

ECOVAP - FB*

Fluidized Bed Evaporator



A number of industries involved in the processing of fouling liquids lose productivity due to scaling problems in the conventional tubular evaporator. This results in loss of efficiency of the evaporator. Removing scales is a very cumbersome process and involves considerable down time for cleaning. Alternatively, one can keep another unit as stand-by, which would involve substantial investment. To overcome these problems, the technique of solid-liquid fluidization in heat exchangers has been successfully employed on a commercial scale by PRAJ.

**A revolutionary Self-Cleaning
Fluidized Bed Evaporator From
PRAJ**



PRINCIPLE OF ECOVAP-FB SYSTEM

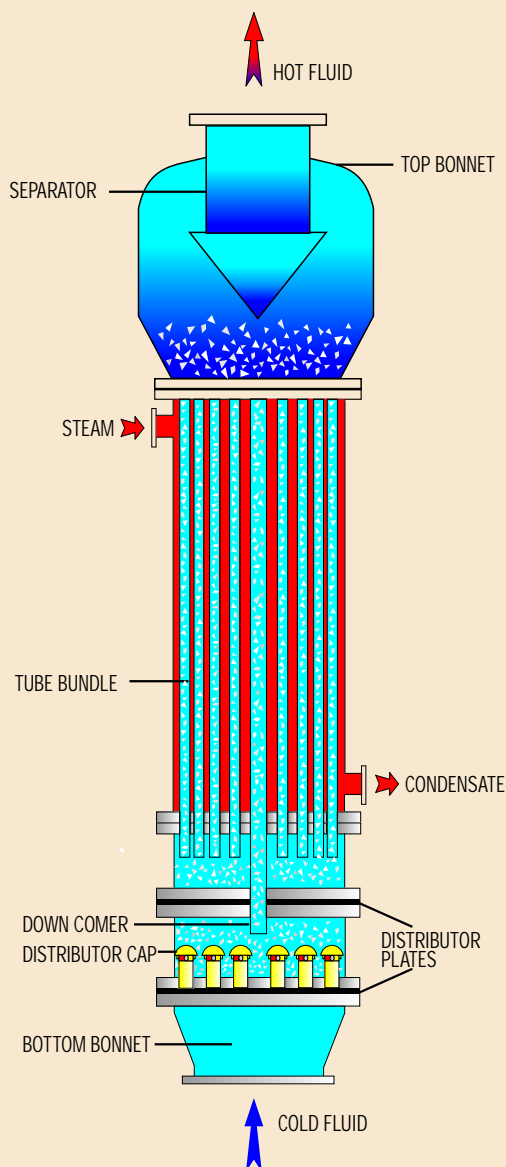
ECOVAP-FB evaporation system is based on unique fluidized bed heat exchanger "FLUBEX*" in which fluidizing media (metallic, ceramic or glass) is added to impart gentle scouring action on tube surface, while moving with the liquid to be evaporated. This keeps the tubes clean. Media are being de-fluidized in the top disengagement zone before being recirculated for re-fluidization.

SPECIAL FEATURES

The system consists of single or multiple effect evaporator and can be operated under vacuum or pressure. Fully automated systems are also available to ensure consistent product quality and efficient performance. Process fluids with higher viscosities can also be handled effectively.

OPERATION OF FLUBEX HEAT EXCHANGER

The fouling liquid is fed from an inlet nozzle into the lower section by a specially designed plate, with nozzles having dome shaped caps placed over them to prevent backflow of the solid Fluidizing medium. The liquid along with solid media is then distributed uniformly through all the tubes. The solid media is maintained in a fluidized state, which imparts a slight scouring effect on the inside of the tube walls while moving upward through the tubes. This also enhances the heat transfer coefficient without any damage to the tube material while simultaneously keeping the tube walls free of scales.



At the top of the channel, a disengagement zone is provided which separates the solid particles from the liquid. The solid are then recirculated to the inlet chamber through several downcomer tube

bundles. The fluidizing media is selected according to the requirements of the process. The material can be metal, gravel, ceramic or glass in spherical or cylindrical shapes. A minor topping up is required annually.

BENEFITS

- No loss in production time since downtime is virtually nil.
- Maintenance costs are practically nil, since there is no tube cleaning required.
- Initial investment would be generally lower since lower heat transfer areas are required.
- Standby unit, related piping and frequent CIP is not required.
- Lesser floor space as compared to conventional system.
- Disposal problem of CIP effluent is avoided.

APPLICATIONS

Waste water Evaporation

- Cane Molasses based Distillery spent wash.
- Fermented mash.
- Yeast plant effluent.
- Black liquor from paper mills.
- Tannin liquors.

PRAJ provides complete system with accessories according to your requirements. For trouble free continuous operation, ECOVAP-FB Fluidized Bed Evaporator is the right choice for you!

Network - International

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