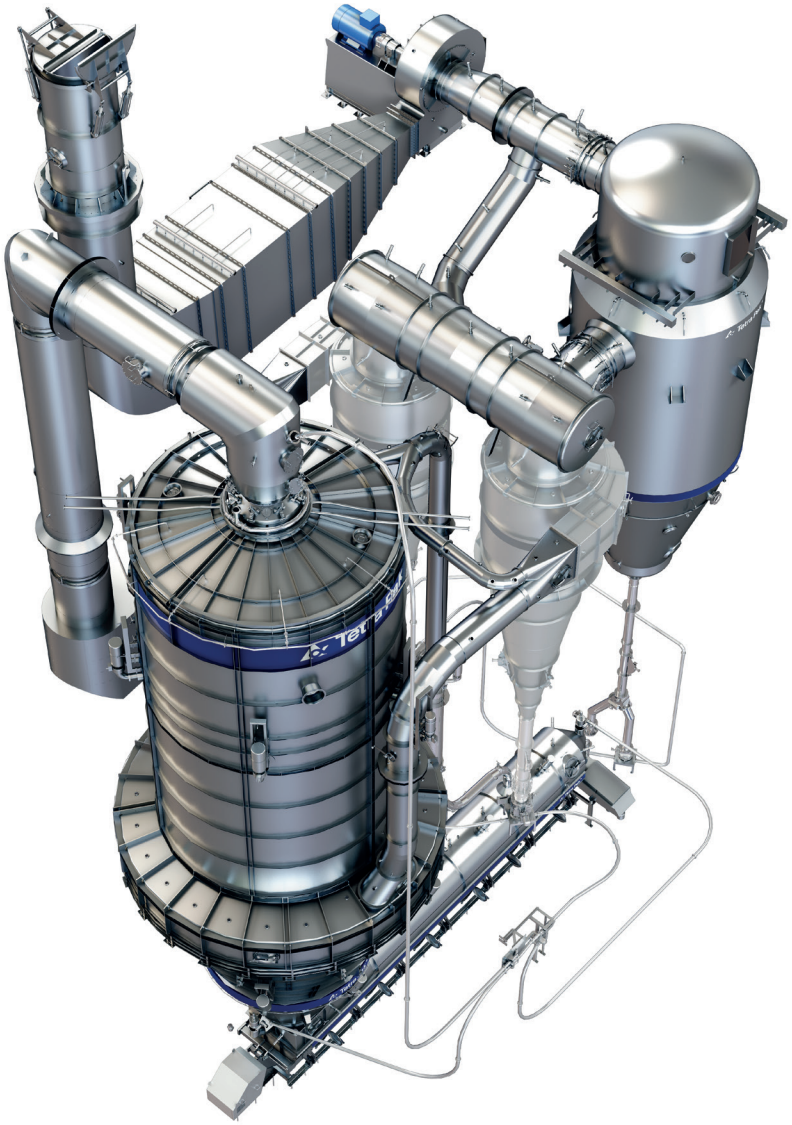
Tetra Pak® Spray Dryer Tall Form Bustle

Continuous spray drying system for heat sensitive powders.



Application
Tetra Pak® Tall Form Bustle spray dryer (TFB) concept features air outlets on the bustle which minimizes internal recirculation of fines in the chamber, limiting their exposure to excessive heat by keeping the residence time of fines particles as short as possible. This results in enhanced product quality and consistency.

The Tall Form Bustle spray dryer is typically suitable for products like WPC80, WPI, Skim milk, minerals and hydrolyzed proteins.

Highlights
- Delivering best available powder quality
- Typically integrated in a full Tetra Pak line solution for optimal integration
- Flexibility in product range and powder functionalities
- Proven technology
- Long production runs
- Compliance to latest explosion safety regulations and hygiene standards

Working principle
The TFB spray dryer is characterised by its tall slim drying chamber and air outlets positioned on the bustle. Featuring a single STAD air distributor with integrated high-pressure nozzle assembly and optional fines return capability, the set-up enables easy and accurate process adjustments as well as improved operator safety through short lances and side-mounted placement.

The air in the cylindrical section travels almost plug flow and reverses in the conical section. The process air discharges in the conical section at the “Bustle” together with any smaller particles (fines) that are entrained in this exhaust air. Depending on the required

functional properties, fines separated from the exhaust air can be reintroduced in the atomizing zone.

Due to the reversing of the airflow, the coarse particles are separated from the air by gravity and discharged into a fluidbed for multi-stage drying.

Alternatively, the TFB dryer can be operated as a single stage dryer with an open pressure transport (OPT) system for product cooling and transport to either cyclones or a bag filter, eliminating the need for a fluidising bed. This concept does not allow production of agglomerated or instantized (lecithinated) products.

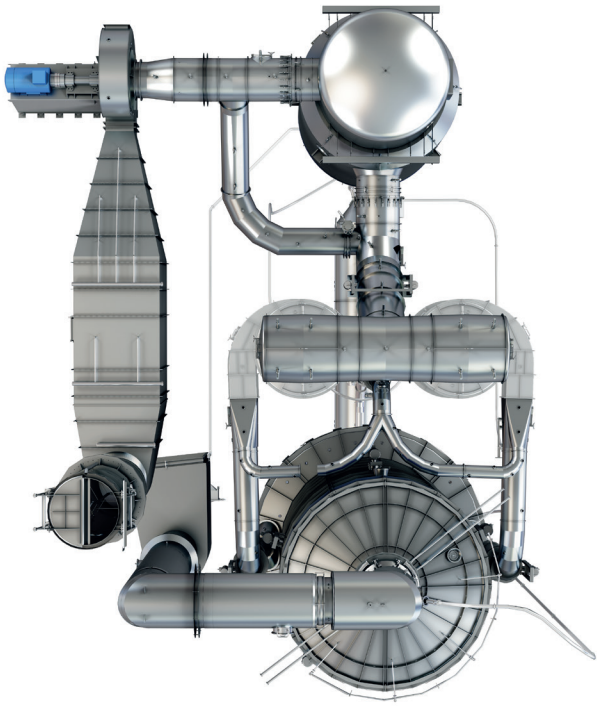
Capacity
Capacity of the spray drying system depends on product range. For example, a system to produce 1,400 kg/hr WPC80 powder could consist of the following scope of supply:

SCOPE OF SUPPLY

- Feed system: feed tank(s), feed pump and concentrate heater
- Tetra Pak® Homogenizer high-pressure pump and high-pressure set
- Tetra Pak® Spray Dryer Tall Form Bustle with Tetra Pak® Shaking Bed
- Air supply system, including filter, main air heater, fans and ducting
- Air exhaust system, including ducting, Tetra Pak bag filter and fan
- Instrumentation and automation
- Engineering and commissioning
- Documentation, warranty and service

Options

- Integrated Static Bed
- Energy recovery
- 24/7 production
- De-humidification
- Spray monitoring system
- Tetra Pak cyclone(s), including high efficiency alternatives
- Tetra Pak bag filter (fully cleanable CIP execution)



Consumption
Based on a capacity of 4,200 kg/hr concentrate from 29 to 95 TS %, during normal production, using steam main air heater, CIP-able baghouse and environmental conditions of 10 °C and 95 % RH:

TETRA PAK® SPRAY DRYER TALL FORM BUSTLE

Steam*, kg/hr	6,400
Electricity, kW (absorbed)	540
Cooling water**, m³/hr	6
Compressed air, Nm³/hr	130

* 18 bar (at 10 °C and excluding winter coil)
** with 2 °C in and 8 °C out