Evaporator

- Unique Separator Design
- Low Capital Cost
- Energy Efficient
- Easy to Clean
- Reduced Sucrose Losses
- Ideal for Evaporator Station Expansions
Long Tube Evaporators (LTEs)

The LTE has many advantages over conventional alternatives such as Roberts, Kestner and falling film evaporators. These include:

• Lower heat transfer coefficients.
• Lower capital cost.
• Low cost stand-alone foundation.
• No supporting steelwork is required.
• Small footprint.
• No integral pumping is required (as with falling film evaporators), but boiling in the long tubes elevates juice by about 4 m.
• Low juice retention time.
• Mechanical cleaning is easier than Roberts - there are fewer cleaning tool entries.

Unique features of the Bosch Projects LTE

• The Bosch Projects design incorporates a controlled quantity of juice recycled from the top of the vessel back to the feed in the base. This optimises heat transfer and ensures that there is always sufficient upflow for all tubes to remain wetted to the top of the tube, preventing baking on dried out surfaces.

• Effective entrainment protection with easy access to entrainment separators thereby requiring low maintenance.
• Simple, effective juice distribution.
• Easy incorporation of chemical cleaning.
• Integral clear juice heating.

Most factories use clear juice heaters ahead of the first effect evaporator to create flashing on entry to the evaporator. This ensures that there is some steam and a high juice velocity from near the bottom of the tubes. This is the optimum process, but requires the additional investment cost of clear juice heaters.

Some factories do not have CJ heaters. This detracts from the normal performance of the evaporator. To alleviate this effect, Bosch Projects LTE may have clear juice introduced through sprays onto the upper wall surface of the vapour/juice separation chamber. Some of the vapour generated in the LTE is thus used for direct-contract heating of the juice by 5°C to 10°C as it flows down the walls. This juice is then combined with the recycled juice that is injected back into the base of the vessel. This raises the temperature of the juice entering the bottom of the evaporator tubes. Less of the tube length is therefore used as an inefficient low velocity juice heater, and more as an efficient climbing film “boiler”.