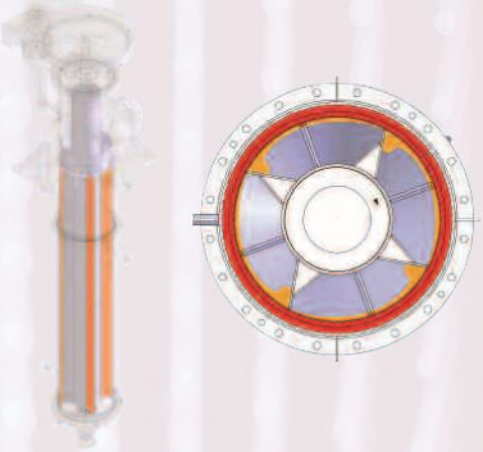
Thin Film Evaporators



Economic solutions for demanding tasks

Thin film evaporators solve difficult tasks in distillation, concentration, degassing, drying and reacting. The rotors mix the product and distribute it as a thin film over the heat transfer surface. The excellent heat exchange produced by the agitation and the thin film yields an immediate evaporation of the volatile components.

Thin film evaporators offer many advantages compared to other evaporator types. Due to the high turbulence in the liquid film, they are able to process viscous, fouling and soiled liquids in a continuous and reliable process. Temperature sensitive products experience a gentle treatment in the evaporator, due to the short residence time and the narrow residence time range. The high heat flux allows a high evaporation rate and high evaporation ratios in a single pass. Additionally, the thin film evaporator is easy to regulate and to adjust to changing operating conditions.

You should consider its benefits

- if you have to produce high product qualities in an economic way,
- if you need a production plant with highest process reliability and availability,
- if you want to optimise energy costs and reduce service and maintenance costs.

Thin film evaporator in our test facility

Largest product range worldwide

Buss-SMS-Canzler has the largest range of thin film evaporators in the world. As the technology and manufacturing leader, we offer our customers the security of a process solution based exclusively on product quality and profitability.

We choose the right solution, optimised to your process requirements, from our broad range of products, which includes

- different rotor designs (fixed clearance, wiped film),
- vertical or horizontal orientation,
- cylindrical or conical body design,
- co-current or counter current vapour flow.

Working temperatures up to 500°C

Buss-SMS-Canzler thin film evaporators can also process products with high boiling components, as for example our inductively heated INDUTHERM®, which reaches operating temperatures up to 500°C.

Rigid blade rotor with fixed clearance

Rotor with hinged metal wiper blades

Rotor with radially moving PTFE or graphite wiper elements

Rotor in hygiene design

Low service and maintenance costs

Service is not only a matter of planning, but also a result of design. Modern mechanical seal designs, low-maintenance bearings, the precise balancing of our rotors and the quality of our heating jackets are the decisive factors for the smooth running of our evaporators. The result is minimised wear even under extreme conditions.

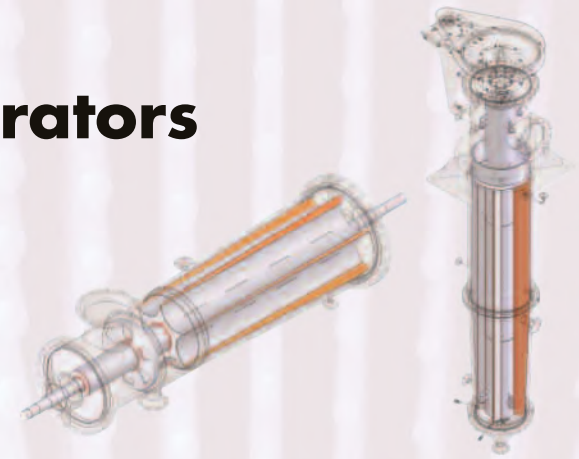
Rotor with radially moving PTFE wiper elements

Process conditions	**Operation window**
Feed rate:	20 – 100.000 kg/h
Evaporation performance:	up to 40.000 kg/h
Heating temperature:	up to 380°C [1]
Heating:	saturated vapour or liquid medium
Pressure on process side:	-1 to 30 bar(g)
Flow rate with viscosities up to 10 Pa·s:	50 - 1.000 kg/h·m^2
Product viscosity at process temperature:	up to 70.000 mPa·s
Residence time:	< 1 min [2]
Evaporation ratio (Concentrate/Feed):	up to 1:50 [3]
Loading range:	20 – 100%

1) evaporators with electrical inductive heating up to 500°C
2) longer residence times achieved in horizontal evaporators
3) depending on evaporator type

Titanium rotor

Conical Thin Film Evaporators SAKO



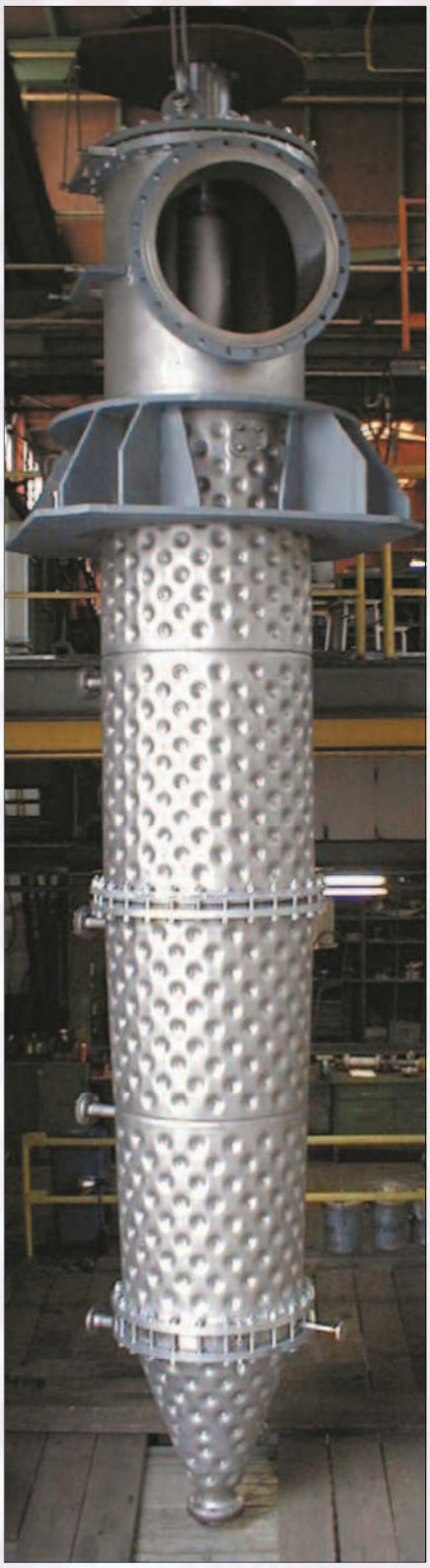
Two flexible all-rounders
Your process and space requirements decide whether the vertical or the horizontal evaporator type SAKO is used. With either design it is possible to adjust the gap between the rigid blade and the heat transfer surface – thus allowing you to change the thickness of the film.

The vertical SAKO processes products with viscosities up to 50.000 mPa·s at high evaporation ratios. By adjusting the gap, you change the residence time and optimise the diffusion controlled evaporation. This is a considerable advantage with degassing processes, when minimum residues of low-boiling components are required.

The conical heating section guarantees the constant wetting of the surface area, even with small concentrate quantities.

The horizontal SAKO is suitable for products with viscosities up to 70.000 mPa·s. The conical construction reaches a continuous film formation, even with high evaporation ratios. The co-current flow of vapour and product allows for the feeding of overheated liquids directly into the unit (flash evaporation). The horizontal evaporator provides longer residence time. Therefore it can also be used as a reactor.

Evaporator module with horizontal SAKO



Vertical SAKO in test facility