Yuanxian food machine

Vacuum-Fresh

Food Vacuum Cooling Machine

2025

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Core Technical Principle

Food Vacuum Rapid Cooling Technology

Physical principle

Under a pressure of 613 Pa, the boiling point of water drops to 0°C, while at standard atmospheric pressure it is 100°C. This principle can be utilized to achieve rapid cooling. By reducing the pressure, water can evaporate at a low temperature, absorbing heat and thereby quickly cooling food. This method is much more efficient than traditional cooling methods.

Two-stage cooling

First, the pressure is reduced to the flash point so that the moisture on the surface of the food begins to evaporate, creating conditions for rapid cooling. Then, continuous evaporation absorbs heat, causing the food temperature to drop rapidly and reach the desired cooling temperature in a short time, thus maintaining the quality of the food.

System Advantages

The vacuum system has good sealing performance. The cooling process is hygienic and safe, which avoids external contamination of food and ensures food safety. It can accurately control the cooling speed and temperature, and carry out personalized cooling according to the needs of different foods, thereby enhancing the cooling effect.

02

Core product features

Six Major Technical Advantages

Special Dual-Channel Water Catcher

It adopts a special double-channel water catcher, which has remarkable energy-saving effects. Compared with cold storage refrigeration, it saves 60% of energy, and compared with traditional vacuum rapid cooling machines, it saves 30% of energy, thereby reducing enterprise operating costs. The cooling efficiency is significantly improved by 30%, the cooling time is shortened, the production efficiency is increased, and the large-scale production needs of enterprises are met.

Intelligent Temperature and Pressure Control System

Temperature and pressure dual control system, with adjustable control logic according to actual needs;Contact temperature control: Using temperature probes to precisely control the temperature of food (in direct contact with food);Non-contact method: Utilizing vacuum pressure sensing technology to avoid the contamination risk caused by the probe coming into contact with food. Achieving precise temperature control, ensuring even and stable temperature during the cooling process, and guaranteeing the consistency of food cooling quality.

Neat and simple structural design

The 6mm thick SUS304 stainless steel enclosure is sturdy and durable, with strong corrosion resistance and a long service life, ensuring the long-term stable operation of the equipment. It is supported by a carbon steel skeleton, which provides stable structure and high load-bearing capacity, able to support heavy weights and ensuring the safety and reliability of the equipment. The 1.5mm SUS304 stainless steel front panel is clean, durable and easy to clean.

Automatic Processing System

One-button start-up operation is simple and convenient. Temperature and pressure control modes can be switched at any time. Different parameter requirements can be pre-set according to different foods to meet the cooling needs of different foods and improve production flexibility. With a high degree of automation, it reduces manual intervention, lowers the risk of operational errors, and enhances production efficiency and product quality.

Miniaturized production line adaptation

With the minimalist design concept and optimized structural layout, the equipment occupies less floor space and has a higher space utilization rate, making it suitable for various production sites. It can be flexibly installed on different production lines to achieve rapid cooling, improve the overall efficiency of the production line, and save space costs.

Modular Design

The modular design of each system minimizes the cost of after-sales maintenance

Reserved multiple module interface options, such as temperature and pressure curve data interface, Internet of Things module for remote control, etc.

Customized modules: nitrogen return module, gas regulation module, etc.

03

Industry Application Scenarios

Eight Food Fields

Vegetables

Fresh-cut salads, frozen vegetables and other vegetable products can maintain a fresh and tender taste after cooling, extend the shelf life, and reduce nutrient loss. It is suitable for vegetable processing enterprises to ensure product quality, meet the market demand for fresh vegetables, and improve product competitiveness.

Meat products

For meat products such as braised meat and low-temperature prepared meat, uniform cooling can avoid surface icing, maintain the meat tender and juicy, and ensure good taste. It is used in meat processing enterprises to improve production efficiency, ensure stable product quality, and meet consumers' demand for high-quality meat.

Sushi

For sushi products such as sashimi and sushi platters, the taste is better after cooling, which can maintain the freshness of the ingredients and improve the product quality. It is suitable for sushi-making enterprises to ensure the taste and quality of the products, meet consumers' pursuit of high-quality sushi, and increase the added value of the products.

Pastry and dim sum

For dough products such as baozi (steamed buns), jiaozi (dumplings), and mantou (steamed bread), it remains soft and does not harden easily after cooling, extending the shelf life. It is used in dough product manufacturing enterprises to improve production efficiency, ensure consistent product quality, meet market demand, and reduce production costs.

Bakery products

For bakery products such as cake bases and cookies, they do not collapse easily after cooling, maintaining a complete shape and delicate taste. It is suitable for bakery enterprises to improve product quality and production efficiency, meeting consumers' demand for high-quality bakery products.

Seafood

For aquatic products such as shrimp and surimi products, the taste is better after cooling, maintaining the freshness of seafood, reducing the fishy smell, and improving the product quality. It is used in aquatic product processing enterprises to ensure product quality, extend the freshness period, and meet the market demand for high-quality aquatic products.

fried food

Fried chicken, spring rolls and other fried products have a crispy exterior and juicy interior after cooling, resulting in a better taste and less likelihood of becoming soft again. This is suitable for fried food production enterprises to improve product quality and production efficiency, meeting consumers' demand for delicious fried foods.

Pre-made dishes

Ready-to-eat meal packages, cooking kits and other pre-made dish products can maintain the original flavor of the ingredients after cooling, with no impact on taste and nutrition. They are used in pre-made dish production enterprises to improve production efficiency, ensure product quality, and meet consumers' demand for convenient and delicious pre-made dishes.

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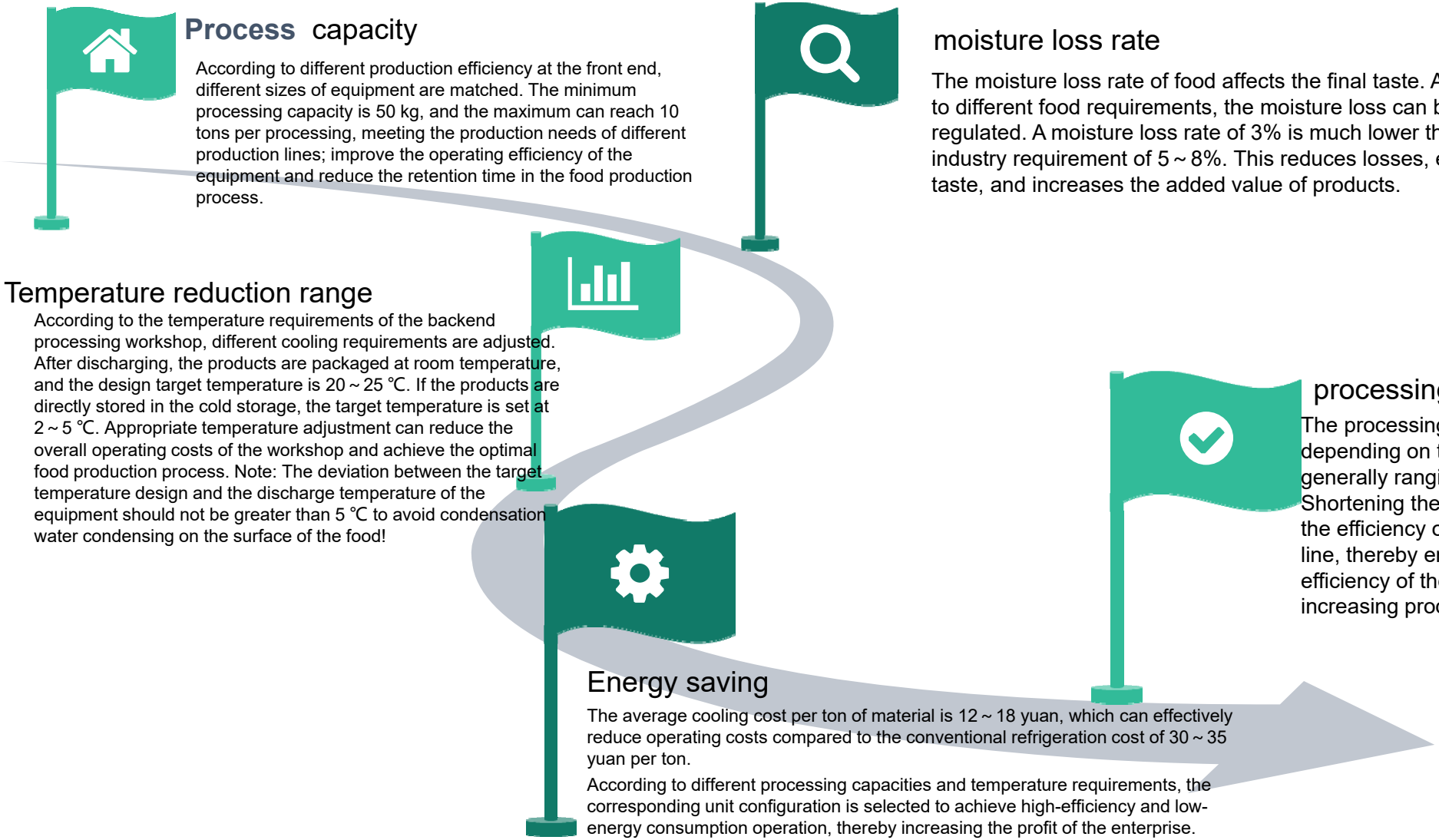
Performance parameter comparison

Core indicators of food vacuum cooling machine



Process capacity

According to different production efficiency at the front end, different sizes of equipment are matched. The minimum processing capacity is 50 kg, and the maximum can reach 10 tons per processing, meeting the production needs of different production lines; improve the operating efficiency of the equipment and reduce the retention time in the food production process.

moisture loss rate

The moisture loss rate of food affects the final taste. According to different food requirements, the moisture loss can be regulated. A moisture loss rate of 3% is much lower than the industry requirement of 5 ~ 8%. This reduces losses, ensures taste, and increases the added value of products.

Temperature reduction range

According to the temperature requirements of the backend processing workshop, different cooling requirements are adjusted. After discharging, the products are packaged at room temperature, and the design target temperature is 20 ~ 25 ℃. If the products are directly stored in the cold storage, the target temperature is set at 2 ~ 5 ℃. Appropriate temperature adjustment can reduce the overall operating costs of the workshop and achieve the optimal food production process. Note: The deviation between the target temperature design and the discharge temperature of the equipment should not be greater than 5 ℃ to avoid condensation water condensing on the surface of the food!

processing cycle

The processing cycle varies slightly depending on the target temperature, generally ranging from 15 to 25 minutes. Shortening the cooling time improves the efficiency of the entire production line, thereby enhancing the turnover efficiency of the enterprise and increasing production output.

Energy saving

The average cooling cost per ton of material is 12 ~ 18 yuan, which can effectively reduce operating costs compared to the conventional refrigeration cost of 30 ~ 35 yuan per ton.

According to different processing capacities and temperature requirements, the corresponding unit configuration is selected to achieve high-efficiency and low-energy consumption operation, thereby increasing the profit of the enterprise.

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