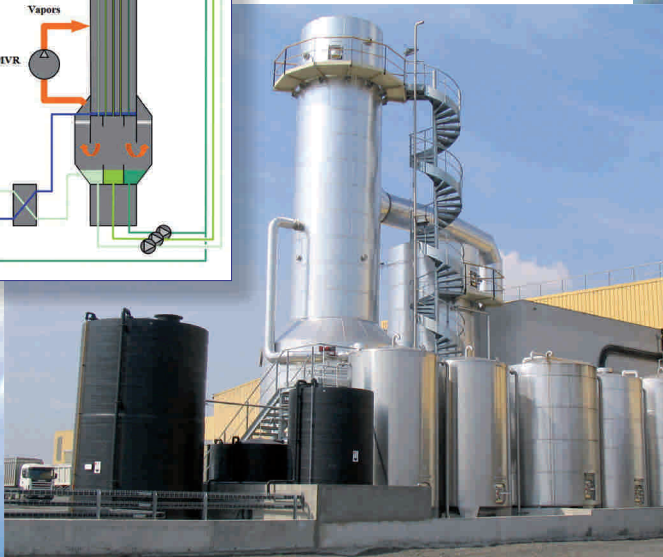
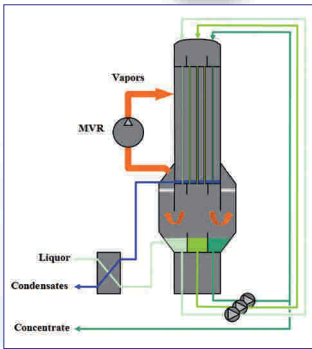


France evaporation

POLLUTION REMOVAL . THERMAL ENGINEERING . INDUSTRIAL PROCESS

EVAPORATION

- Single / multiple effect evaporation
- Mechanical Vapor Recompression
- Cogeneration - thermal recovery



CRYSTALLIZATION

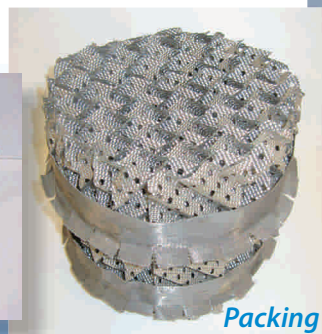
- K_2SO_4
- Na_2SO_4
- Boric acid
- Vinasse with potash removal
- Any salt solution



microscope view

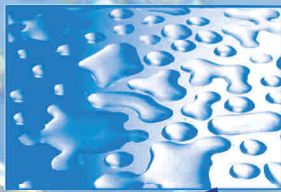
DISTILLATION / STRIPPING

- Treatment of the dissolved ammonia
- Concentration of the ammonia into ammonium sulphate for spreading
- Recovery of solvent
- Hexane
- Alcohol concentration (ethanol)



Packing





France evaporation

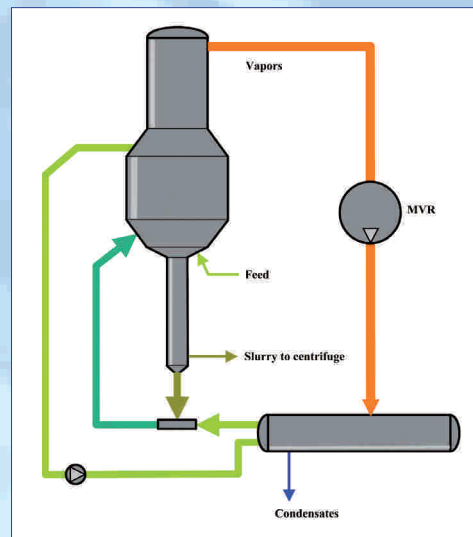
**NEW PATENT
CRYSTALLIZER**

IFC - Indirect Forced Circulation®

IFC® is a new patented crystallizer developed by Crystal Evap Consult, and with France Evaporation as partner for the realization of turn key plants.

Advantages compared to FC/DTB/OSLO crystallizers:

- The IFC® crystallizer avoids the contact of large crystals with pump or circulator, however allowing them to re-circulate.
- D50 (**medium size of the crystals**) in IFC® is 2 to 3 higher than in a FC and the CV (distribution) is around 20% instead of 40% to 50% for FC (Forced Circulation) or DTB (Draft Tube Circulation).
- This technology allows to have a better control of the secondary germination.
- With a very partial destruction of fines, IFC® can make crystals as large as in a DTB but with much lower energy consumption, and particularly with a MVR (Mechanical Vapor Recompression) system.
- The fines content at the outlet of the dryer is around 3% (or less) instead of 10% or more for FC et DTB.



IFC can operate as:

- Evaporative crystallizer
- Adiabatic cooling crystallizer
- reactor

Price is sensibly similar to a classical crystallizer (DTB or FC)

In conclusion

- **Excellent Crystal Size Distribution (CSD)**
- **Very low content of fines**
- **Pilot tests very representative of the industrial plants results**

