



Tetra Pak® Evaporator Falling Film TVR

Continuous infant formula evaporation system



Highlights

- Full flexibility in recipes
- Long production runs due to high hygienic standards
- Proven technology
- Fully cleanable (Cleaning in Place)
- CIP of steam-side and Sterilisation in Place (SIP) optional)

Application

Tetra Pak® Evaporator Falling Film TVR provides a fully automatic and continuous evaporation system. The evaporator is suitable for the production of the complete range of infant formula, from baby food to follow up products.

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

Tetra Pak® Evaporator Falling Film TVR

Working principle

Tetra Pak® Evaporator Falling Film TVR is fed from the compounding area. From the balance tank product is pre-heated with a tubular pre-heater and direct steam injector (DSI). Product starts to evaporate in the top of the first calandria.

The evaporator works according the falling film principle, which means that product and vapour are flowing downwards through the tubes. At the bottom, concentrate falls down and vapour is sucked into the separator, whereby the smaller concentrate particles are separated from the vapour.

Concentrated product is pumped to the concentrate tanks of the dryer.

As the amount of water evaporation is limited and the required temperature difference is relatively high, steam is used as driving force. This is referred to as thermal vapour recompression (TVR). Depending on capacity and specific product needs the number of stages and thermo-compressors are defined.

A density controller in the concentrate flow is used to set the steam flow to the thermo-compressor.

Capacity

Capacity of the evaporator system depends on composition of the products. For example if product is concentrated from 40 to 55% total solids for a 10 000 kg/hr feed a typical system would be as follows:

Standard scope of supply

- Balance tank
- Feed pump
- Pre-heater
- DSI
- Thermo-compressor
- Calandria
- Vapour separator
- Condensor
- Ducting
- Instrumentation
- Documentation and engineering

Options

- Steam side CIP cleaning
- Silencer vessel around thermo-compressor
- Sterilisation in place (SIP) of the evaporation system

Consumptions

Based on a capacity of 10 000 kg/hr from 40 to 55% and during normal production:

Steam (incl. DSI)	1 500 kg/hr
Electricity	25 kW (absorbed)
Cooling water	20 m ³ /hr with 30 °C in and 59 °C out
Ring water	1.5 m ³ /hr with 25 °C
Sealing water	0.5 m ³ /hr with 25 °C