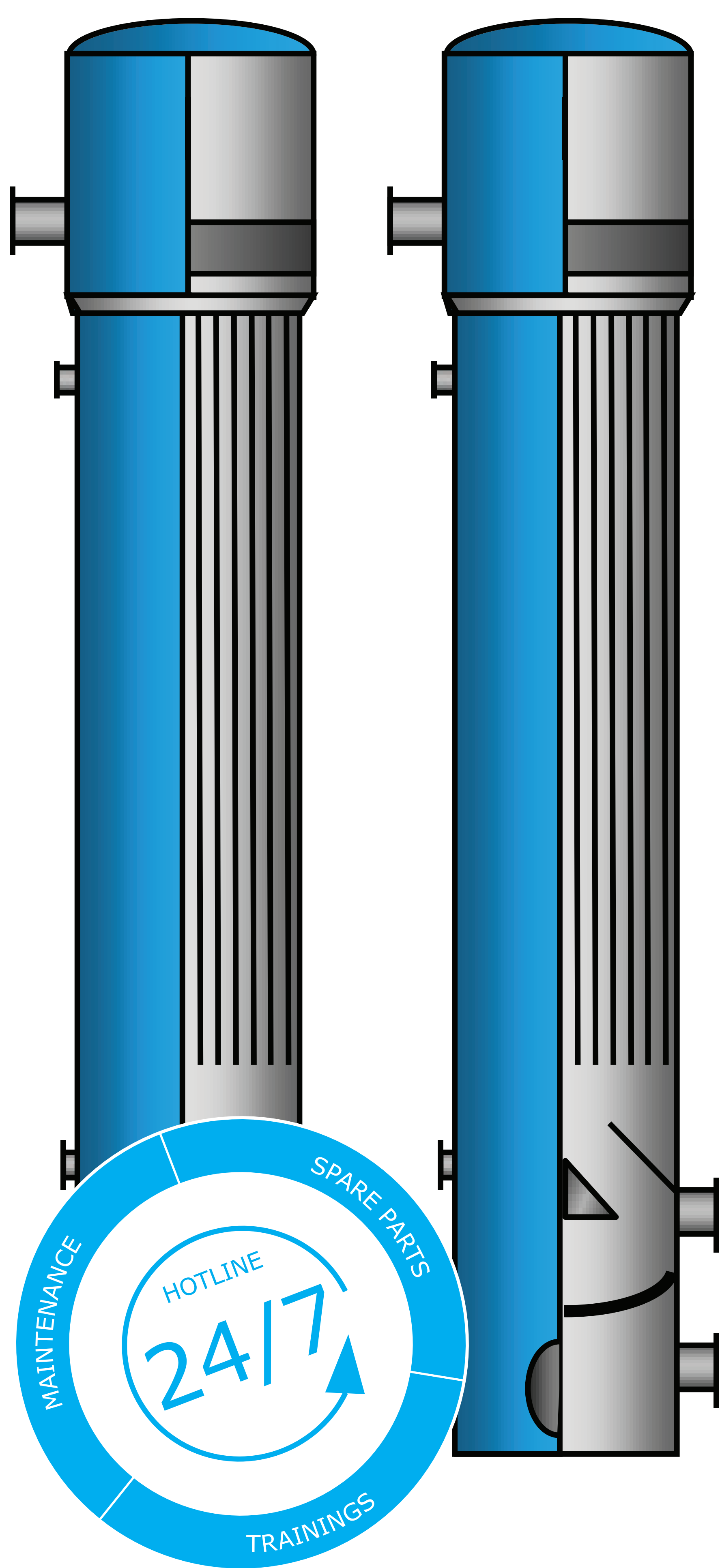
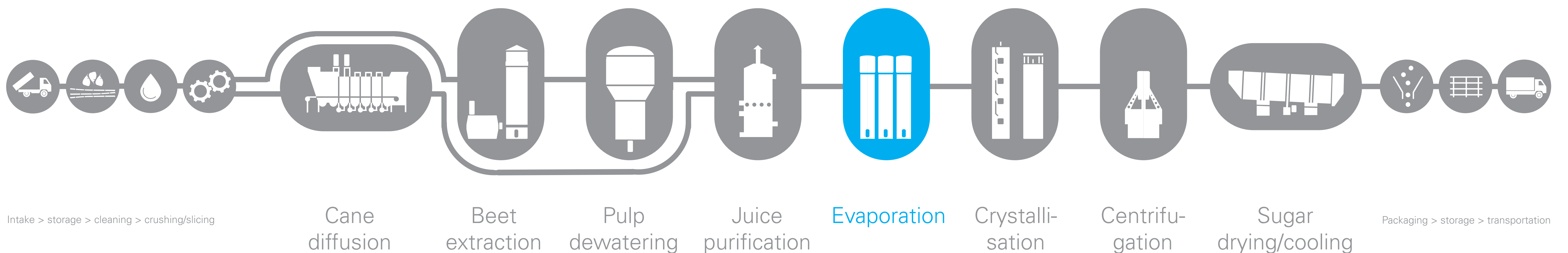


# Falling-film evaporator (FFE)



## Principle of operation

Falling-film evaporators from BMA consist of a juice distributor, a calandria, a vapour separator, and a juice tank. As it enters the juice chamber, the juice is depressurised and then fed into the juice distributor by the circulation pump. Developed by BMA, the juice distributor is the heart of the evaporator. It distributes the juice evenly over up to almost 6,000 tubes, thus permitting optimum evaporation in the calandria according to the falling-film principle. The tubes in cane sugar factories can be up to 10 m long, in beet sugar factories up to 12 m.

The juice and vapour are separated below the calandria, depending on their level of concentration by either an impingement or a deflection-type separator. The concentrated juice is collected and discharged separately. Any excess is mixed with incoming juice and then circulated. Falling-film evaporators are operated with wetting rates of 1 – 2 m<sup>3</sup>/(h x m).

In the cane sugar industry, use of a suitable concept including standby FFEs and bypasses can ensure 24/7 operation. A special design permits mechanical cleaning of the heating tubes without opening the juice distributor dome.

Full automation with a higher-level control concept ensures a constant dry substance content of the concentrated juice at the outlet and safe operation in the event of a disruption.

## Benefits

-  **Heat transfer**  
High heat transfer coefficient even with a low  $\Delta T$ .
-  **Juice discolouration**  
Little discolouration of the juice thanks to short retention times.
-  **Cleaning intervals (cane)**  
Long cleaning intervals of up to 30 days thanks to optimum juice distribution.
-  **Vapour pressure**  
Higher vapour pressures thanks to better heat transfer.

up to **10%** STEAM REDUCTION WHEN INSTALLED TO REPLACE A 5-EFFECT ROBERT EVAPORATOR STATION.

## Technical data

Heating surface [m <sup>2</sup> ]	500 to 7,000
Diameter [mm]	1,800 to 4,200
Cleaning interval*[d]	7 to 10 in effect 5 14 to 18 in effect 3
*Cane sugar	40 to 50 in effect 1

## Reference extract

Customer	Year	Country	Type
CSS	2015	Senegal	Cane
Al Nouran	2015	Egypt	Beet
Etihad	2014	Iraq	Refinery
JDW	2013	Pakistan	Cane
ICPL	2010	India	Cane

## More information



<https://www.bma-worldwide.com/evaporation/falling-film-evaporator.html>



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