



**MVR EVAPORATION  
OF STARCH PRODUCTS**





*“The EPCON MVR evaporator ensures our clients in starch industry high production availability and low operational cost”*



## Evaporation of potato fruit juice

During production of potato starch it is essential that all equipment is available for production during the campaign. After grating, the fruit juice is evaporated to recover nutrients and to minimize storage and transportation cost.

In recent years there have been more and more restrictions to the use of fruit juice directly on the fields.

EPCON has experience with evaporation of both native fruit juice, and fruit juice reject water where proteins are coagulated and separated up front.

It is important to have an energy efficient dewatering to keep the total production cost as low as possible. For this application the EPCON MVR evaporator is a well proven solution since the energy consumption normally is as low as 13-20 kWh/t removed water.

*Right: EPCON MVR evaporator handling 45m<sup>3</sup>/h potato fruit juice.*





## Evaporation of steep liquids and starch slurries



When producing sweeteners from grain or corn, evaporation is required of the steep liquids from the wet milling process (for instance BSL, CSL).

The steep liquids have to be evaporated at low temperature due to protein content. The combination of high vacuum and large quantities of water that needs to be evaporated, makes it important to have an optimized design to keep both the investment cost and operational cost as low as possible.

The steep liquids contain acid and a condensate with low COD is important.

Also starch slurries (for instance wheat slurry) needs low temperature evaporation to get the correct water content.

For these applications the EPCON MVR evaporator is a well proven solution since the energy consumption normally is as low as 13-25 kWh/t removed water.

*Left: EPCON MVR evaporator handling 12m<sup>3</sup>/h barley steep liquid (BSL).*



## Evaporation of syrups

In sweetener production, evaporation is required in several process steps, such as concentration of corn syrup, glucose, dextrose, fructose and other syrups.

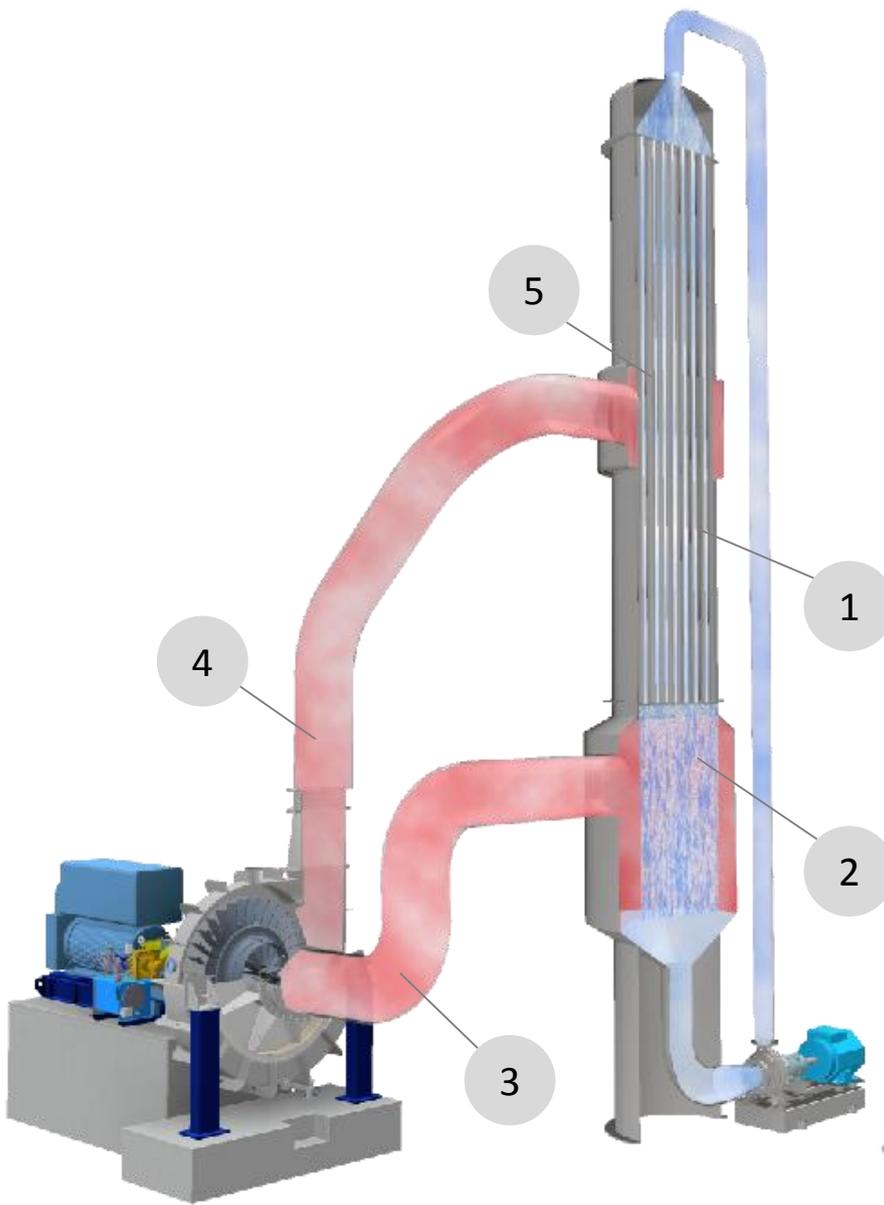
As there are large quantities of water that needs to be evaporated, a low energy consumption is important for a profitable business.

This makes it even more important to have an energy efficient dewatering. For this application the EPCON MVR evaporator is a well proven solution since the energy consumption normally is as low as 15-30 kWh/t removed water.



*Right: EPCON MVR evaporator handling 21m<sup>3</sup>/h corn syrup*





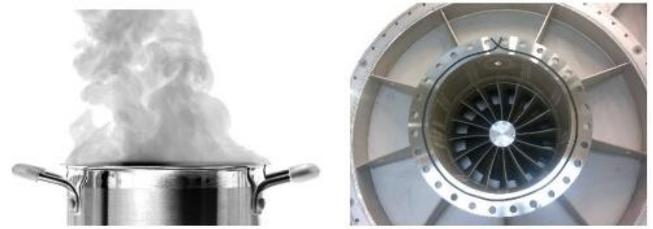
The EPCON MVR evaporator only uses 8-40 kWh per ton evaporated water.

This is a reduction of up to 99% compared to a 1 effect steam driven evaporator.

MVR or Mechanical Vapor Re-compression (also known as MVC) is a technology where the vapor is compressed in a fan or a compressor to a higher temperature and pressure.

This compressed vapor is then used as energy source instead of boiler steam. Most of the products delivered by EPCON are based on MVR technology.

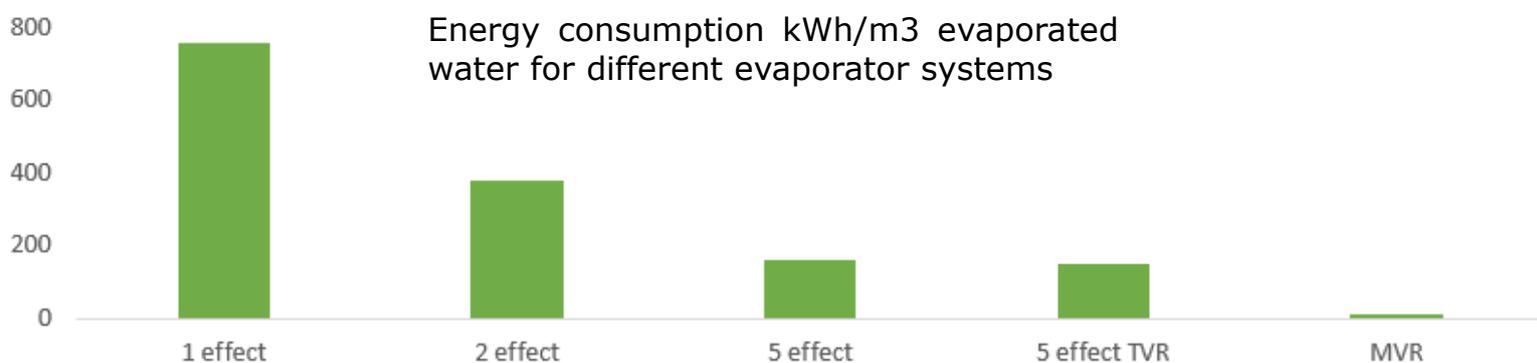
EPCON has 30 years experience with MVR technology.



1. The liquid evaporates in the tubes
2. The liquid is separated from the vapor to give a clean condensate
3. The vapor goes to the MVR fan at 55°C
4. The MVR fan compresses the vapor to higher pressure and temperature (60°C, sat)
5. As the vapor at 60°C is heat exchanged with the evaporating liquid, it condenses into a clean condensate.

The temperatures used here are examples only. EPCON always select the optimum evaporation temperature and temperature rise in the MVR fan. This selection is done based on the liquid properties.

## EPCON MVR technology



*”The EPCON MVR evaporator is built to last for decades. Our After Sales services is your guarantee and is an important part of our concept.”*

EPCON offers all customers the possibility for a 24-hours after sales service that includes troubleshooting, spare parts, preventive and corrective maintenance, as well as inspection of installations.



## Aftersales services

## Lab and pilot testing facilities



EPCON has tested a wide range of fluids. Frequently, the analysis of fluid samples is conducted on the permanent testing equipment at our laboratory in Trondheim. If fluids have to be tested on site, EPCON also has mobile test rigs that can be dispatched anywhere in the world for use at the customer's own plant.





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