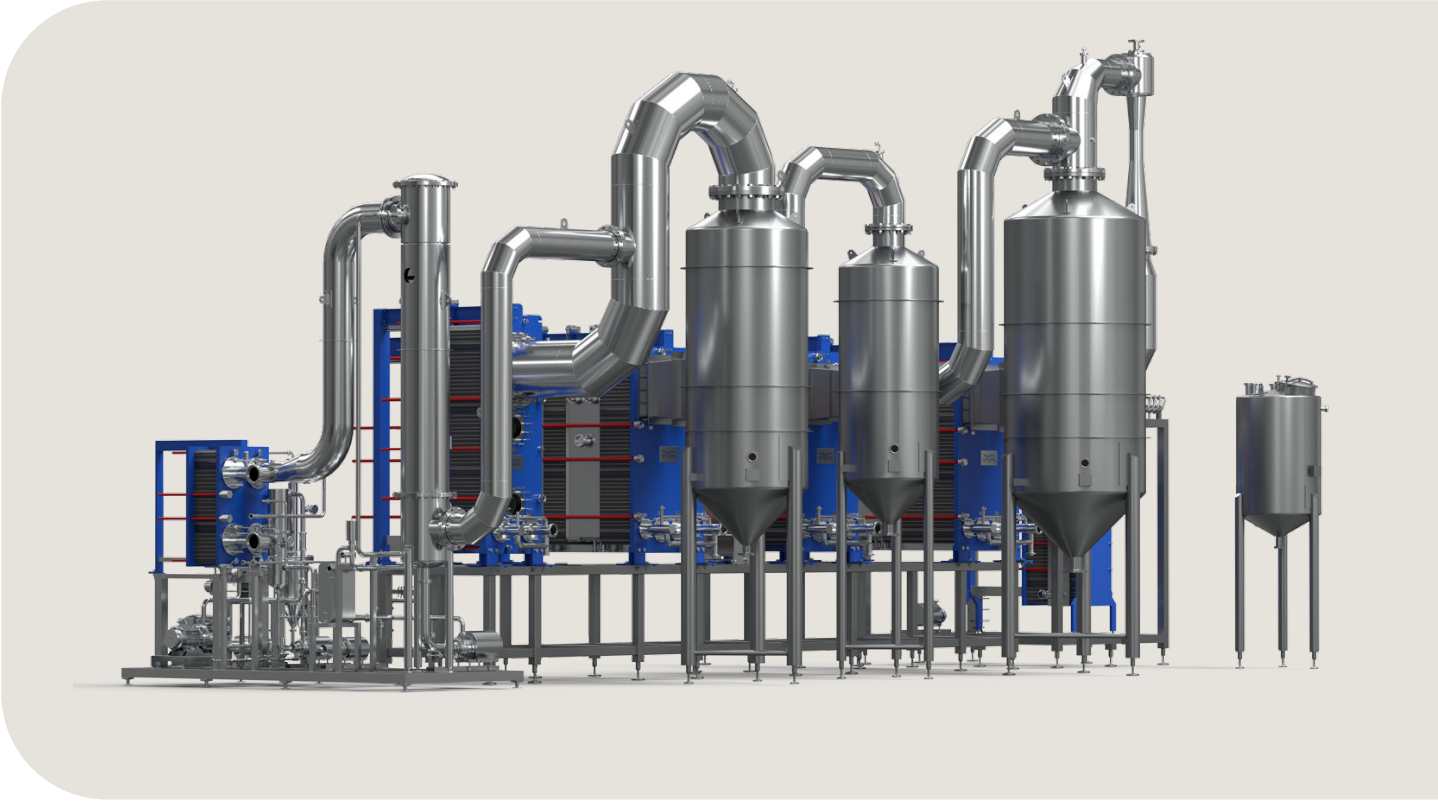
Alfa Laval AromaVap evaporation system

Gentle evaporation using rising film plate evaporator with aroma extraction unit



Introduction

AromaVap rising film plate evaporators quickly and gently concentrate fruit juices and herbal extracts. The evaporation system also extracts and concentrates the aromatic volatile compounds without any loss of organoleptic and nutritional properties.

Application

The AromaVap evaporation system is ideal for concentrating any type of clear or cloudy fruit juice or herbal extract exiting from a direct extraction setup or from any re-working process.

Benefits

- Very short residence time with minimum impact on product quality
- Extremely efficient heat transfer
- Compact design and easy operation.

Design

The AromaVap evaporation system is based on rising evaporating film technology. When required the evaporation system features a once-through flow where the product reaches the final concentration in one single pass without being exposed to any kind of recirculation, that may have a negative impact on product quality.

The AromaVap evaporation system operates under vacuum and can consist of either a single effect or multiple effects connected in series. The exact configuration of each evaporator – with one or more effects – depends on process requirements in terms of product properties, feed flow and concentration as well as needed steam economy.

Each effect in the AromaVap evaporation system consists of an AlfaVap plate evaporation unit connected to a vapour separation vessel.

Product enters via the bottom port of the evaporation unit and flows upwards in rising film evaporation mode, heated by the

chosen medium which is normally steam. A certain fraction of the water content in the product is converted into vapour along the heat transfer area. The resulting mixture of liquid and vapour phases exits at the evaporation unit outlet and flows toward the separation vessel, where the two phases are separated by centrifugal forces.

The vapour phase exits at the upper outlet of the vessel and is directed to the following effect or to the condenser. The liquid phase exits from the bottom connection and is led to the following effect or to the final product collecting point.

To avoid recirculation the AromaVap evaporation system can include one or more connection boxes which is a unique Alfa Laval solution to divide an effect into several sections.

The AromaVap evaporator design is also available in a compact configuration where all heat exchangers and vapour separators are integrated on a single frame minimizing the size of the equipment, the installation time and the system hold-up volume.

The combination of rising film evaporation and once-through flow using connection boxes reduces the time to achieve the final concentration with great benefit to the final product quality.

The AromaVap evaporation system is equipped with a control system that manages all the electrical and electronic components needed for a fully automatic process of the production sequence as well as the complete CIP process.

The AromaVap evaporation system can be pre-assembled and delivered ready for quick onsite re-assembly and connection to utilities.

Aroma extraction

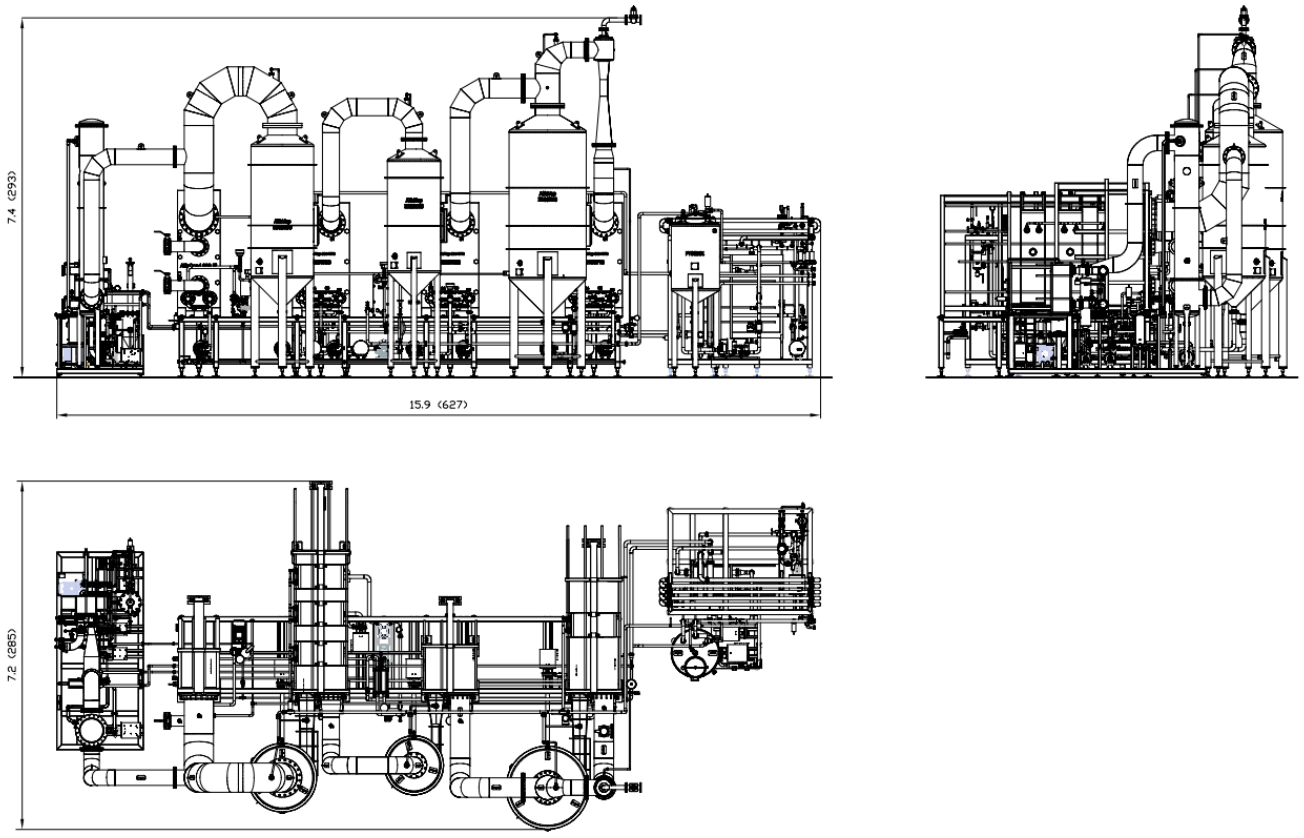
The AromaVap evaporation system is equipped with a special skid-mounted aroma extraction and recovery module that concentrates the aromatic compounds exiting from the evaporator.

The streams from the evaporator are stripped inside a column filled with structured packing. The concentrated automatic compounds leaving the top of the column are condensed progressively at low temperature using a double-stage condensation group. The streams are finally extracted as a cold condensate, enriched with aromatic components. These high-value components can be re-added to the concentrated product directly after the evaporator or later, before the final stage of filling. They can also be packed and stored separately for other uses.

Technical data

Capacity range of evaporated water	500-25.000 kg/h
Maximum achievable concentration	72-80 °Bx depending on product properties
Maximum number of effects	4
Utility data	Depending on capacity and effects configuration

Dimensional drawing



The dimensional drawing displays a typical AromaVap evaporation system of medium size. Dimensions in metres (inches).

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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com