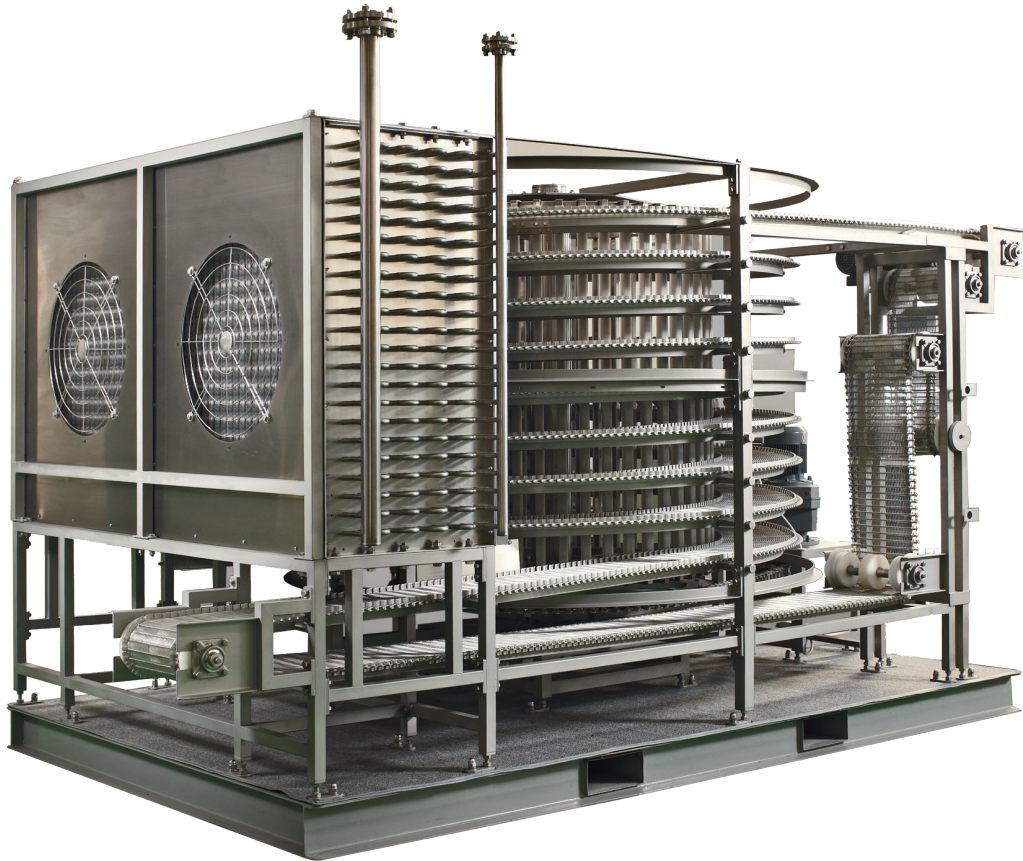




冰轮环境
MOON-TECH



QUICK FREEZING EQUIPMENT

MOON ENVIRONMENT TECHNOLOGY CO., LTD.

CORPORATE BUSINESS

COMPANY INTRODUCTION

Committed to artificial environment control technology innovation
Committed to the comprehensive use of energy technology innovation

1956

Since 1956

000811

Stock Code

5000+

Employees

120+

Clients from Countries/Regions



GLOBAL VISION

9 Industrial Parks over the world

120+ Countries /Regions



Headquarters



Baoding Industrial Park



Laishan Industrial Park



Jinan Center



Guxian Industrial Park

TECHNICAL AWARDS

Only Chinese company wins UN award for exemplary project to protect ozone layer.

22

National & provincial technological innovation platforms

72

National and industrial standards

256

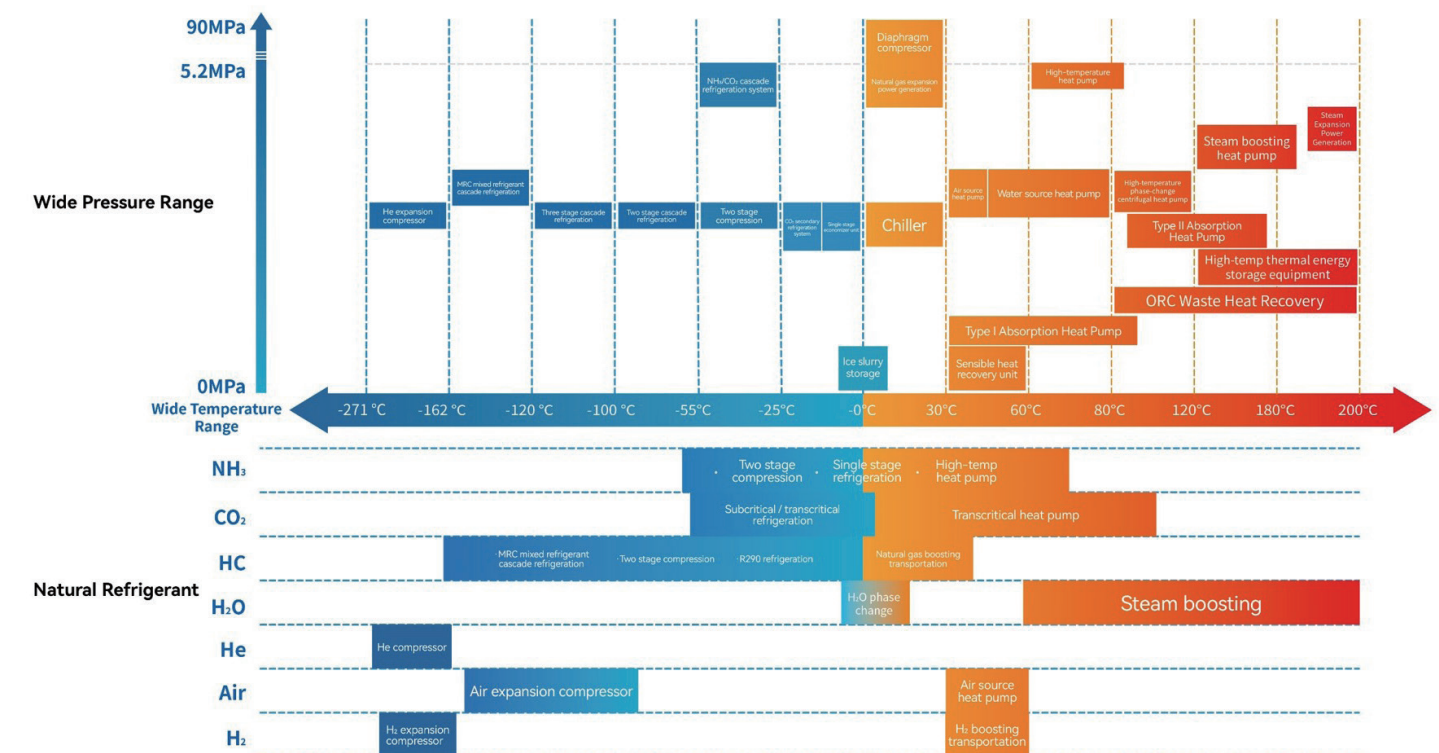
National, Provincial and Ministerial Scientific and Technological Achievement Awards



OUR TECHNOLOGY

Complete production line helps to provide optimal temperature and pressure conditions for all types of users around the world in a more low-carbon way.

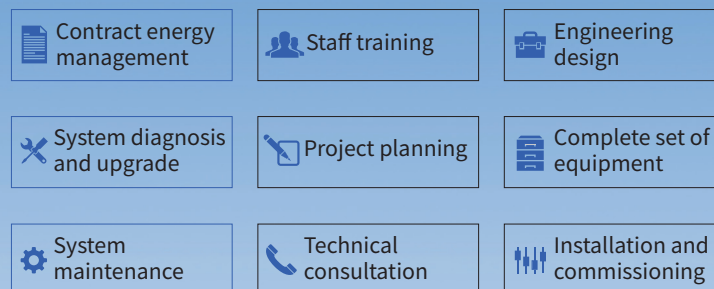
PROMOTE COMPLEMENTARY UTILIZATION OF ENERGY BY USING ARTIFICIAL ENVIRONMENT CONTROL TECHNOLOGY



FULL LIFE CYCLE SERVICE

MOON-TECH is committed to becoming an “intelligent cooling and heating system integration expert” in the field of artificial environment and comprehensive energy utilization technology, using a more environmentally friendly way to provide users in various industries around the world with the best “temperature” and “pressure” conditions, professional and value-added services, so as to build an interconnected world of refrigeration and heating.

Global service guarantee



ADVANTAGES OF SYSTEM INTEGRATION

01

Binglun Environment is capable of providing full-service support including project planning, engineering design, complete sets of equipment, installation and commissioning, system maintenance, technical training, system upgrades, and energy performance contracting.

02

Ice Wheel has established a high-performance freezing laboratory that can simulate the freezing states of various types of frozen products. Based on the freezing curve, it scientifically and professionally provides single freezing machine solutions.

03

The temperature range is wide, from 0° C pre-cooling devices to -70° C ultra-low temperature freezing devices, all can be provided.

04

There are various refrigerant options available, including ammonia (R717), carbon dioxide (R744), and Freon (R404A, R507, etc.) as working media.



OVERVIEW

During the food freezing process, rapid freezing can make the ice crystal particles formed by the water inside the food become finer, minimizing damage to the cell tissue to the greatest extent. The water loss rate of the product is low, and the taste and nutritional value can be retained to the greatest extent.

FEATURES OF CONTINUOUS FREEZING PRODUCTS

The continuous freezing products of the ice wheel environment include four major series of products: tunnel series quick-freezing devices, spiral series quick-freezing devices, fluidized quick-freezing devices, and intelligent tunnel quick-freezing devices. They share the following significant common features.

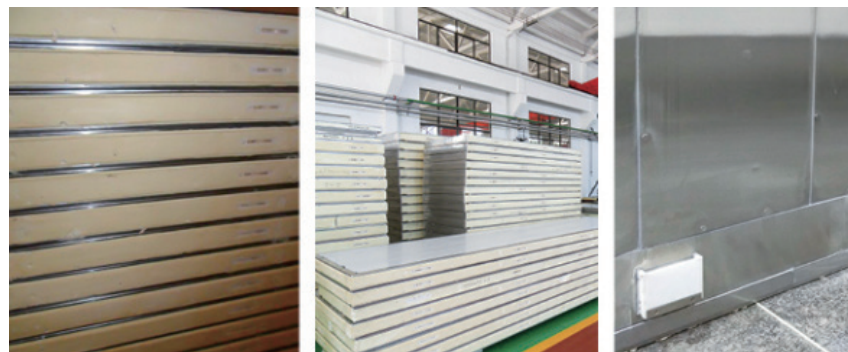
Evaporator

The segments come in various forms such as aluminum tubes, aluminum sheets, stainless steel tubes, aluminum sheets and aluminum-magnesium alloys. The tube group adopts a front-row arrangement form, a variable pitch structure, smooth flat sheets, and the tubes and sheets have close contact. The area ratio is reasonable, which reduces the temperature difference between the intake and exhaust air, improves the freezing efficiency and lowers the frosting rate.



Insulated storage body

The insulated storage body complies with the mechanical industry standard of the People's Republic of China JB/T6527-2006 "Insulated Sandwich Panels for Combined Cold Storage". Both the inner and outer panels of the insulation are made of 304 stainless steel plates, and are integrally pressure-foamed with rigid polyurethane. The panels are connected by a hook-lock box locking method.

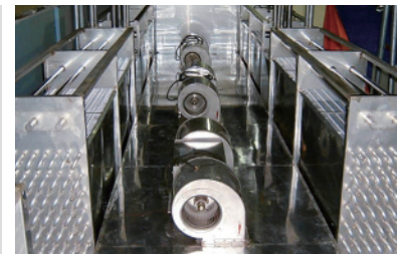


TUNNEL SERIES QUICK-FREEZING DEVICE

The tunnel-type quick-freezing devices of Ice Wheel Environment include three major series of products: ordinary tunnel-type quick-freezing devices, high-efficiency tunnel-type quick-freezing devices, and dual-channel tunnel-type quick-freezing devices.

Proprietary features of the tunnel series quick-freezing device

The fan of the high-efficiency single freezing machine is a centrifugal fan specially designed for low-temperature and humid environments. The motor is a waterproof and moisture-proof precision cast aluminum motor with excellent anti-corrosion performance. The impeller is made of die-cast aluminum in one piece.



The plates and strips are selected from imported high-strength stainless steel plates and strips.



ORDINARY TUNNEL-TYPE QUICK-FREEZING DEVICE



Application scenarios of ordinary tunnel (plate and strip) type quick-freezing equipment

It is mainly used for the rapid freezing of aquatic products (such as scallops, shrimps, various fish slices, fish segments, squids, etc.), fried cakes, cut meats and other products that do not require plating.

The tunnel (plate and strip) type quick-freezing device is divided into single-plate and double-plate and strip types. The freezing capacity range of the single-plate and strip is 250 to 800 kg/h, and that of the double-plate and strip is 500 to 1600 kg/h.



Note: Frozen products are based on bare frozen scallop columns (specification $\Phi 20 \times 18 \text{ mm}$, 80 pieces per pound, moisture content 80%, fabric density approximately 4 kg/m^2 , entry and exit temperatures $+10^\circ \text{ C}$, -18° C).

Application scenarios of ordinary tunnel (mesh belt) type quick-freezing device

It is mainly used for the rapid freezing of processed foods (such as dumplings, tangyuan, steamed buns, poultry, meat, spring rolls, vegetable rolls, breaded fish, breaded shrimp, shumai, pastries, etc.), single shrimp, fish slices, the vast majority of frozen products and raw frozen cut meat.

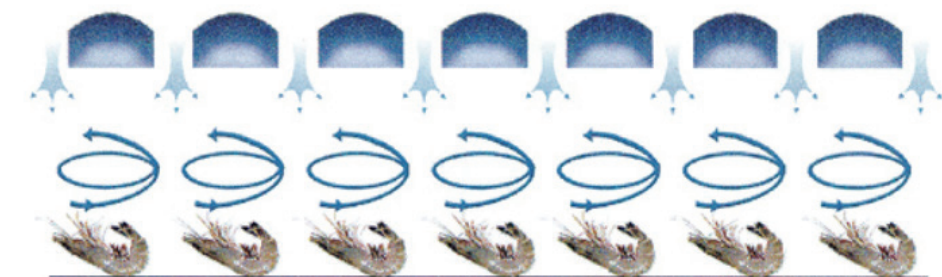
The tunnel (mesh belt) type quick-freezing device is divided into single mesh belt and double mesh belt. The mesh width ranges from 1.2 meters to 4 meters. The freezing capacity range of the single mesh belt is 250 to 3000 kg/h, and that of the double mesh belt is 500 to 6000 kg/h.

Note: Frozen products are based on raw frozen dumplings (20g each, fabric density approximately 10 kg/m^2 , entry and exit temperatures $+15^\circ \text{ C}$, -18° C).

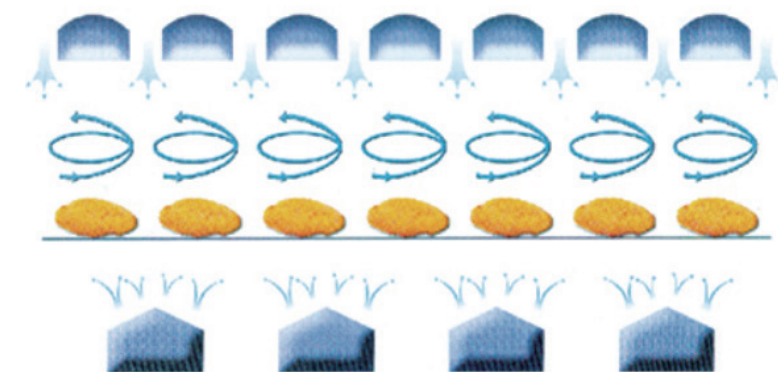


The air distribution method of the common tunnel-type quick-freezing device

By adopting the "heat fluctuation" air distribution system, the freezing heat exchange efficiency of food is significantly improved and energy consumption is also greatly reduced in a fluctuating state.

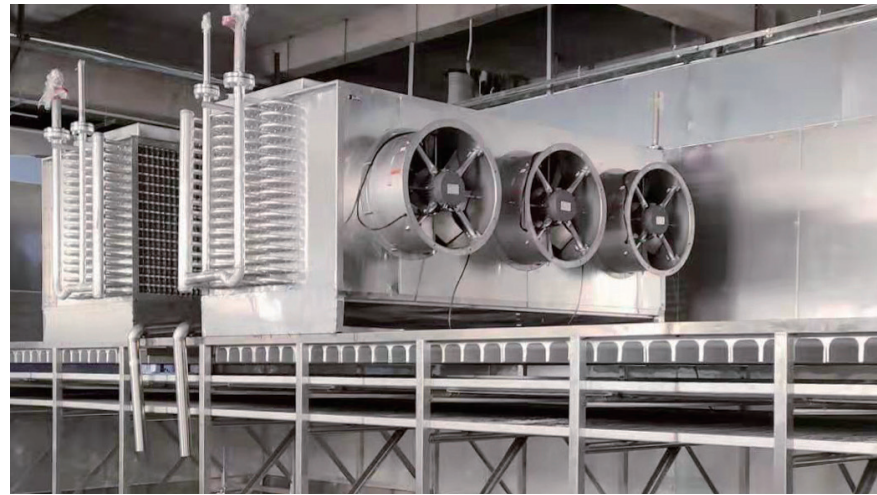


"Thermal fluctuation" air distribution system



"Bidirectional thermal fluctuation" air distribution system

DOUBLE-CHANNEL TUNNEL QUICK-FREEZING DEVICE



Application Scenarios Of Dual-Channel Tunnel Quick-Freezing Equipment

It is mainly applied to processed foods such as dumplings, steamed buns, and tangyuan, and can also be used for the rapid freezing of individual or plate meat and aquatic products.



Production Capacity Of Dual-Channel Tunnel Quick-Freezing Equipment

Dual-channel: Network width range 1.2 meters to 4 meters, single network belt freezing capacity range 250 to 3000 kg/h.

Note: Frozen products are based on raw frozen dumplings (20g each, fabric density approximately 10kg/m³, entry and exit temperatures +15° C, -18° C).

Product Features Of The Dual-Channel Tunnel Quick-Freezing Device

There are spacious enough passageways on both sides of the conveyor belt, allowing for smooth entry into the warehouse for cleaning.

The internal maintenance space of the warehouse is spacious, making it convenient to enter for maintenance.

HIGH-EFFICIENCY TUNNEL-TYPE QUICK-FREEZING DEVICE

Application Scenarios Of High-Efficiency Tunnel Plate And Belt Quick-Freezing Equipment

It is particularly suitable for the rapid freezing of fish slices, squids and some shrimp aquatic products. The high-efficiency tunnel plate and belt quick-freezing device is divided into single-plate belt and double-plate belt. The freezing capacity range of the single-plate belt is 400 to 750kg/h, and that of the double-plate belt is 800 to 1500 kg/h.

Note: Frozen products are based on bare frozen tilapia slices (200x100x20mm in size, 120g per slice, moisture content 75%, fabric density approximately 7.5kg/m², entry and exit temperatures +10° C, -18° C).



Application Scenarios Of High-Efficiency Tunnel Mesh Belt Type Quick-Freezing Device

It is particularly suitable for the rapid freezing of aquatic products such as fish and some shrimp.

High-efficiency tunnels have a faster freezing speed, lower dry loss and higher quality compared with ordinary tunnels.

It is usually matched with an ice coating machine and a secondary freezing production line.

The freezing capacity range of the high-efficiency tunnel mesh belt type quick-freezing device is 500 to 1500kg/h.

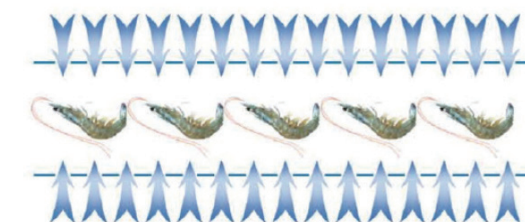
Note: Frozen products are based on headless raw shrimp (size Φ15x80mm, 16-20 per pound, moisture content 75%, fabric density approximately 3kg/m², entry and exit temperatures +15° C, -18° C).



High-Efficiency Tunnel-Type Quick-Freezing Device Air Distribution Method

Based on the common "thermal fluctuation" air distribution system, the wind speed is greatly increased, thereby significantly shortening the freezing time, further improving the freezing efficiency and reducing the dry loss of food.

During the product freezing process, the entire process is in a positive pressure zone, and the return air zone is located outside the conveyor belt. Due to high wind speed and large wind pressure, buffer zones are set up near the inbound and outbound storage bodies to reduce cold leakage.



SPIRAL SERIES QUICK-FREEZING DEVICE

Exclusive Features Of The Spiral Series Quick-Freezing Device

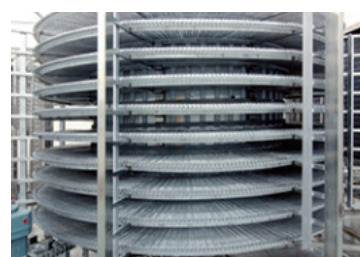
The spiral series of quick-freezing devices are divided into single spiral and double spiral types. The double spiral can achieve low feeding and low discharging, while the single spiral can only offer low feeding and high discharging or high feeding and low discharging. Moreover, multiple options for the direction of the inlet and outlet can be provided according to the user's requirements.

The internal passage of the quick-freezing device is spacious, allowing personnel to move freely. There are no hygiene dead corners, which is convenient for internal cleaning and maintenance.

- The air duct, blades and support of the axial flow fan are all made of stainless steel. The blades are stainless steel castings and the motor is a waterproof and moisture-proof precision cast aluminum motor.
- The air distribution method is a one-to-one connection between the evaporator and the drum, which results in better freezing efficiency.
- The bottom plate of the quick-freezing device is in the form of slopes on both sides, with corner plates on the bottom plate and drainage ditches on both sides. The upper panel of the base plate is welded as a whole, with good flatness and no leakage. The drainage outlet is located at the end of the bottom storage plate, making drainage convenient.

The transmission mode adopts a unique slight tensioning technology, and the conveyor belt is in a uniformly loosened operating state, ensuring the stable operation of the conveyor belt.

Multi-point fault detection, real-time monitoring of the working status of the quick-freezing device, can immediately alarm and display the fault point and cause, protecting each transmission component from damage.



The friction strip of the drum transmission is made of "C" -shaped ultra-high molecular material. With a unique wrapping and fixing process, it can effectively prevent movement and at the same time effectively avoid surface deformation of the friction strip caused by thermal expansion and contraction.



The control cabinet adopts an internationally renowned brand PLC controller and touch screen control. The display is intuitive and the operation is simple. Reserve a signal interface for uploading the signal of the quick-freezing device.



- The inlet and outlet are equipped with emergency stop switches and alarm lights. In case of an accident or emergency, the machine can be stopped at any time and an alarm can be triggered.
- The reducer adopts a well-known imported brand. The main drive drum, reducer and frequency converter are in a one-to-one configuration, which can ensure smooth operation for a long time.



SPIRAL QUICK-FREEZING DEVICE



Application Scenarios Of Spiral Quick-Freezing Devices

It is widely used for the rapid freezing of prepared foods, aquatic products, cut meat and poultry, ice cream, pastries, small packaged foods, etc. It is especially suitable for frozen products with long freezing time, high entry temperature and large production volume requirements, and is suitable for assembly line processing.

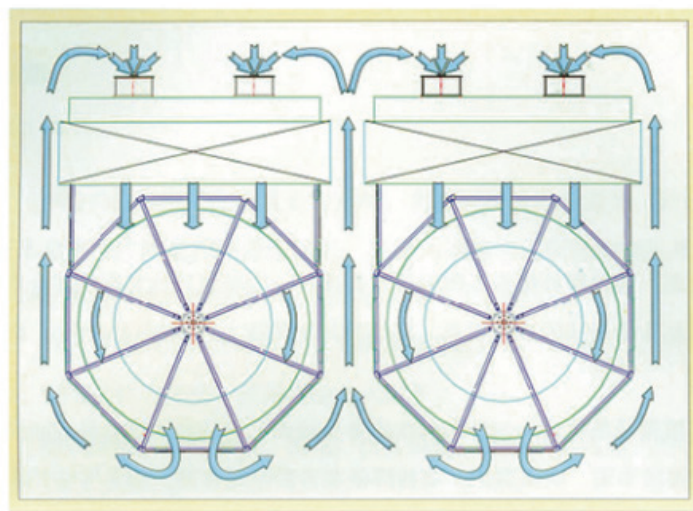
The spiral quick-freezing device is divided into single and double spiral types. The freezing capacity range of the single spiral is 250 to 2500kg/h, and that of the double spiral is 500 to 5000 kg/h.

Note: Frozen products are based on bare frozen raw chicken legs (size $\Phi 80 \times 100 \text{mm}$, 100g per piece, fabric density approximately 11kg/m², entry and exit temperatures +20° C, -18° C).

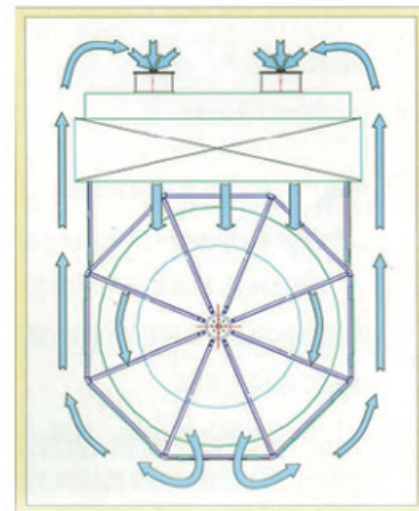


The Air Distribution Method Of The Spiral Quick-Freezing Device

Horizontal air supply, cold air is blown out through the evaporator and air box to form a uniform diffused air state. After being evenly distributed, it is blown towards the surface of the food, greatly shortening the air outlet and return path of the evaporator and minimizing the temperature difference between the outlet and return air as much as possible. The outside of the evaporator is connected by a stainless steel air guide plate, which, together with the insulated storage body, forms a reasonable and smooth air guide duct, ensuring uniform air flow at different positions of the mesh belt. This enables the frozen products to achieve the best heat exchange effect, ensures the consistency of the freezing quality of different parts of the products in the same tray, and effectively reduces the frosting speed of the evaporator.



Double Helix Air Distribution Mode



Single Spiral Air Distribution Mode

ACCUMULATION TYPE SPIRAL QUICK-FREEZING DEVICE



The accumulation type spiral quick-freezing device mainly consists of feeding and discharging devices, basic frame and insulation structure, main drive device, stainless steel accumulation type mesh belt, two-layer platform, tensioning device, air cooler, centrifugal fan, air balance device, automatic lubrication system, air defrosting system, CIP cleaning system, electrical control system, etc

Application Scenarios Of The Accumulation Type Spiral Quick-Freezing Device

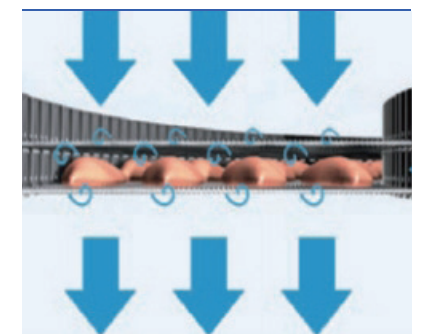
It is suitable for the rapid freezing of fried foods and products such as meatballs and chicken nuggets. The freezing capacity range of the accumulation type spiral quick-freezing device is 250 to 2500 kg/h.

Note: Frozen products are based on bare frozen raw chicken legs (size $\Phi 80 \times 100 \text{mm}$, 100g per piece, fabric density approximately 11kg/m², entry and exit temperatures +20° C, -18° C).



The Air Distribution Method Of The Accumulation Type Spiral Quick-Freezing Device

The accumulation type spiral quick-freezing device adopts vertical air supply, and all the cold air passes from top to bottom through multiple layers of mesh belts. Meanwhile, the mesh belt baffle is equipped with a certain number of ventilation holes, which can form radial airflow on the surface of the mesh belt. Food is always frozen under the combined effect of vertical cold air and horizontal cold air, increasing the freezing speed by more than 20%.



Product Features Of The Accumulation Type Spiral Quick-Freezing Device

- The specially designed high-baffle mesh belt is adopted, which will prevent the products from being blown off, piled up and clogged, or the belt from being overturned.
- Compared with traditional equipment, the floor space can be saved by more than 40%.
- Users can be optionally equipped with the CIP automatic cleaning system to achieve automatic cleaning with clean water and foam as well as automatic disinfection, thus saving on cleaning
- Use more than 50% of water. Users can optionally choose ADF air defrosting, which can extend the continuous working time of the single freezing machine and improve the freezing efficiency.



FLUIDIZED QUICK-FREEZING DEVICE

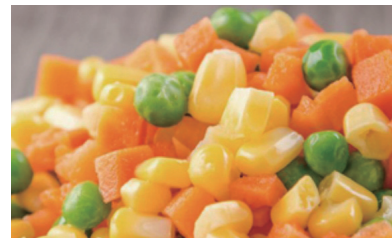
It adopts an advanced two-stage method. The first stage rapidly cools the surface layer to the freezing point temperature. Under the action of the mechanical vibration device, food particles do not stick together. The second stage deeply freezes to ensure the freezing effect of the product. It is the best choice for the rapid freezing of granular, flake, block and other food monomers.



Application Scenarios Of Fluidized Quick-Freezing Devices

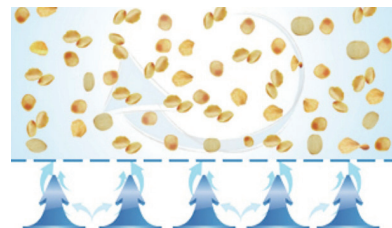
It is suitable for the rapid freezing of fried foods and products such as meatballs and chicken nuggets. The freezing capacity range of the accumulation type spiral quick-freezing device is 250 to 2500 kg/h.

Note: Frozen products are based on naked frozen green beans (fabric density approximately 20 to 30kg/m², entry and exit temperatures +15° C and -18° C respectively).



The Air Distribution Method Of The Fluidized Quick-Freezing Device

Under the effect of strong cold air flow from bottom to top, the granular, sheet-like or block-shaped food evenly placed on the screen shows a "fluidization" movement and is rapidly frozen during the movement.

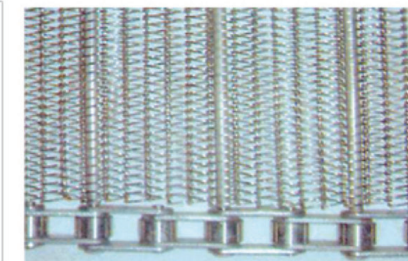
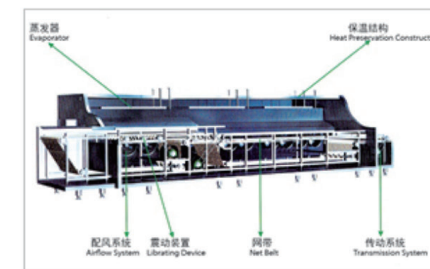


Proprietary Features Of The Fluidized Quick-Freezing Device

- The evaporator has a variable fin pitch structure with a fin pitch of 40-20-10mm. The fin pitch on the air inlet side is no less than 40mm, and that on the air outlet side is no less than 10mm.
- The fan is selected as an axial flow or centrifugal fan. On the basis of meeting the air pressure requirements for food fluidization, it ensures the air volume needed for product freezing. The motor adopts a waterproof and moisture-proof motor, and the wiring is designed to be waterproof and moisture-proof.



- It adopts a two-stage design, and the freezing effects such as single-unit rate and dry loss are all superior to those of the one-stage fluidized quick-freezing device.
- The conveyor belt is made of high-strength stainless steel mesh belt.
- The fan, conveyor belt and vibration are all variable-frequency speed-regulated, which can meet the freezing requirements of different products.



INTELLIGENT TUNNEL QUICK-FREEZING DEVICE

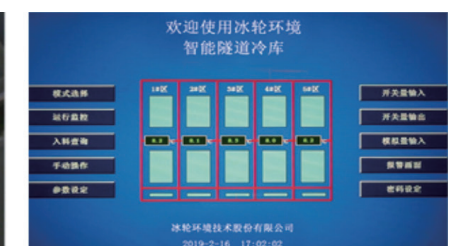
Application Scenarios Of Intelligent Tunnel Quick-Freezing Devices

The series of intelligent tunnel quick-freezing devices can be widely used in the quick-freezing processing of packaged foods, including cut meat, aquatic products, some processed foods, ice cream and many other products. They can replace large quick-freezing warehouses to achieve automated continuous production and also have the storage function of a quick-freezing warehouse. The freezing capacity of intelligent tunnel devices is usually between 8t/h and 15t/h. Frozen products are based on the plattered and frozen cut chicken products.



Product Features Of The Intelligent Tunnel Quick-Freezing Device

- Intelligent control, automatic entry and exit of goods, saving labor costs and improving working conditions.
- Intelligent output statistics make it easy to achieve precise management of the production mode.
- The equipment can achieve long-term continuous production.
- Compared with traditional quick-freezing warehouses, it can save more than 60% of the building area.



FLAT PLATE SERIES QUICK-FREEZING DEVICE

Flat Plate Quick-Freezing Device

The food and the metal plate are in a double-sided contact rapid freezing type. The metal plate serves as the evaporator. Both the upper and lower surfaces of the food are in close contact with the metal plate. The cold energy is directly conducted to the food through the metal plate. Due to the fact that the thermal conductivity of the metal is dozens of times greater than that of the air surface heat exchange system, the rapid freezing of the food is achieved.



Application Scenarios Of Flat Plate Quick-Freezing Devices

It is mainly used for freezing any disc-shaped food that is not afraid of being squeezed or easy to shape, such as cut meat, poultry, by-products, etc. The freezing capacity range of the flat plate quick-freezing device is 960 to 2520 kilograms per time.

Note: The freezing amount is based on the fish plate (specification 600x400x80mm, 15kg per plate, entry and exit temperatures +20°C, -18°C).

Features of the flat plate series quick-freezing device

- The flat plate evaporator is professionally designed to ensure uniform evaporation of the refrigerant, consistent surface temperature of the plate, and high freezing efficiency.
- Both the liquid supply and gas return manifolds are made of stainless steel pipes, which can ensure long-term and frequent use in low-temperature environments. The liquid supply and gas return processes are both optimally designed to ensure the uniformity of liquid supply.
- The lifting mechanism is stable and reliable. The professionally designed hydraulic system, high-precision hydraulic cylinders and high-quality hydraulic pumps ensure that the hydraulic system can operate stably for a long time.

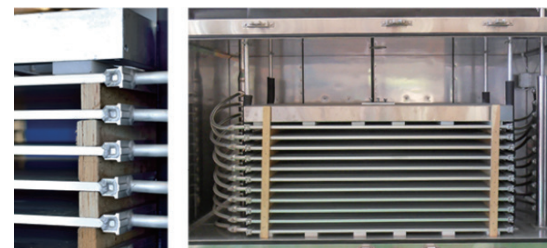


PLATE SHELF FREEZE



The food comes into direct contact with the bottom surface of the metal plate, and the other surfaces of the food undergo convective heat exchange by the cold air generated by the fan. The heat transfer mode is direct contact and cold air dual heat transfer, also known as the "dual-effect rapid freezing form".

Application Scenarios Of Panel Shelf Freeze

It is widely applicable to the rapid freezing of cut meat, aquatic products, poultry, processed foods and some fruit and vegetable foods. The freezing capacity range of the plate shelf freeze is 1500 to 5000 kilograms per time.

Note: The freezing amount is based on the fish plate (specification 600x400x80mm, 15kg per plate, entry and exit temperatures +20°C, -18°C).

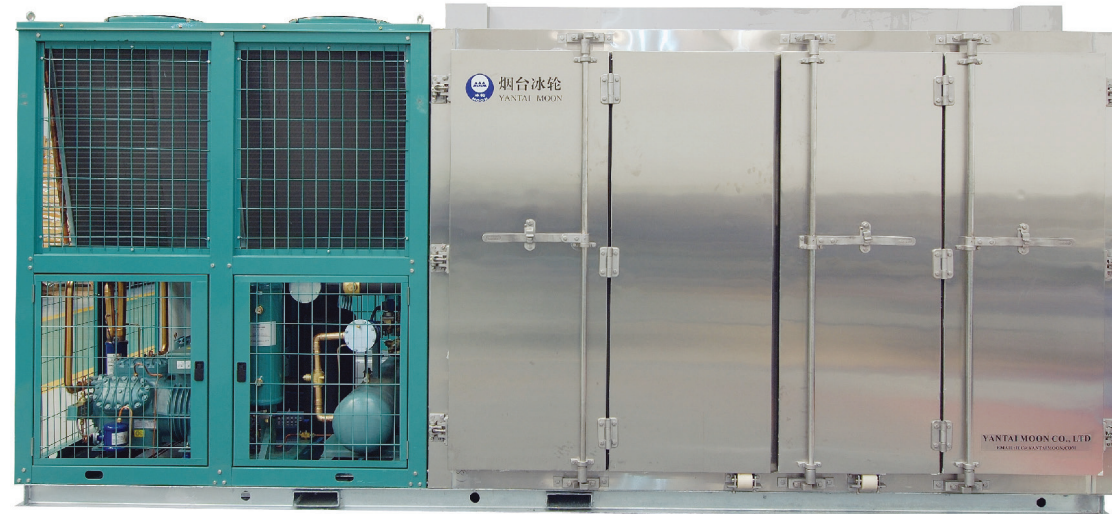


Features Of The Plate Shelf Freeze

- The plate rack evaporator adopts an irregular design, which greatly improves the heat exchange efficiency.
- Both ends of the plate are equipped with axial flow fans for cold air circulation, achieving a dual freezing mode of contact and convection, with a large heat exchange coefficient.
- When necessary, evaporation coils can be equipped at both ends of the plate to increase the quick-freezing efficiency.



ALL-IN-ONE TABLET SERIES



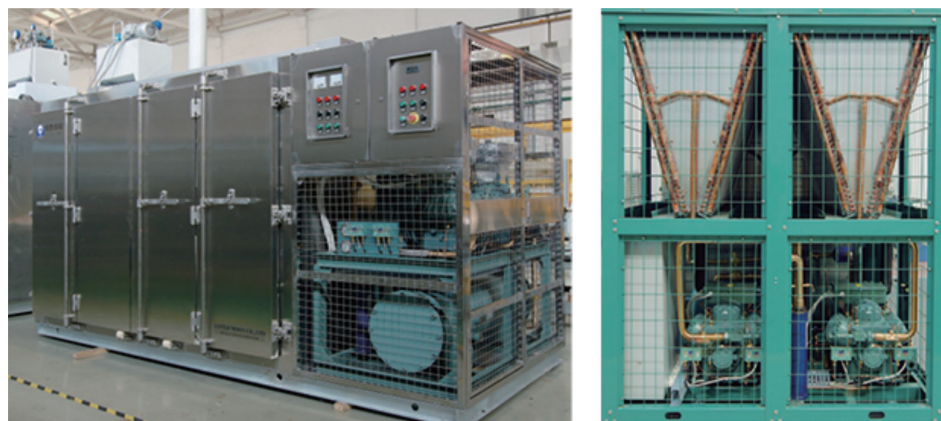
Based on the flat plate speed device and the plate shelf freeze, the corresponding cold source is configured and installed on a unified base or placed separately in close positions, forming the self-configured cold source flat plate series.

Production Capacity Of The All-In-One Flat Panel Series

The freezing capacity range of the integrated flat plate series is 1200 to 1500 kilograms per time.

Note: The freezing amount is based on the fish plate (specification 600x400x80mm, 15kg per plate, entry and exit temperatures +20° C, -18° C).

- The water-cooled all-in-one machine can be used by customers simply by connecting the corresponding power supply and water source.
- For the air-cooled integrated machine, customers only need to connect the corresponding power supply and solve the ventilation and cooling of the condenser of the unit before it can be used.



PROCESS ASSEMBLY LINE

Ice-Plated Wire

Ice Coating Machine/Secondary Freezing

The ice coating machine and secondary freezing, along with the shrimp quick-freezing device, are mainly used for ice coating and secondary freezing of shrimp after quick-freezing. After quick freezing and ice plating, not only does the shrimp have a bright color, but it can also prevent the loss of moisture in the shrimp, prevent the oxidation of proteins, and better ensure the freshness and taste of the shrimp. Ensure that the shrimp retain their nutritional value to the greatest extent during long-term storage. The output of the ice coating machine and secondary freezing is matched with the quick-freezing device, and the processing capacity range is usually between 500kg/h and 3000kg/h. The product is based on shrimp.



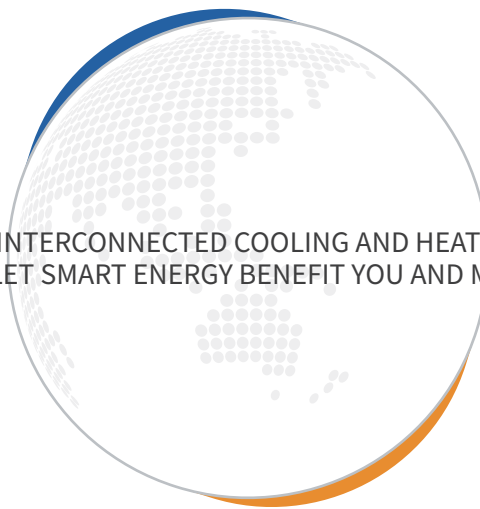
Fruit And Vegetable Pretreatment Line

It is mainly used for pretreatment before the quick-freezing processing of fruits and vegetables. For different food processing techniques, corresponding equipment components are configured to complete food pretreatment processes, such as cleaning, blanching, cooling, and fabric distribution. The production capacity of fruit and vegetable pretreatment is matched with the quick-freezing equipment, and the processing capacity range is usually between 1000kg/h and 5000kg/h. The pretreatment plans for different products vary and need to be customized according to the food processing technology.





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BUILD AN INTERCONNECTED COOLING AND HEATING WORLD
LET SMART ENERGY BENEFIT YOU AND ME



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