



冰轮环境
MOON-TECH



FLUIDIZED FREEZER

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

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

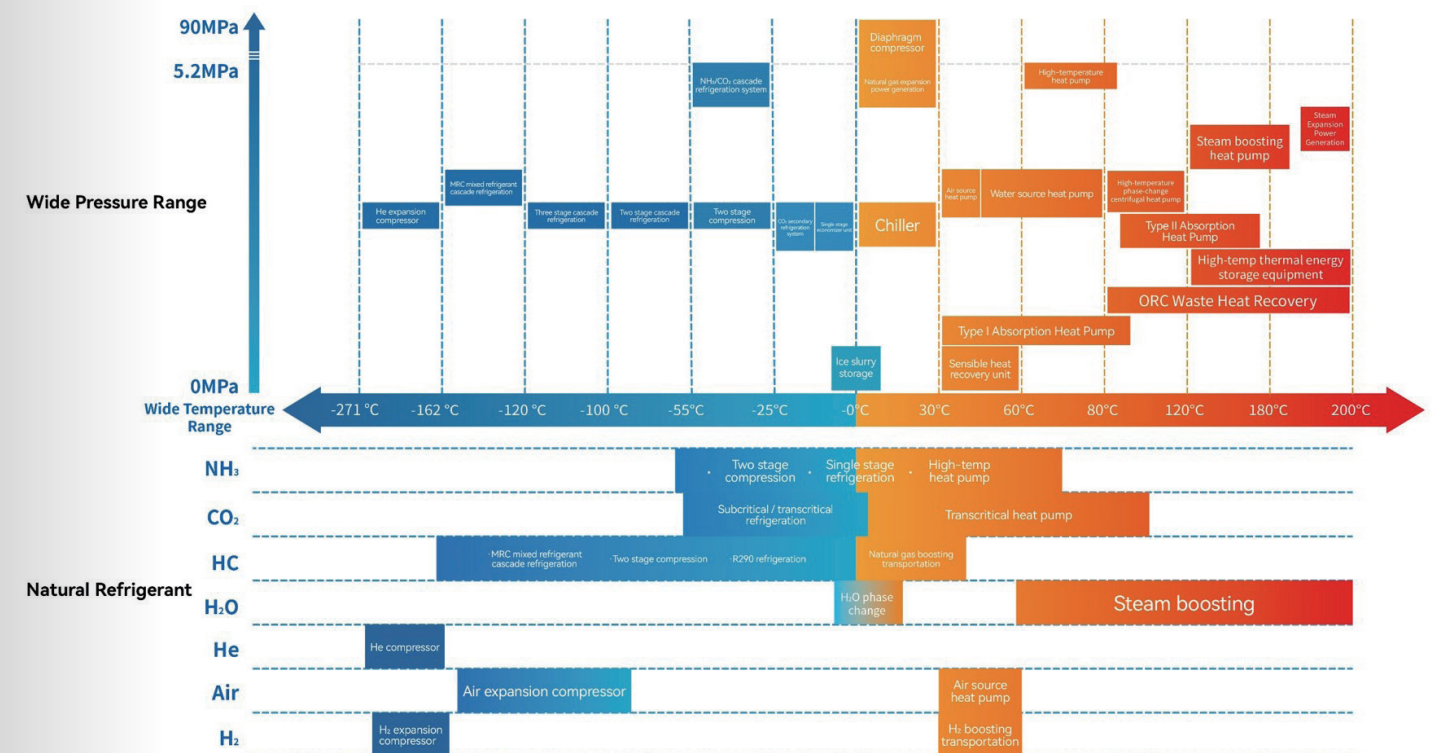
Engineering A Better Future



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.

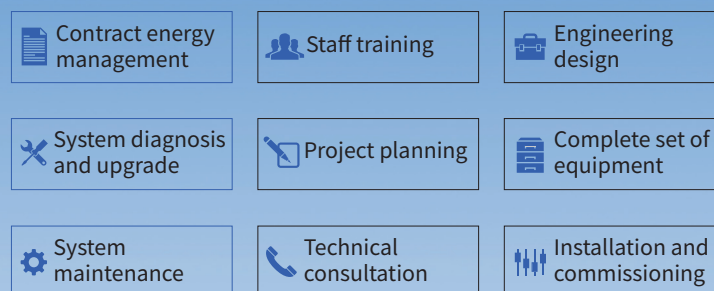
PROMOTE COMPLEMENTARY UTILIZATION OF ENERGY BY USING ARTIFICIAL ENVIRONMENT CONTROL TECHNOLOGY



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



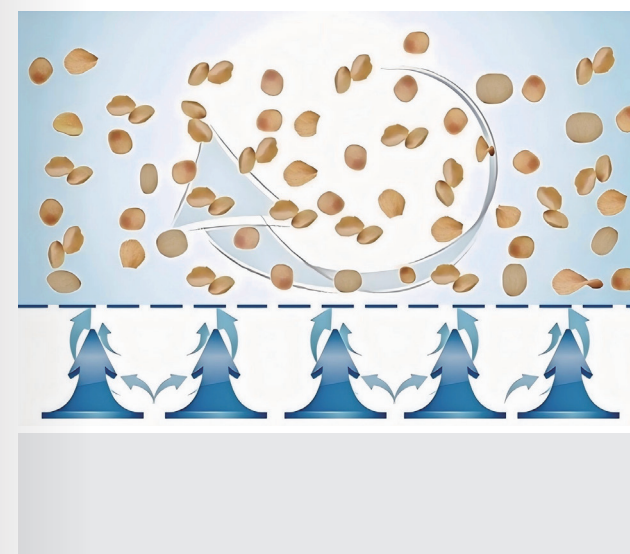
Fluidized individual quick freezing (IQF) technology

The flow process where solid particles and gas media in fluid mechanics is divided into three motion modes: fixed bed flow, fluidized bed flow and suspended flow. Fluidized bed flow is a sort of complex motion mode of fluid with solid particles; in fluidized bed flow, under the action of air flow, the motion mode of solid particles also becomes similar fluid status——“fluidization”.

Fluidized quick freezing refers to the process where the particles of granular, flaky or blocky foods on screen meshes move in “fluidized” status and are quickly frozen during movement under the action of strong cold air flow from bottom to top. Because of mutually full action between such strong cold air flow and food particles, mass transfer and heat transfer in food layer are very quick, thus achieving the purpose of quick freezing of individual food.



Two- stage fluidized freezer

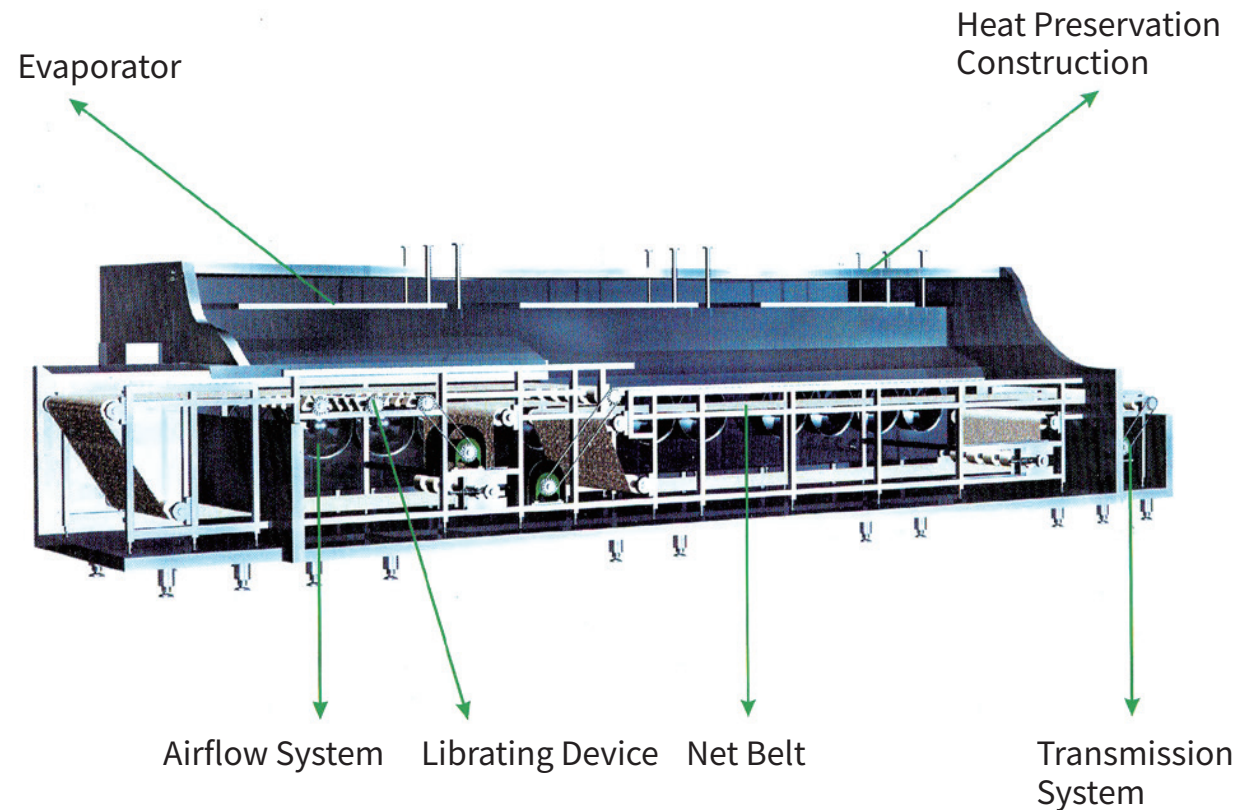


The fluidized freezer consists of insulation structure, mesh belt, transmission system, vibration device, air distribution system, evaporator, feed inlet, discharge port and electric control system.

MVD series two- stage fluidized freezer: foods are frozen in two stages; quick freezing of surface layer is performed in the first stage; i.e. surface layer is quickly cooled to freezing point temperature, so that food particles are not mutually bonded under the action of the mechanical vibration device; then foods enter the second section via the intermediate guide plate for deep freezing, so that the core temperature of the particles of frozen foods reaches -18°C .

Product features

- High efficiency, energy saving, safety.
- The reasonable and uniform air distribution mode realizes “full fluidization” of foods and reaches individual quick freezing effect with high efficiency.
- The totally enclosed insulation structure minimizes loss of refrigeration capacity and realizes remarkable energy saving effect.
- The thoroughly clean freezing environment meets the requirements of international food sanitation and safety as well as HACCP certification.



Insulation structure

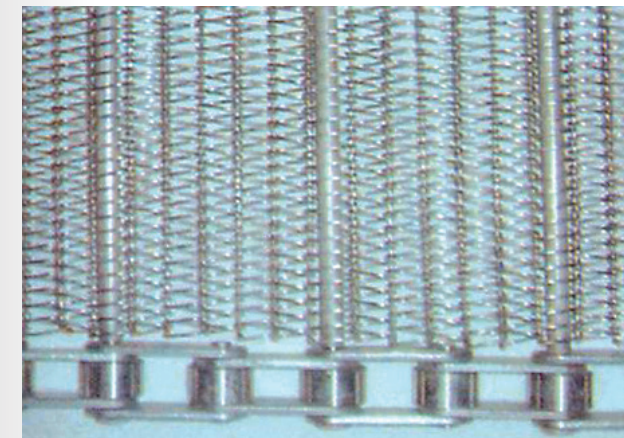
- The insulation structure is assembled of two-sided stainless steel polyurethane laminboards and supported by an integral rigid bottom frame and has excellent heat retaining property.
- The insulation boards use the environment-friendly material R141B as a foaming agent, which protects environment and has high quality.
- The discharge port is assembled of two-sided stainless steel polyurethane laminboards and has good heat retaining property.
- The bottom is inclined to a certain angle and the height can be adjusted, thus reaching the requirements of drainage, cleanliness and sanitation.
- The freezer can be placed on a plane or the ground with drainage slope directly and stably without a foundation, thus making for ground cleaning.

Access door

- Convenient repair and cleaning passages and access doors are set up on the two sides of the freezer, for convenient of cleaning and maintenance.
- The access door uses an integrally foam-formed PVC door frame and is provided with an automatic temperature control electric heater, thus thoroughly eliminating cold leakage of the access door and making for opening.
- New stainless steel door hinges and locking pieces are elegant and durable; high quality sealing rubber strips are resistant to low temperature and aging and have long service life.
- The two sides of the feed inlet and discharge port are fitted with small access doors for convenience of thorough cleaning.



Mesh belts



- Mesh belts are manufactured by specialized mesh belt manufactures using imported CNC mesh belt forming machines, have superior quality.
- “Herringbone” stainless steel mesh belts are adopted and have sooth surface and various forms to ensure perfect appearance of foods.
- The mesh belt backing strips from precision casting of new materials reduce mesh belt wear and result in longer service life.
- The feed inlet is fitted with a cleaning device used to thoroughly clean up mesh belt residues and prevent bacteria form breeding.

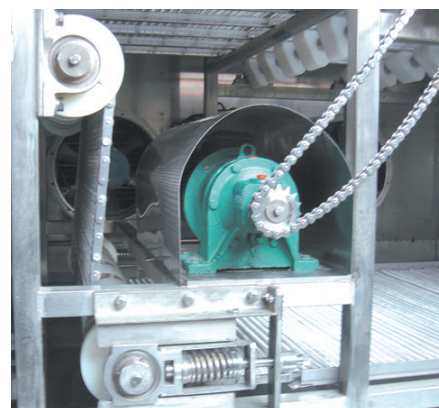
Evaporator

- Structure form with aluminum tubes and aluminum sheets, combined defrosting mode with water +hot ammonia, conforming to food hygiene and safety requirements.
- Large size fins, imported special equipment for expanded connection, tight contact, small heat resistance, high heat exchange efficiency.
- Variable pitch of fins and the optimum air current organization form so as to realize long-term continuous working with high efficiency.
- The liquid feed device and air return device use TOYO’s patent technology, thus preventing oil from being accumulated in coil pipes.

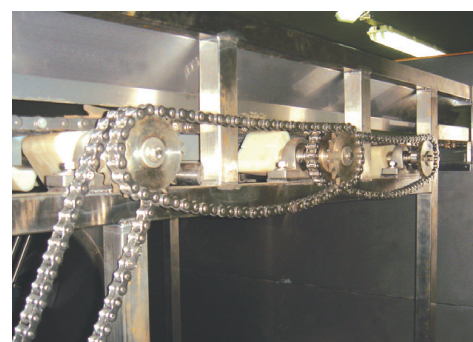


Transmission system

- A mesh belt chain transmission mechanism is adopted and runs stably and reliably, thus ensuring long-term continuous operation and durability of equipment.
- A tensioner structure is used to adjust the operation of mesh belts and thus to prevent them from off-tracking or loosening.
- Drive sprockets, chains and bearings all use stainless steel materials and conform to food hygiene requirements.
- A brand reduction gear is installed and can realize stepless frequency conversion and speed control; with the reduction gear, the speed of conveyor belts can be flexibly adjusted to meet the requirements of different products.



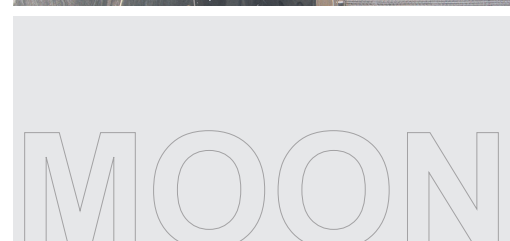
Vibration device



- The mesh belts in the first stage of the two-stage fluidized IQF machine are fitted with a mechanical vibration device to prevent foods from sticking during freezing.
- The vibration device has unique structure and stepless variable frequency regulation of its vibration frequency can be realized as required by materials.

Air distribution system

- Uniformly distributed fans with a totally enclosed air supply environment form high-speed uniform air flow in the lower part of mesh belts and blow foods via mesh belts in suspended motion.
- High pressure axial fans are provided to ensure high pressure while obtaining large air quantity, thereby ensuring that materials are fully fluidized.
- Brand low temperature fans with wing distortion blades are provided, thus realizing high efficiency, low noise level and longterm reliable operation.
- Blades are made of die-casting aluminum alloy and have high strength and smooth and clean surface; shells use stainless steel materials and conform to the requirements of food safety.
- Motor protection level reaches IP55, which can ensure long-term stable operation at low temperature.



Control system

- The control system is operated simply, conveniently and reliably and its control functions can be added according to the customer's different demands.
- The control cabinet is designed with a waterproof stainless steel structure, thus meeting the application requirements of food processing workshops all the more.
- Quality electrical components of premium brands are adopted and reasonable system design and circumspect synergetic functions are provided to satisfy and reassure customers.
- An emergency shutdown button is installed at the feed inlet; in the event of an emergency, by pressing the button, equipment can be immediately shut down.

Product extension

- High quality products can be obtained by separately configuring mesh belts for different frozen products.
- When customers need to increase the Feed inlet height, it can be increased according to concrete requirements.

Special tips

- Freezing capacity
The freezing capacity lies on the shape, size, water content and physical and chemical properties of food.
- Refrigerant
Ammonia, fluorine or other refrigerants or secondary refrigerants. standard product is ammonia; if there are special requirements, please clearly indicate them on the order form.
- Refrigerating system
This series products will have a better performance if worked individually with a refrigerating system.
- Application environment
Ideal working conditions of the freezer: workshop temperature is lower than 20°C .



Table of performance parameters of MVD series fluidized freezers

Product mode 1	MVD1000	MVD1500	MVD2000	MVD2500	MVD3000
Order code	018641010000	018641020000	018641030000	018641040000	018641050000
Nominal freezing capacity (kg/h)	1000	1500	2000	2500	3000
Effective width of mesh belt (mm)	1150				
Feed inlet height (mm)	100				
Inlet & outlet material goods core temperature (°C)	+15/-18				
Frozen temperature (°C)	-35				
Defrosting water quantity (m3/time)	16	22	30	36	43
Cold consumption under nominal working conditions (kW)	150	220	290	360	430
Installed capacity (kW)	28	40	52	58	77
Net weight(t)	6	8	9.5	10	12
Operating weight (t)	6.6	8.8	10.5	11	13.2

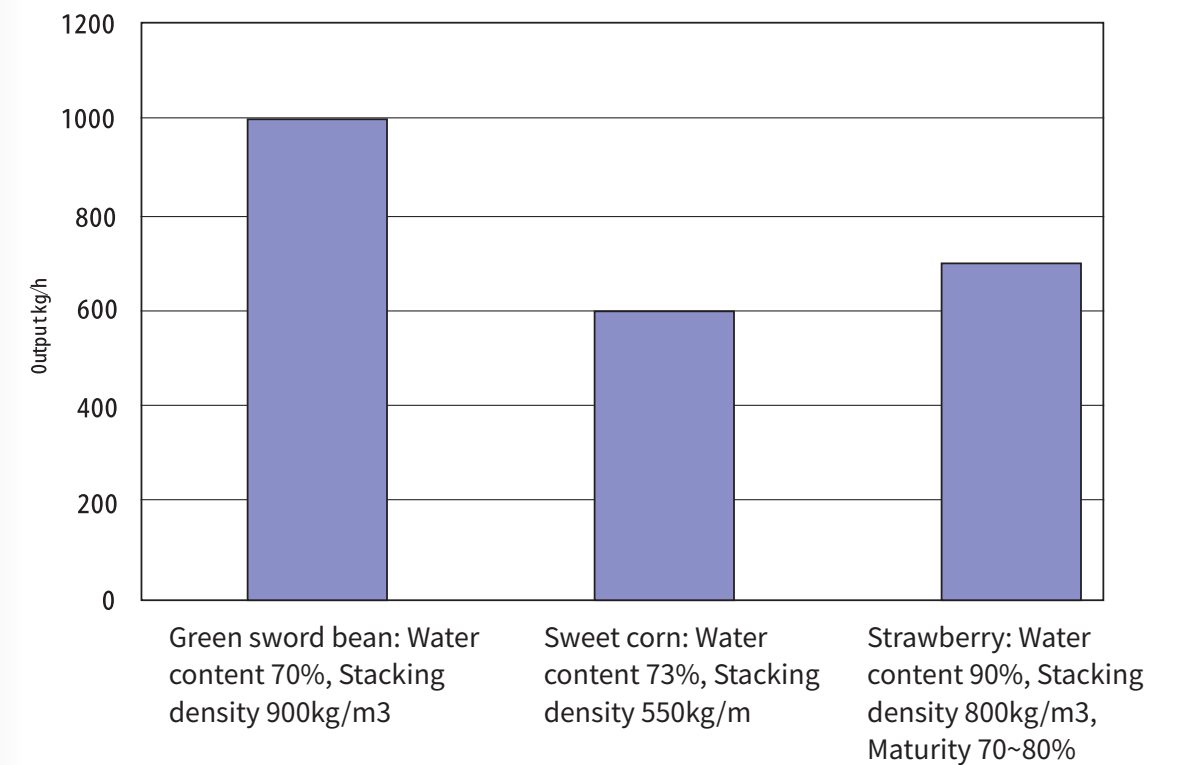
Note:

1. The nominal freezing capacity is designed as per green sword beans, with the water content of 70% and the material distribution density of 900kg/m³;
2. The cold consumption under nominal working conditions is calculated as per the operating condition at -40°C vaporization temperature. When the actual freezing temperature is different from the value in the table, please configure the system equipment according to actual operating conditions.
3. Applicable to multiple refrigerants or secondary refrigerants such as R717, R22, R404A, R507C, R134a, etc.
4. The evaporator feeding mode is used as the pump feeding mode.

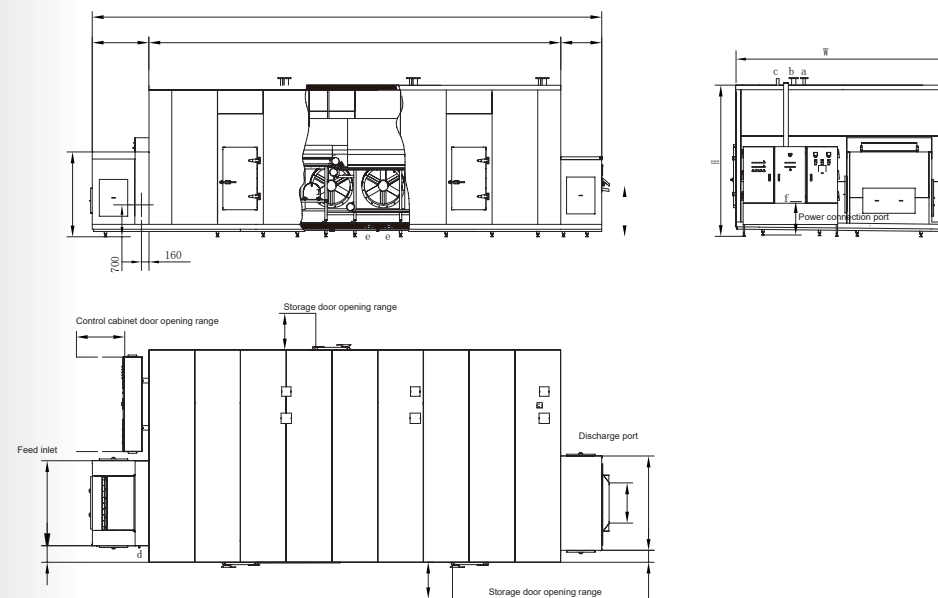
Freezing capacity comparison

The freezing capacity of the products of the same model is different for different foods or in different application environments. Taking MVD-1000 as an example, refer to the following figure for the output of certain frozen products at -35°C freezing temperature:

Model: MVD1000; Freezing temperature:-35°C ; Inlet & outlet goods core temperature:+15/-18°C



Outside drawing



RAPID FREEZING

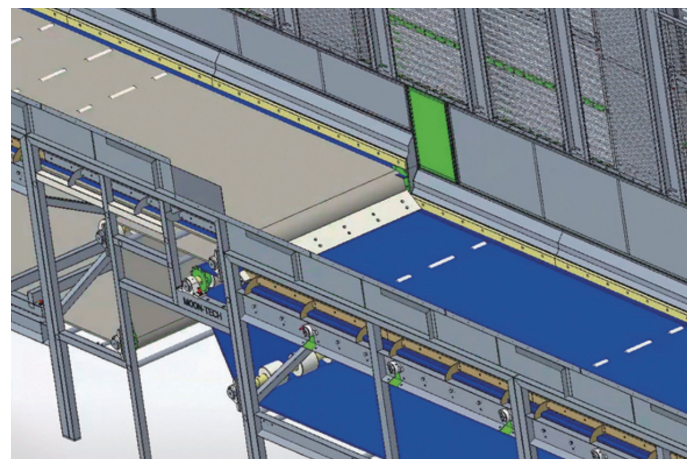
Two-Stage Freezing Process

Stage One – Crusting Stage:

Rapidly freezes the surface of the product to lock in moisture and prevent sticking.

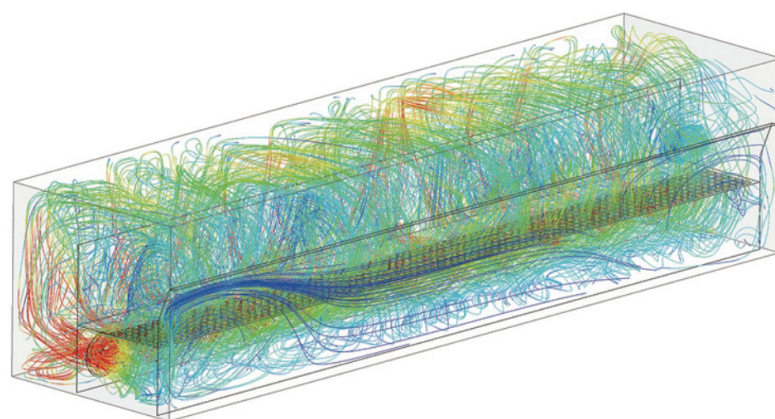
Stage Two – Deep Freezing Stage:

Performs deep freezing of the product, ensuring high individual quick freezing (IQF) rate and excellent product appearance.



Unique Air Duct Design

Optimized through CFD (Computational Fluid Dynamics) analysis to reduce air resistance and ensure more uniform airflow distribution.



High-volume fan

Customized high-volume axial flow fans, featuring fast freezing speed and excellent freezing effect.



High-amplitude vibration shaft

The vibration shaft adopts an integrated design and is customized with a high amplitude to ensure that the mesh belt remains undamaged during long-term use.



Diversified design

For different frozen products, we provide centrifugal fan equipment with different layouts to meet customized demands.



Persistent operation

The material of the heat exchange tubes has been comprehensively upgraded, with the standard configuration being SUS304L.

The windward side of the feeding end adopts a large sheet spacing of 40mm, increasing the sheet spacing by 25%. This results in higher efficiency and longer operation under frosting conditions.

The wind path uses complete fins to achieve a variable fin pitch design, eliminating local wind resistance and making the wind field more uniform.

The optional ADF online air defrosting system can promptly clean the frost on the evaporator at low temperatures, ensuring longer continuous operation time.



SOLUTION

Providing You with Complete Production Line Solutions



Dedicated to Serving Every Customer with Heart

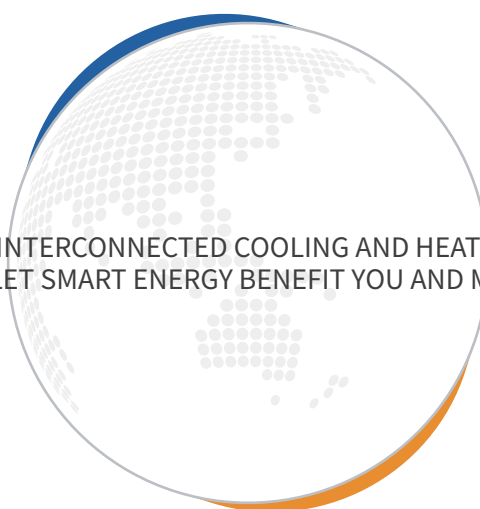
Moon-Tech's engineering team conducts in-depth analysis of each customer's production line needs, delivering customized and personalized overall planning and process design. From raw material handling at the beginning of the process to finished product packaging at the end, we offer a full-scale production line system centered around IQF (Individual Quick Freezing) machines. This system is supported by upstream and downstream equipment for sorting, conveying, cooking, cooling, glazing, and more — all aimed at optimizing every step of your production process and perfecting even the most hidden details.

Meanwhile, Moon-Tech's strict quality control system ensures long-term, safe, and stable equipment operation.

Through our intelligent control system, we provide digital management of both the production process and energy consumption, empowering our clients to achieve greener and more sustainable development.



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MOON-TECH



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



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