EUTECTIC FREEZE CRYSTALLIZATION (EFC)

EFC is a unit operation that separates highly concentrated salt solution into highly-pure ice and salt.

- 90% lower energy costs than evaporative crystallization.
- 50% lower energy costs than triple-stage evaporation.
- Reusability of water.
- No hot liquid/steam within EFC.
- Limited corrosion issue.

In EFC, salt solution is cooled down and producing pure ice, which causes an increase in the salt concentration in the remaining solution, up to the point (eutectic) where the salt crystallizes at the same time with ice.

EFC is a technically and economically efficient technology that has been successfully implemented in the industry. Design optimization of industrial crystallizer and study the role of EFC in zero-liquid-discharge water treatment process scheme.

Objective of this research are to optimize the design of industrial crystallizer and to conduct an experimental study of EFC in zero-liquid-discharge water treatment process scheme.

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