Thermal Separation

Evaporation and distillation solutions

Separation technologies belong to the basic operations in many processes in the chemical and related industries – whenever liquids have to be separated, water or any other solvent has to be removed, concentration has to be increased or volume reduced, valuable and pure products have to be produced in defined product properties and qualities, by-products or impurities have to be stripped or precipitated.

To meet customer specifications in density, purity and operating time, while minimizing investment and operating costs, GEA's highly skilled process engineers develop innovative and thermally optimized separation solutions including evaporation and distillation.

GEA's thermal separation plants are applied in the production of a wide range of products within chemicals and pharmaceuticals as well as food and beverage products. Our product range includes plants in all sizes; from small pilot plants for research and product development to the largest industrial installations.

Working with GEA means having a solid partnership every step of the way, from product and process testing and design throughout project execution to the startup and operation of your plant until after sales service.

Thermal Separation

Heating options for thermal separation plants

Traditionally, an evaporator or distillation plant is heated by live steam, but waste heat (e.g. recompressed vapor, drier vapor, hot water or thermal oil) can be used as energy source as well, as long as the amount of energy required for the thermal separation process is given.

Options are:

- Steam-heated (Single/Multiple-effect)
- Thermal vapor recompression (TVR)
- Mechanical vapor recompression (MVR)
- Dryer vapor heated

Specific utility consumption per ton of evaporation

	Steam/t	Electricity/kWh	Cooling water/m³ ΔT = 10K
Live steam	1	minor	60
2-effect	0.5	minor	30
3-effect	0.33	minor	20
4-effect	0.25	minor	15
TVR	~0.5	minor	30
MVR	minor	~30-50	minor

GEA portfolio

Falling film evaporators:
Best suited for temperature-sensitive products and liquids with small amounts of solids and going up to high concentrations.

Multi flash evaporator:
For applications involving large throughputs of process solution with a relatively low concentration factor and other applications.

Forced circulation evaporator:
Ideal for highly viscous liquids or with a tendency to form incrustations. Optimal for inorganic solutions among other applications.

Distillation and rectification plants, batch and continuous operation, multi-effect, energy efficient with mechanical vapor recompression (MVR) and in split-column design

CompaCon® Evaporator:
Skid-mounted falling film and forced circulation evaporators for small-scale production. Energy efficient, easy to transport and assemble.

GEA has several test centers for product and process testing equipped with laboratories and several evaporation and distillation pilot plants.

GEA Wiegand GmbH
Am Hardtwald 1
76275 Ettlingen, Germany
Tel: +49 7243 705 0
gea.com/contact