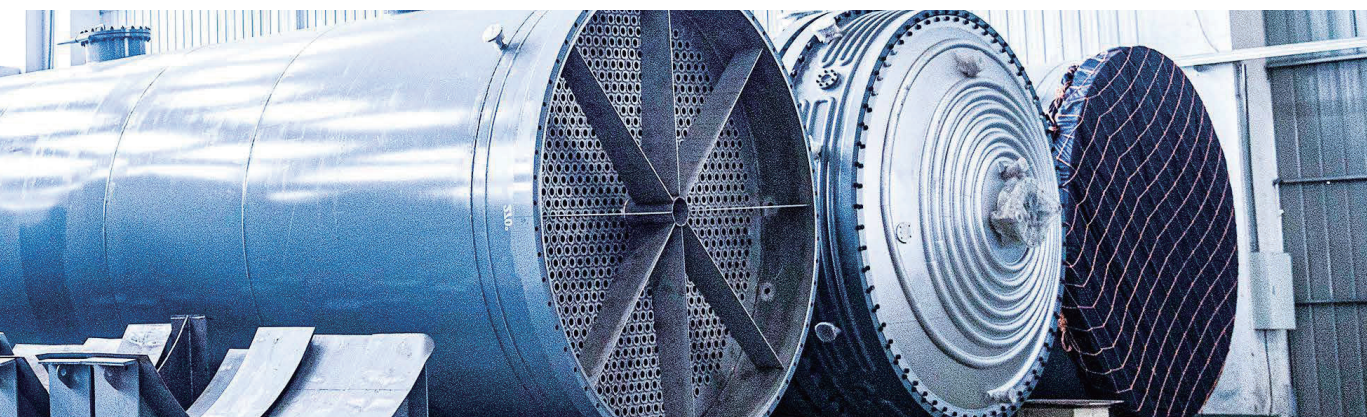


Melt Crystallization Technology and Equipment

Eco-friendly | High-purity

SHANGHAI DODGEN CHEMICAL

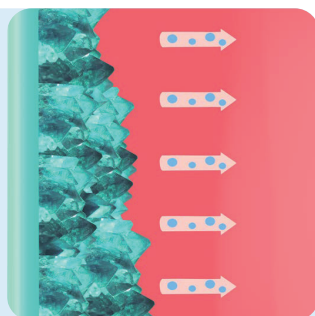


Principle of Melt Crystallization

The driving force of the melt crystallization process is the supersaturation or undercooling of a component in the molten liquid, the process is divided into three stages: crystallization, sweating and melting.

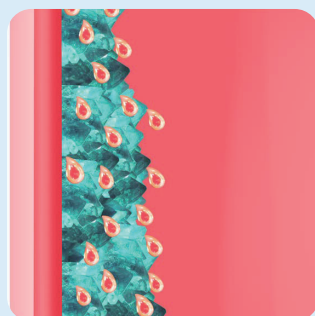
Crystallization

Crystallization is the process in which, as the temperature of the molten liquid is gradually decreased, a component in the melt becomes supersaturated and begins to nucleate and grow into crystals.



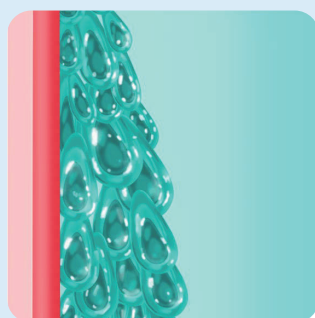
Sweating

During the growing process of crystal, impurities of mother liquor will inevitably be trapped in the coarse crystal, so the coarse crystal needs to undergo the sweating process for purification.



Melting

The purified crystals are melted completely by heating.

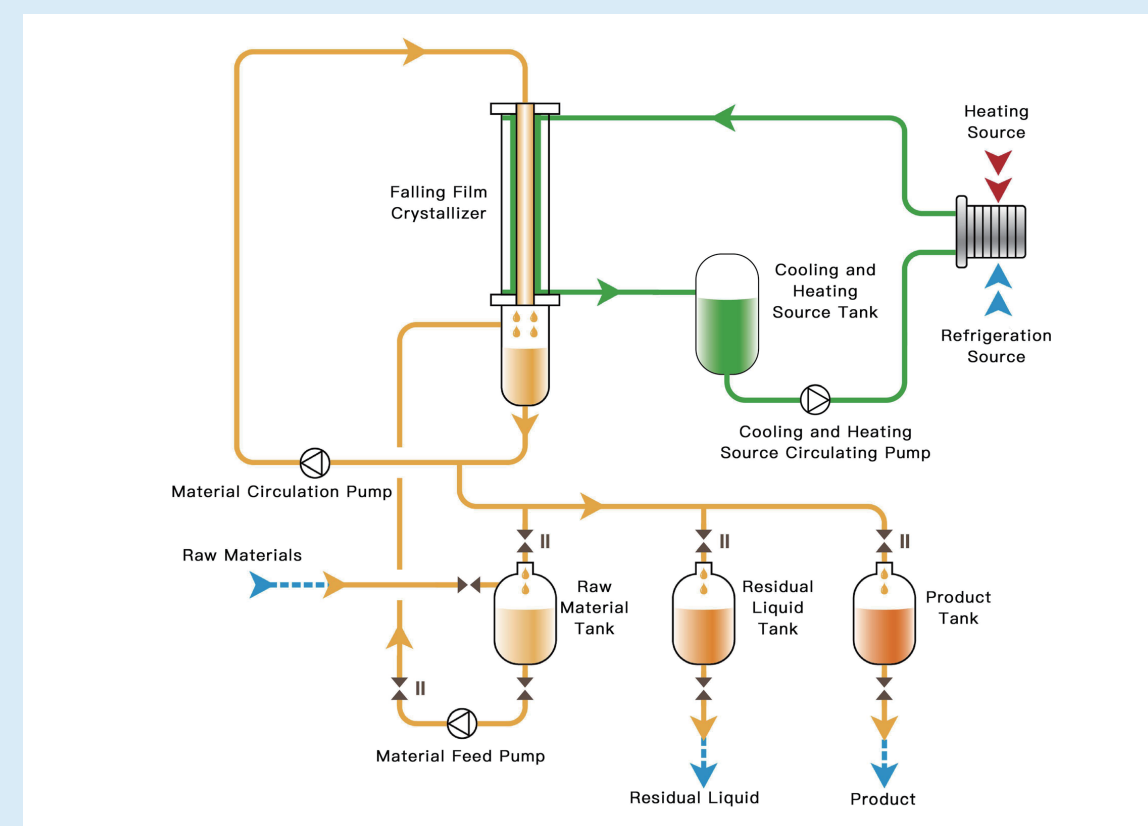


DODGEN Melt Crystallization

DODGEN is an outstanding player in the field of melt crystallization technology. We improve separation efficiency by enhancing the coupling of cutting-edge melt crystallization separation technology with other separation technologies. Additionally, we have developed a unique melt crystallizer to adapt to the separation of specific substances.



Dynamic Crystallization Flow Diagram



Advantages of Melt Crystallization

The melt crystallization technique offers many advantages:

✓ High Product Purity

The product purity can be above 99.99% chromatographically pure.

✓ Low Operation Requirements

Generally, it is operated at atmospheric pressure and low temperature, with simple and safe operation.

✓ Applicable Special Material System

It is very difficult to separate isomers and chiral substances by distillation, while separation can be easily achieved by melt crystallization.

✓ No Solvent Required

The crystallization process does not require the addition of other solvents, which can avoid the increase of impurities and environmental pollution.

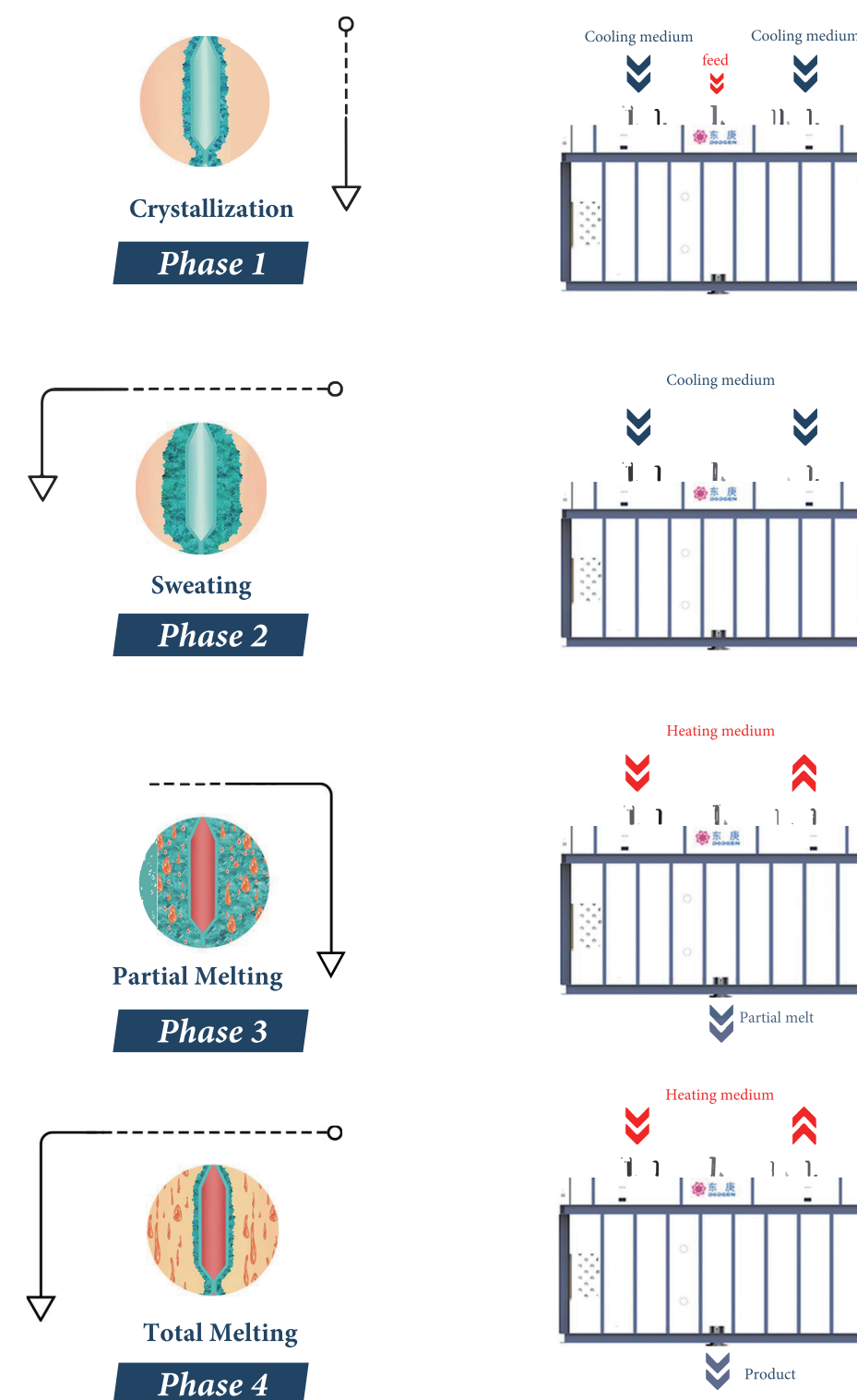
✓ Investment Saving

There are no excessive requirements for equipment, which can reduce costs and equipment investment.

✓ Energy Conservation and Environmentally Friendly

The energy consumption of melt crystallization is generally only 10%-30% of that of distillation.

Static Melt Crystallization Process



FFC Multistage Recrystallization Process

Multi-stage fractional recrystallization is a necessary process for falling film melt crystallization to achieve ideal purification effect. The way the feedstock is produced in the segments depends on the desired product purity and yield.

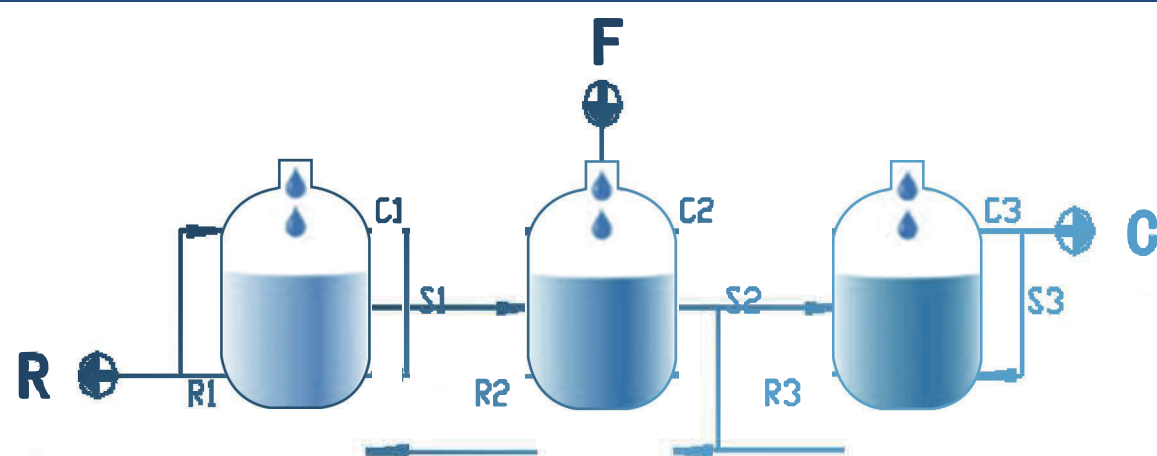
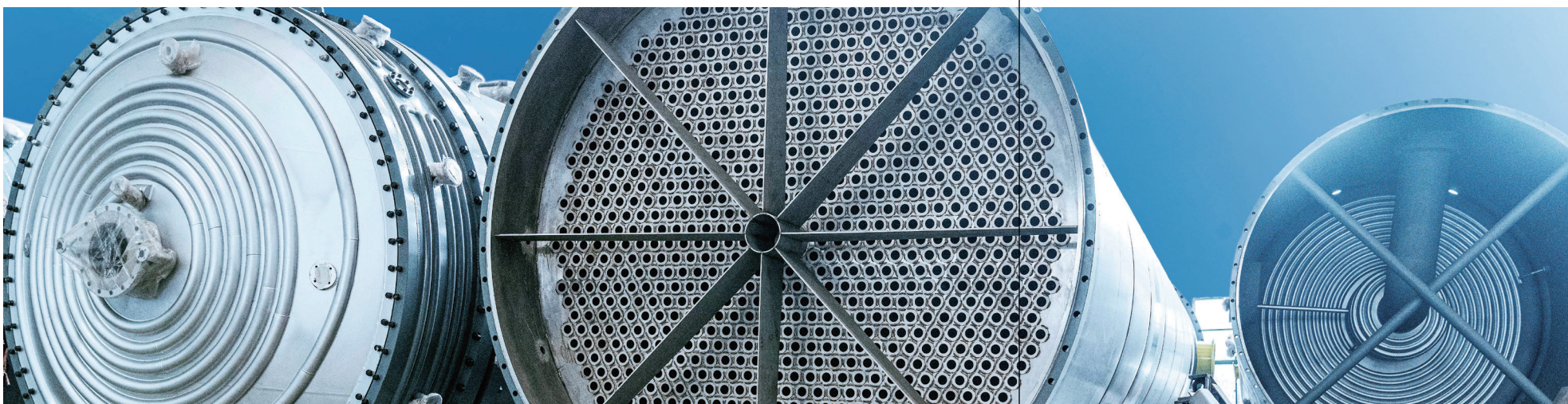


FIGURE: Schematic diagram of typical 2+1 multi-stage segment recrystallization

DODGEN falling film crystallization technology has the characteristics of large crystallization area, high processing capacity and high crystallization efficiency. A single set can handle more than tens of thousands of tons of materials, and PLC fully automated control can achieve the effect of a fully continuous process, with online real-time data and self-learning optimization process.



Preferred Conditions

01. Bottleneck in Distillation Process

- The substances are easily decomposed by heat.
- The substance polymerization causes serious operational problems.
- The boiling points are very similar and the energy consumption of distillation is high.
- The number of theoretical plates required for distillation is high.

02. Special Group Substances

- Substitution of benzene
- Hydroxy acids
- Fused ring compound
- Phenyl alkanes, phenyl ketones, etc.
- Diamine, dinitrile, diisocyanate

03. Obtain High Purity Chemicals

- The product requires purity greater than 99%
- The Crystallization meets the requirements of food grade, polymer grade and electronic grade

04. Freezing Point in the Range of 20-200°C

- More than 70% of the substance has a freezing point of 20-200°C and requires low public works consumption.

Typical Applications

Petrochemical Industry

- 1, 2, 4, 5 - Tetramethylbenzene
- Maleicanhydride
- P-xylene
- M-xylene

Polymer Monomers

- Caprolactam
- Hexanediamine
- Bisphenol A
- Acrylic acid
- Dimethyl terephthalate

Electronic Chemicals

- Hydrogen peroxide
- Phosphoric acid
- Ethylene carbonate
- Dimethyl carbonate
- Vinylene carbonate

Biosynthetic Materials

- Dimethyl succinate
- Lactide
- Pentanediamine
- Long-chain dibasic acid

Coal Chemical Industry

- Refined naphthalene
- Fischer-Tropsch wax
- Cresol, Naphthol

Fine Chemicals

- Benzoic acid
- Phenylenediamine
- Dichlorobenzene
- Chloroacetic acid
- Nitro chlorobenzene

WeChat Official Accounts



Add Our WhatsApp



@ DODGEN Chemtech



 inquires@chemdodgen.com

 +86 180 1605 8776

 <https://www.dgchemtech.com/>

 27th Floor, No.388, Fushan Road
Pudong New Area, Shanghai