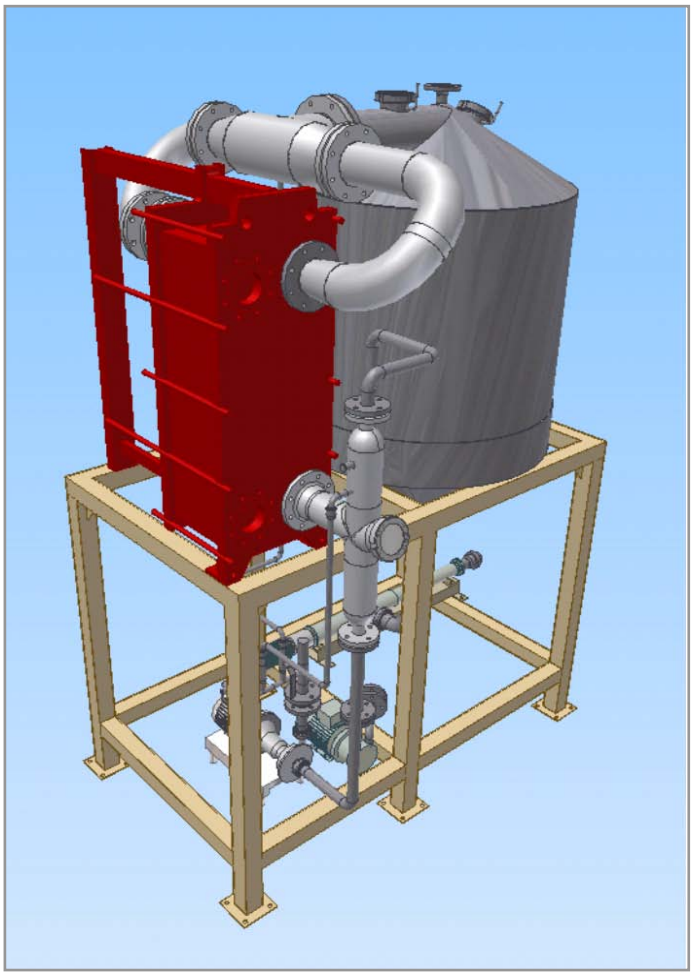
EPCON®
Evaporation Technology AS

FLASH COOLER

CONCENTRATION AND INSTANT COOLING



EPCON EVAPORATION TECHNOLOGY AS

EVAPORATORS – DRYERS – DISTILLATION & DEHYDRATION - HEAT RECOVERY SYSTEMS
ENGINEERING AND AFTERSALES SERVICES

Flash cooling

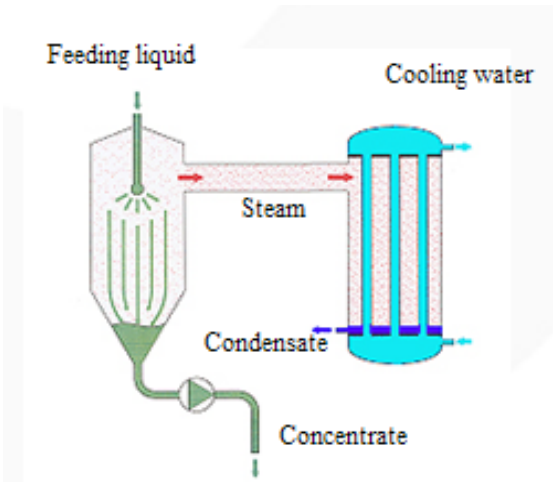
Flash cooling, also known as vacuum cooling, is a technique that combines cooling with a concentration process. By feeding hot liquid into a chamber that has a vacuum state, vapour will be emitted until the liquid reaches thermal equilibrium. This causes instantaneous reduction of the temperature in the liquid, and the concentration of dry solids increases. The concentrate is discharged by means of pumping.

Depending on the initial temperature, the final temperature and the properties of the liquid, the concentration can be increased by 1% to 10% of dry solids, and the temperature can be lowered towards 0°C. The selection of final temperature can be made independently of the process, but the more cooling the greater the increase in concentration.

Applications

The EPCON flash cooler is a flexible system that can be used for a wide range of applications including:

- ❑ Cooling of milk and dairy products
- ❑ Cooling of juice
- ❑ Concentration and instant cooling of viscous products not suited for cooling in surface heat exchangers.
- ❑ Degassing of products containing inert gases, prior to evaporation or other downstream processing.



Advantages

Flash cooling is particularly suitable for viscous and sensitive liquids, often with a high content of dry solids. Cooling is instantaneous with no use of heated surfaces which could lead to fouling. In many cases this technique ensures high quality of the final product due to the rapid cooling.

Components

The flash chamber is special designed for generating sufficient liquid surface area and good liquid / vapour separation. Also reliable concentrate discharge is essential, which is taken care of by the chamber liquid section design and suitable discharge pump.

A good vacuum and condensate system is essential for reliable operation of flash coolers, as they often operate in pressures close to absolute vacuum.

Cooling water must be available with a sufficiently low temperature for condensing the evaporated mass, or alternatively air cooling can be used.

For condensation both tube and plate heat exchangers can be used based on the vapour properties and the customers requirements.

EPCON's design of flash chambers give reduced plant dimensions. The plants can be delivered assembled and installed on a frame, simplifying the installation and start-up of the plant.

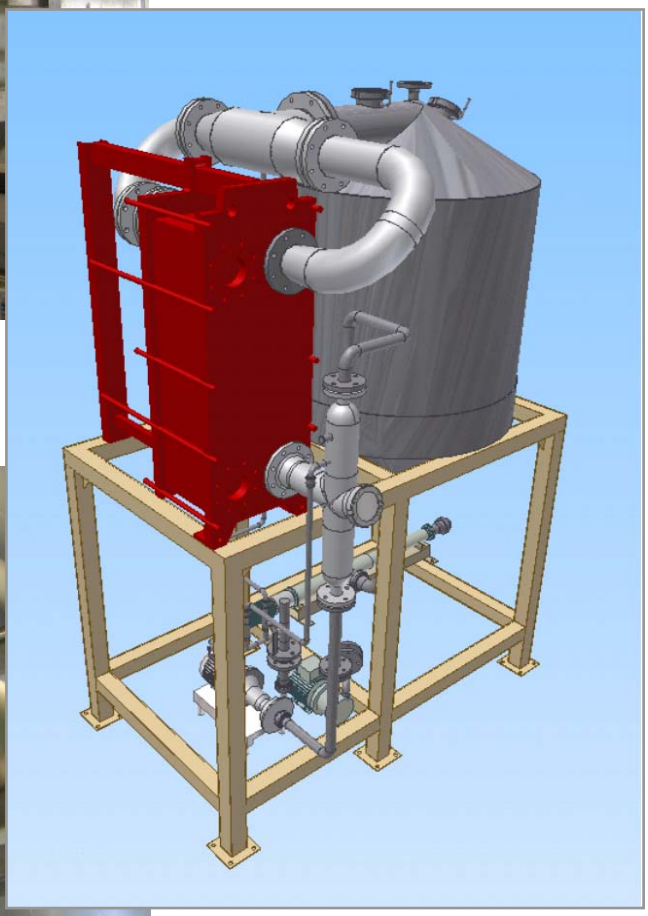
Application adaption

Each flash cooler is tailor made to the customer specification with regards to liquid properties, operating temperature, and capacity. A wide range of materials and piping standards can be delivered.

Turn key plant

EPCON can offer a wide range in scope of supply. Ranging from engineering and main component delivery to turn key plants.

Flash vessel on frame delivered by EPCON as part of project with engineering and component delivery.



The pictures show EPCON flash coolers.

EPCON pilot evaporators

EPCON has a wide range of pilot evaporation plants including mobile evaporator pilot units that can be used as flash coolers. These pilot units allow our customers to document and verify the product quality using an EPCON Flash cooler. The units operate from 20 to 100°C.

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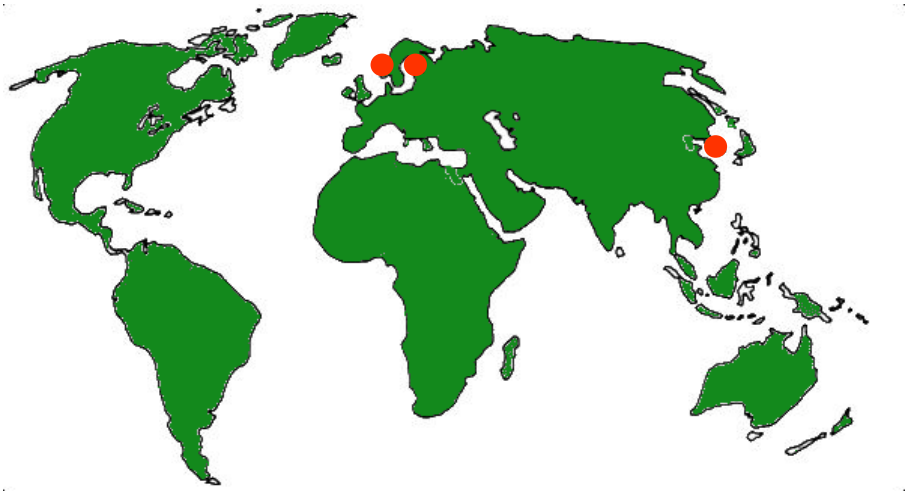

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