APPLICATION

Evaporative Concentration

There are three different ways to classify and operate the evaporator as follows

1. By operation conditions

1) Running under normal pressure
   : It evaporates in the atmospheric pressure and the evaporated steam is generally released through air pollution control facilities such as absorption tower
2) Running with reduced pressure
   : Evaporation happens in the vacuum pressure (100~150 Torr) and the steam is often condensed.

2. By evaporating process

1) Gravitational horizontal pressure tube
   : Heating surface is placed inside of the evaporator and this surface evaporates and condenses simultaneously, making it very compact system.
2) Circulating vertical pressure tube
   : Heat exchanger and evaporator is composed separately and this evaporating method is flash type which is suitable for sewage treatment process with high concentration.
3) CALANDRIA method
   : Exchange is vertically placed and the installed clarifier circulates fluids into the tube, working as the heat exchange. This evaporate method is suitable for generating highly concentrated sludge.

3. By reuse of energy sources

1) Thermal Vapor Recompression method (TVR)
   : This method uses the steam ejector to extract about 50% of the evaporated steam and heats up the wastewater from the heat exchange. This method is cost-efficient.
2) Mechanical Vapor Recompressing method (MVR)
   : This method uses the heat pump (root type or turbo type) to suck and extract all of the evaporated steam and heats up the wastewater from the heat exchange.
   This is another innovative way of saving energy costs.
3) Multi-use recompression
   : Unlike TVR and MVR method, it brings in the external steam to heat up the sewage water and uses that steam to heat up the second heat exchanger. Steam generated from the second heat exchanger is then used at the condenser.
   This method is ideal for converting steams generated from a mega plants like desalination into clean water.

2F, Co-op Starclass, 76 hwarang Rd, Seongbuk-gu, Seoul, Korea, 02799
TEL 82-2-910-2500 / FAX 82-2-910-1953

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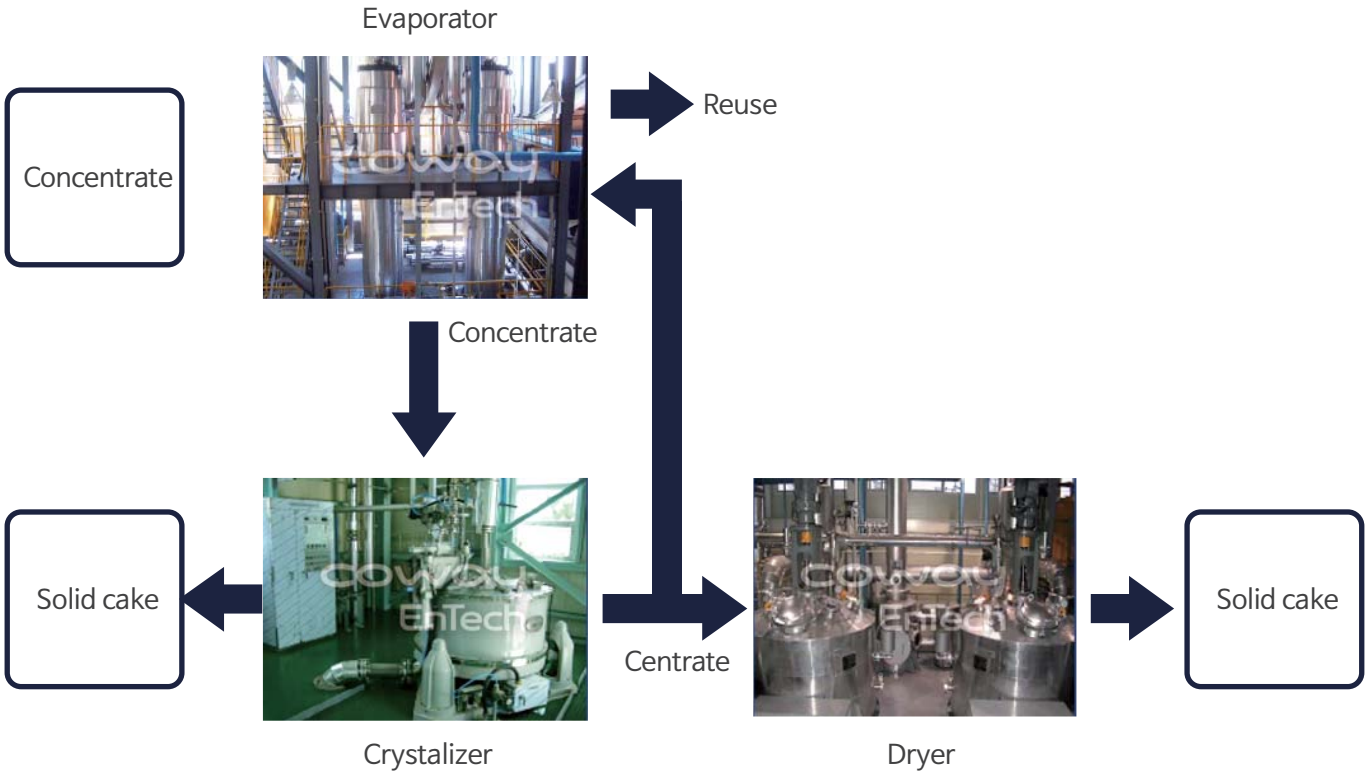
Process



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