

CHEM

EVAPORATION & CRYSTALLIZATION TECHNOLOGIES



Vacuum ■ Evaporation ■ Crystallization ■ Heat Transfer Technologies



Evaporation & Crystallization Technologies

Solving Environmental Problems

Chem evaporation technologies are the first of their type having set new standards in the development of advanced environmentally friendly concepts.

CHEM customize



Our Wealth of Experience

Chem evaporation technology offers a proven solution where the condensates are re-used as make-up water and the recovered crystalline products are recycled for profitable industrial production. We offer complete solutions by combining evaporation with other options of pre and after treatment. Having supplied more than 100 plants in process industries for the treatment of various industrial effluents and concentration of many liquids, the field experience from the design and manufacture along with continued research and development have resulted in a unique expertise in this technology. This enables Chem to provide the right combination of other process equipment with the evaporation plants and thus provide practical solutions to the most difficult problems.

Our Wealth of Knowhow

The composition of the effluent may differ extremely, even in the same industries, day to day. Our knowledge of the physical and chemical properties of the intermediates and finished products is both intimate and comprehensive and stems from many years of

practical experience. Design is established after taking into consideration the product behavior, optimum operating conditions, evaporator type, concentrated solution and effluent properties.

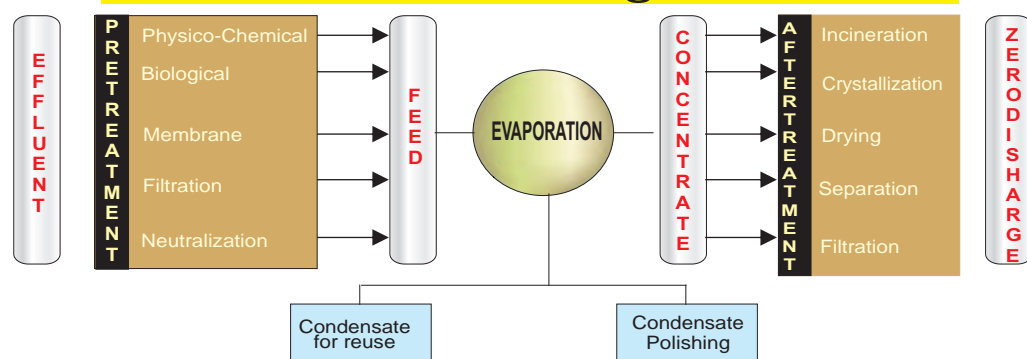
Chem Reference Plants

Chem have designed, supplied and commissioned a large number of plants for the following:

- Chemical effluents
- Organically contaminated effluents
- Dyes and Intermediates effluents
- Effluent from pharmaceuticals and bulk drugs manufacture
- Contaminated glycerine / salt solution in edible oil refining
- Effluent waters from pesticides and agrochemical industries
- Reject Waters from Reverse Osmosis Systems

We have also supplied evaporators in the food and dairy industries.

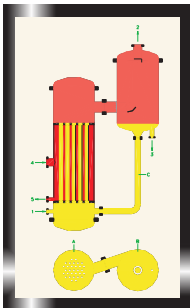
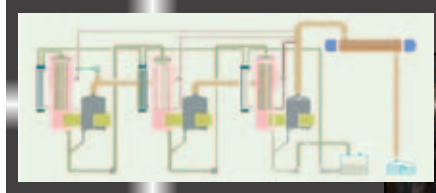
Chem Zero Discharge Solutions



Evaporator Types & Arrangements

Chem Falling Film Evaporators

These types of evaporators are best suited for liquids which are temperature sensitive, have a high rate of specific heat transfer, particularly for non-crystalline solutions. They are easy to operate, clean and are extremely sturdy. Chem falling film evaporators are available for capacities ranging from 500 kgs/hr to 45,000 kgs/hr with effects ranging from single to seven, or even more.

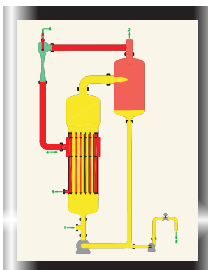


Chem Natural Circulation Evaporators

These are very simple and are normally used where the effluent has a high viscosity, higher levels of hardening agents, undissolved solids, for products which are not affected by their own high temperatures and longer residual times. The operation could be continuous, batch or semi-batch and donot require pumps for recirculation or intermediate product transfer. Chem natural circulation evaporators are available for capacities ranging from 100 kg/hr to 5,000 kgs/hr and are usually preferred for effects ranging from single to three.

Chem Forced Circulation Evaporators

Normally used for liquids which are prone to fouling, scaling, crystallizing or for those which are inversely soluble or while concentrating thermally de-gradable materials. Here high recirculation rates allows high liquor velocities through the tubes which help to minimize the build up of deposits or crystals along the heating surface. Chem forced circulation evaporators are available for capacities ranging from 100 kgs/hr to 10,000 kgs/hr.

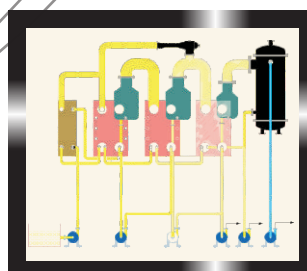


Chem Rising Film Evaporators

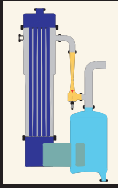
Rising Film Evaporators are preferably used for the concentration of highly viscous products and products that have a tendency to foul the heating surface. Can also operate as high concentrators with single-pass operation. Chem rising film evaporators are available for capacities ranging from 100 kgs/hr to 5,000 kgs/hr.

Chem Plate Type Evaporators

Plate type evaporators are of a compact design and are designed for single pass climbing film operations, which result in even and gentle evaporation of the product. Useful to handle asymmetrical flows- when a limited pressure drop is acceptable for one of the media but pressure drop is not a limiting factor for the other. Chem plate type evaporators are available for capacities ranging from 100 kgs/hr to 12,000 kgs/hr.



Thermal Vapour Recompression



One of the outstanding features of the Chem evaporation systems is that the operational costs are minimum. This is achieved by multi-stage energy utilization and the use of thermo-compression. The energy input in relation to the vapourization capacity is minimized. The same quantity of heat is used from effect to effect and condensation heat is also recovered.

Individual System Specialization

The basic components of an evaporation system are individual evaporation units with pumps, interconnecting piping and other associated equipment.

The decision as to which evaporator type is the most suitable for each application is based on the chemical and physical properties of the feed. The design is governed by the ascertained process parameters based on the computer aided design of both thermo and hydro dynamics, engineered design and construction of each component tailored to the customer's needs. Instrumentation and control systems are also custom designed to suit individual needs. Chem's in-house laboratory and testing facility is frequently the first stage of



our project engineering phase.

Crystallization Systems

Chem multi-stage crystallizers are of an advanced special design, in which the supersaturation at each stage is controlled through smaller circulation quantities. The design of Chem crystallizers is energy efficient, with larger throughputs and smaller dimensions. The salts are selectively extracted and crystallized to a high degree of purity. Our product experience includes crystallization plants for organic and inorganic intermediates and final products in the chemical, pharmaceutical, food and other processing industries.

Chem designs and manufactures the following types of Crystallizers for crystallization of diverse products:

- Adiabatic Vacuum

- Evaporative Forced
- Draft Tube Baffle
- Induced Circulation
- Spray Evaporator Crystallizer
- Oslo Type
- Others

Industries:

- Textiles
- Dyes & Dyes Intermediates
- Chemicals - Organic & Inorganic
- Pharmaceuticals & Bulk Drugs
- Agrochemicals & Pesticides
- Food
- Dairy
- Sugar
- Petrochemicals
- Refineries
- Power
- Water Treatment

Our scope of services includes consultancy, engineering, calculation, design, manufacture, delivery, quality control, supervision of erection & commissioning and after-sales service.

CHEM Process Systems Pvt. Ltd.

15 Natraj Industrial Estate, Vasna-Iyava, Sanand Viramgam Highway, Sanand, Ahmedabad 382170. India

Tel.: +91 (0) 2717 284148-49 Fax.: +91 (0) 2717 284194; +91 (0) 79 26850800

Email: chem@chemprosys.com Website: www.chemprosys.com