

CONTINUOUS FREEZERS IN ICE CREAM



Continuous freezers are an essential piece of equipment used in the production of ice cream. They are designed to freeze and churn the ice cream mixture continuously, resulting in a smooth and creamy texture.

The operation of continuous freezers generally involves the following steps:

1. Feeding

- The food product, such as ice cream mix, is fed into the continuous freezer. The mix typically contains the desired ingredients, including dairy, sweeteners, flavorings, and other additives.

2. Chilling

- The continuous freezer rapidly chills the food product by circulating a refrigerant, such as ammonia or freon, around the freezing chamber. The refrigerant extracts heat from the product, lowering its temperature.

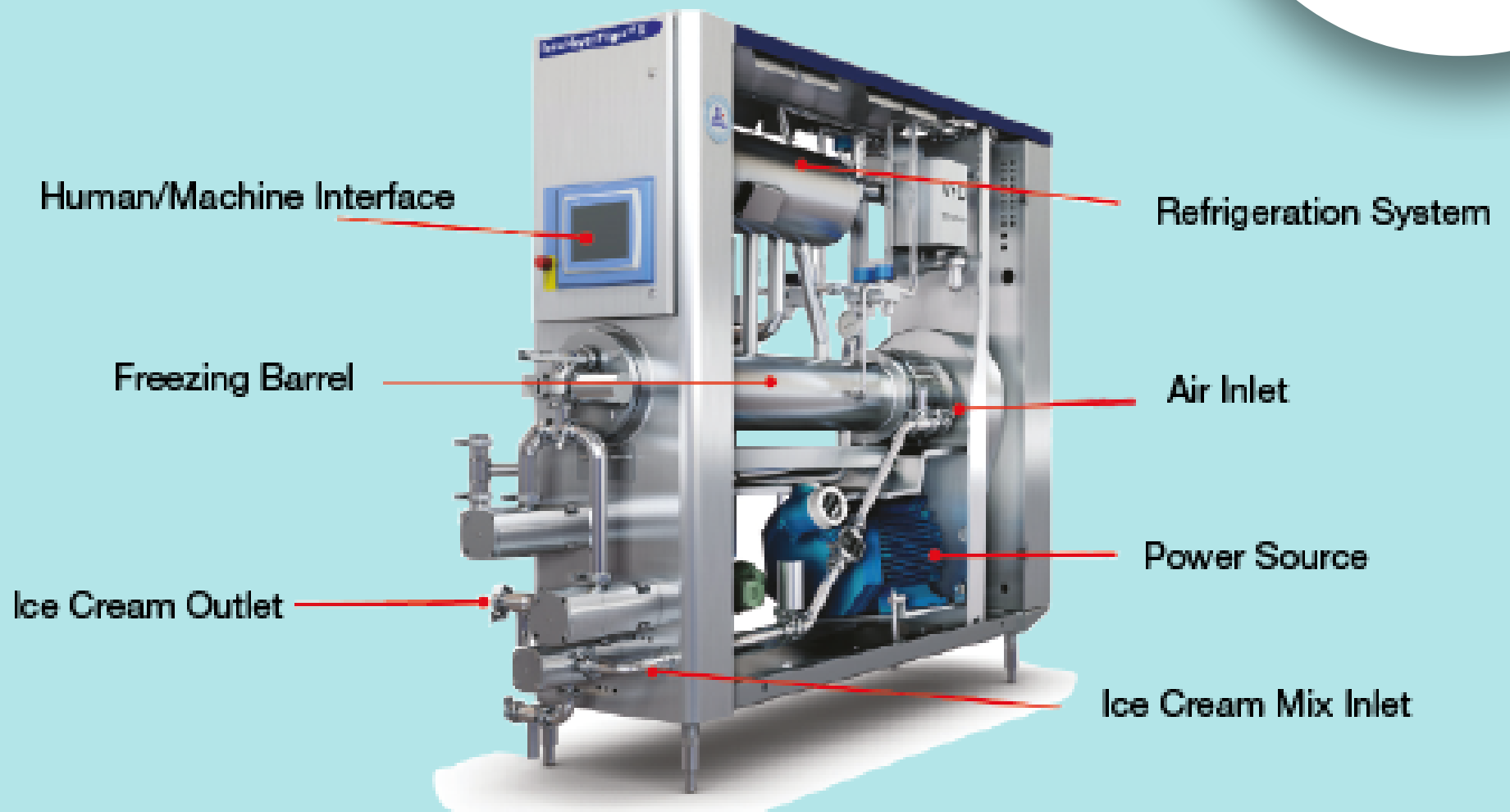


3. Agitation and Mixing

- As the product moves through the freezing chamber, it is agitated and mixed.
- Agitation helps distribute the cold temperature evenly and promotes the formation of small ice crystals, resulting in a smooth and creamy texture.
- The continuous freezer consists of a stainless steel shaft carrying a set of blades (dasher) rotating at 150-200 rpm inside a freezing cylinder.



4. Freezing



- The continuous freezer maintains a controlled freezing temperature, typically around -20 to -30 degrees Celsius.
- It takes about 30 sec for partial freezing the mix. The ice crystal size is reduced to 45-55 μm and the air voids are in the range of 100-150 μm diameter.



5. Overrun Control

- Continuous freezers also control the amount of air incorporated into the product, known as overrun.
- A higher overrun creates a lighter and more aerated product, while a lower overrun results in a denser and creamier texture.

6. Discharge

- Once the product reaches the desired consistency, it is discharged from the continuous freezer.
- From there, it can be directed to packaging equipment or further processing, depending on the specific application.



Commercial production advantages

- High Production Capacity
- Consistent Product Quality due to continuous production
- Time Efficiency because less viscosity is needed and incorporation of air is less
- Flexibility in Recipe and Flavor Variation
- Precise Air Incorporation (Overrun Control)
- Efficient and Automated Process
- There is less tendency towards sandiness because rapid freezing favours small lactose crystals



CONTRIBUTING TO THE PRODUCTION OF DELICIOUS
AND APPEALING ICE CREAM PRODUCTS.