- Spiral Freezer
- Cold Storage Applications
- Blast Freezers
- Ice Bank
- Food Conveyors

nhr

SOĞUTMA SİSTEMLERİ

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1- Spiral Applications
- Spiral Freezer
- Spiral Cooler (-10 / +25 C°)
- Spiral Cooler (Ambient Temperature)

2- Cold Storage Applications
- Cold Storage Devices
- Cold Storage Doors
- Cold Storage Panels
- Shock Rooms
- Air Conditioning Cabins

3- Food Conveyor Applications
- Thermoplastic Belt Food Conveyors
- Modular Plastic Belt Food Conveyors
- PVC Belt Food Conveyors
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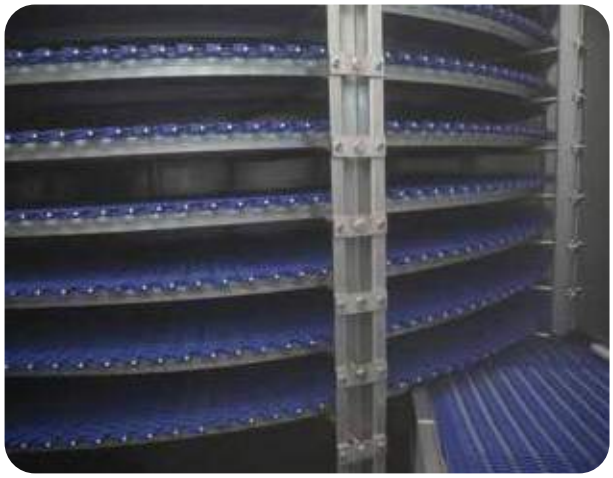
4- Special Cooling Applications
- Ice and Cold Water Systems
- Glazing Machines
- Cooling Systems with Moisture-Saturated Air
- Cold Water Washing Cooling Systems

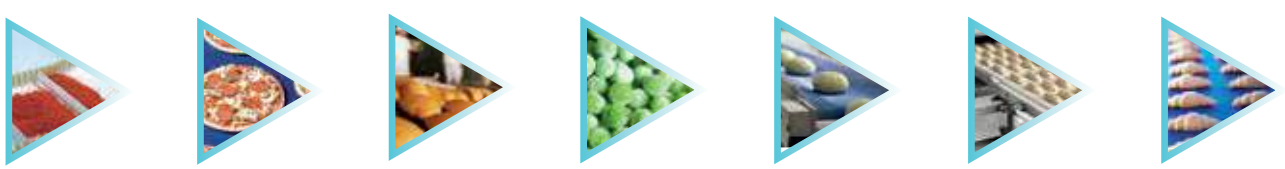
Spiral freezer is used to bring the core, that is, the centre temperature, to -18 ° C as soon as the products entering in a cold room under -40 ° C conditions as in shock rooms. The difference from the classical shock room is that there is a spiral Food Conveyor belt system inside the room and the products enter and exit through the belt Food Conveyor on the stainless steel construction in the -40 ° C shock room. In the standard freezing rooms, the products are placed inside the doors in bulk and the centre temperature is tried to be reduced to -18 ° C by mass. Depending on the amount of product, the freezing time increases, which affects both energy efficiency and shocked product quality.

Thanks to the spiral freezer belt and Food Conveyor system, the freezing period is shortened as the products enter in more orderly and sequentially, one by one, and this is reflected in both product quality and energy efficiency. Spiral freezer is an IQF technology and provides the products to be shocked one by one thanks to the high air flow and spiral circulation in the room. It increases the time, personnel and energy efficiency especially in the continuous production enterprises. Produced with completely hygienic materials suitable for food, spiral freezer blast freezers are advantageous compared to shock rooms in terms of hygiene with special automatic washing systems. With the spiral freezer, bakery products, meat products, seafood, white meat products, dairy products, vegetables and fruits can be shocked.



Modular plastic belts are used as standard in NHR Spiral Systems. For some reasons, we have the advantages of using modular belt when comparing stainless belt and modular belt. To summarize, the risk of formation of black spots on the stainless belt over time and the risk of contaminating the product (the risk of the carbon in the stainless content coming to the surface and contaminating the product due to the friction at the turning points in time), The risk of sticking products more than the modular plastic structure, Lack of effective cleaning metal fatigue (shortening belt life), excessive tension and difficulties in take-off and stopping due to heavy belt load).

SD 0° SD 90° SD 180° SD 270° DD 0° DD 90° DD 180° DD 270°



SPİRAL FREEZER

Dimension change due to belt tension, In case of failure, removing the tape and welding the new tape to its place, The risk of abrasion of the wear parts on the PE bars on the drum surface where the tape is rubbed on the product, The bars on the drum require the belt to rub against the drum at intervals. . NHR Spiral systems have a separate modular belt option for each application. Nhr spiral systems are also used in many non-food sectors other than shock, cooling (-10/25 C °), cooling (ambient temperature). It is also applied as transportation, fermentation and bufering of products after packaging.

The modular belt spiral Food Conveyor systems, which have been produced in our country in the last 10 years, offer advantages such as speed, transport, space saving and efficient shocking. As NHR Cooling Systems, apart from our modular belt spiral Food Conveyor applications, we differ from our competitors with the success of the air velocity passing over the product in the shocking room, hygienic Food Conveyor details, water drain channels after in-room washing and stainless floor application. We offer the right solutions for your products with not only spiral Food Conveyors, but also multilayer, modular belt, fludized system modular belt and high air flow shock tunnels in Food Conveyor systems cooling and freezing applications.

The purpose of NHR Spiral Cooling Systems is to bring the core temperature of the products entering the cold room to the desired temperature condition as soon as possible. The difference from conventional cold rooms is that there is a spiral Food Conveyor belt system in the room and the products enter and exit the cold room by means of the belt Food Conveyor on the stainless steel construction. In standard cold rooms, the products are placed inside the doors collectively and massively, the central temperature is tried to be reduced to the desired degree. Depending on the amount of product, the cooling time increases, which affects both energy efficiency and product quality.

Thanks to the spiral cooler belt and Food Conveyor system, the cooling time is shortened as the products enter the inside more regularly and sequentially, and this is reflected in both product quality and energy efficiency. Spiral cooler is an IQF technology and provides cooling of the products one by one thanks to the high air flow and spiral circulation in the room. It increases the time, personnel and energy efficiency especially in the continuous production enterprises. Spiral cooling systems, which are produced with completely hygienic materials suitable for food, are advantageous compared to cold rooms in terms of hygiene with special automatic washing systems.

As NHR Cooling Systems, apart from our modular belt spiral Food Conveyor applications, we differ from our competitors with the success of the air velocity passing over the product in the cooling room, hygienic Food Conveyor details, water drain channels after in-room washing and stainless floor application. We offer the right solutions for your products with not only spiral Food Conveyors, but also multilayer, modular belt, fludized system modular belt and high air flow shock tunnels in Food Conveyor systems cooling and freezing applications. Bakery products, meat products, seafood, white meat products, dairy products, vegetables and fruits can be cooled with the spiral cooler.

The most intensive use in spiral cooling applications is “döner kebab” cooling. The production process in industrial baked ready-made döner kebab production facilities is as follows. Baton döner kebab is manufactured and shocked in -40 C shock room. The shocked döner kebab is cooked and cut by döner kebab robots. The cut product at 70 C temperature is reduced to 2 C by passing through the spiral cooler and the oil loss is minimized. After this stage, it is either packaged and shocked in packaged form or by passing through the spiral freezer machine and then packaged. Please contact our project department for your revolving projects.

In NHR Hot product spiral coolers, the aim is to reduce the core temperature of the semi-baked or cooked products that have been heat treated as soon as possible without using any cooler to the desired temperature under ambient conditions. The difference from the classical ambient cooling room is that the products are moved around the natural environment with the belt Food Conveyor on the stainless steel construction with a spiral Food Conveyor belt system. In standard cooling rooms, products are placed inside collectively and the centre temperature is tried to be reduced to the desired packaging or storage temperature.

The spiral conveyor control system can be controlled from the PLC touch panel in the stainless panel box, and there is an audible and light warning system in the system. PLC panel can be programmed automatically for different speed settings for different products, washing and defrost processes can be carried out and controlled. spiral conveyor settings and alarms can be received on the PLC panel, and operation and failure conditions can be monitored. The spiral freezer inlet part is in the form of a bottom pan with a lid and there is a water drainage drain in the lower middle point. After the end of day defrosting process, it is washed with high pressure water from the inlet part of the belt in the washing process. This water goes to the water drain through the drain in the lower pan. Washing period duration can be changed on the PLC panel. The fans in the room operate during the washing period in order to avoid water particles on the belt surface.

The drum system, in which the belt will wrap and move together by means of dynamic friction, is made of 304 quality stainless material and has an extremely durable internal construction against bending, crushing or deterioration of its circular structure. There are safety sensors on the spiral conveyor to prevent damage to the belt or system against any external or systemic adversity, and according to the signals from these sensors, the PLC system creates an alarm by showing you the location of the error. These sensors prevent the other surface of the belt from lifting upwards due to the excessive winding of the part of the belt in contact with the drum due to excessive tension, and prevent the belt from wearing or breaking due to hot or cold or an external reason and sends a signal to the PLC system via inductive sensors.

COLD STORAGE APPLICATIONS

Cold storages are complex thermal structures that are needed in the production facilities, sales and logistics points of perishable food products or non-food products that need to be stored at a certain temperature. Although NHR Cold Storage Applications consists of three main material groups, they become integrated with products that provide additional benefits that complement them. Cold storage panels that insulate cold air rooms, different types of cold storage doors for entry and exit, and cold storage devices that will provide the desired storage degree, while forming the main material group, door protection barriers that can be used in cold storage doors, pvc strip curtains and central monitoring systems, etc. completed with products.

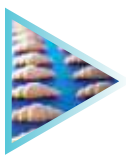
The difference in NHR Cold Storage applications is the use of raw materials that have proven themselves and branded in the cooling sector in all material groups, as well as the correct assembly technique and the ability to apply together with experienced cooling, mechanical and automation technicians at the points where our customers will use cold storages. Using the right material in the cold air rooms is not sufficient to have an efficient cold air room, but the product that results with the correct insulation panels and cooling installation will work with long-lasting high efficiency and minimum energy loss. NHR Cold Storage Applications are designed for different needs as Modular Cold Storage, Industrial Cold Storage, Fast Cooling Rooms, Industrial Freezing Storage and Air Conditioning Rooms.

Cold room applications constitute a very important stage of production in food facilities. Electrical energy costs, which are the most important item for the fixed expenses of the company, cause energy loss from every point that has a heat bridge when the panel is not properly assembled. Moisture entering the room reduces the cooling efficiency. When the choice of machinery and equipment is not made according to the type of product to be stored, when the appropriate panel thickness is not selected, problems such as rapid maturation, moisture loss, darkening and drying on the upper surfaces in meat applications occur. In cold room applications, humidity is proportionally controlled by using dehumidifier when necessary and humidifying humidification devices when necessary.

COLD STORAGE DEVICES

Cold storage devices basically consist of two main parts. These consist of an indoor unit (Evaporator) that will provide heat transfer in the room and an external unit (Condenser) to feed this unit. The evaporator and condenser units are produced in different sizes depending on the volume of the cold room, the amount of product to enter and the desired temperature inside. Compressors can be hermetic, semi-hermetic, semi-hermetic double stage and semi-hermetic screw type. NHR Cold Storage Devices Condensing Units are classified as Commercial Series, Industrial Series, Blast Freezer Devices and Refrigeration with Screw Compressors, NHR Cold Storage Devices Evaporator Units Split Type, Ceiling Type, Shock Evaporators.

The body of the condenser units is made of electrostatic furnace painted and minimum 1.5 mm galvanized sheet construction. Air-cooled type devices are used as standard in hermetic compressors Tecumseh, semi-hermetic and double stage compressors Bitzer, screw compressors with Fusheng or Bitzer brand compressors, fans EBM or ZIEHL-A-BEGG brand, cooling components Alco or Danfoss, Siemens or Schneider brand products in switchgear materials. Evaporators are standard 304 quality stainless cassette and epoxy painted fins. Commercial series groups from 1 Kw to 20 Kw, Industrial series groups from 5 Kw to 220 Kw, Shock Groups from 2 Kw to 45 Kw, Screw Groups and Central System Groups from 40 Kw to 300 Kw It is produced in different types and sizes to provide cooling capacity up to.



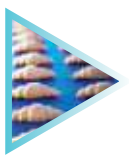
COLD STORAGE DOORS

Although NHR cold storage doors are grouped as hinged cold storage doors, sliding cold storage doors, flip-flap doors and office type doors, monorail and automatic opening functions can be applied to all of these doors. NHR Cold storage doors surfaces are 2 mm as standard. thick fibreglass reinforced polyester plates are used, 40 – 42 kg / m^3 density, B2 non-combustible polyurethane filled. All accessories of the cold storage doors are specially designed, stainless steel and plastic parts. Anodized aluminium profile is used as the frame, and special PVC transition profiles are applied where heat bridges may occur.

Hinged door locks, lockable type, safety mechanism hinges that can be opened from inside and outside, rising when the door is opened. The casings of the sliding cold storage doors can be obtained by interlocking PVC and anodized aluminium profiles, the corner part that will form a thermal bridge is made of PVC profile and the other parts are made of aluminium profile interlocking, there is a channel to be cut into the aluminium profile and can be closed with easy opening and closing aluminium cover profiles. The floor parts are heated with heat transfer oil in a stainless box profile with a resistance in a separate room and there is absolutely no icing thanks to the homogeneously distributed heat in front of the door.

NHR Cold Storage Doors can be manufactured using polyester painted galvanized sheet, PVC film laminated galvanized sheet, Fibreglass Reinforced Polyester plate and 304-316 quality Stainless sheet. Automatic opening and closing with one button in automatic doors, automatic closing after 30 seconds in case of forgotten open, ability to adjust the door speed according to the purpose of use, anti-jamming system during door closing, manual use in power failure, Automation with PLC module, optional radio remote control, It has the ability to control from different points.

SOĞUTMA SİSTEMLERİ



COLD STORAGE PANELS

The main purpose of cold storage panels is thermal insulation. 60-80-100-120-150-180-200 mm, which will be suitable according to the room height and ceiling opening in the frozen warehouses. panel thicknesses should be selected. The second purpose is to create a hygienic environment. There are different surface options for this. Polyester painted galvanized sheet is used as standard. It can be produced as PVC film laminated, plastisol coated or Cr-Ni stainless steel coated upon request. Inner filling material can be Polyurethane (PUR) or Polyisocyanates (PIR). Fireproof class PIR filled panels B-s1 according to TS EN 13501-1; It is advantageous compared to polyurethane filled, locked type cold storage panels produced in discontinuous lines due to its compliance with d0 conditions.

Continue Soğuk Depo Paneli Fiziksel Özellikleri

Yalıtım Kalınlığı	Dış Yüzey Kalınlığı	İç Yüzey Kalınlığı	Min. Boy	Maks Boy	Isı Geçirgenlik Katsayısı	Isıl Direnç
d	$t_{dış}$	$t_{iç}$	m	m	U	R
mm	mm	mm			W/m²K	m²K/W
80		0,4			0,27	3,68
100	0,50	0,45			0,22	4,61
120	0,60	0,5	2	12	0,18	5,52
150	0,70	0,6			0,15	6,68
180	0,80	0,7			0,12	8,25
200		0,8			0,11	9,16

Hesaplamalar TS EN 14509'A uygun olarak yapılmıştır. Kalınlık seçenekleri için lütfen danışınız.

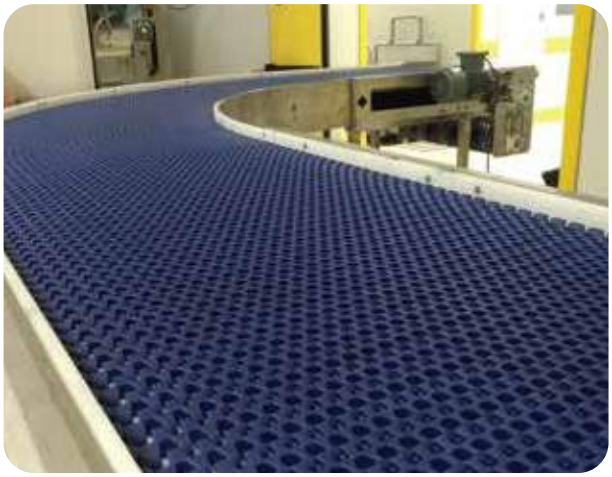
Cold storage panel joint details are provided with inner corner, outer corner, floor U profiles. For cold room panels produced in the discontinuous system, the ready-made corner panel can be installed without using any internal or external corner profile. Special panels such as TE panel, X panel, Z panel, inverted corner panel, tubular panel and stainless skirt can be produced at the common points of two or four cold rooms. Cold storage panels are the ideal solution for businesses to transform areas with unlimited capacities into insulated environments. It is ideal that the polyurethane or polyisocyanates material used in the cold storage panels should be 42kg / m and be spread equally at every point of the panel.

Cold storage panels are stored under correct conditions after production, packaged and planned so that maximum shipment can be made. The project of the panels needed for your domestic and international projects, the shipment schedule and the assembly program are made, and the costs of horizontal and vertical transportation equipment and transportation vehicles such as trucks and trucks are also written in our offers. NHR cold storage panels are frequently used in clean room applications in hospitals, pharmaceuticals and facilities producing medical products, thanks to their smooth surface, hygienic and easy-to-clean feature. Special hygienic inner corner, outer corner, floor U and skirting board profiles are used at corner and floor joints in clean room applications.

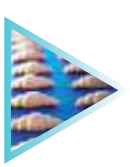
CONVEYOR APPLICATIONS

Food Food Conveyors are extremely helpful machines for the automation of food production, starting from the stage of taking the product to the first facility in production, including washing the product, calibrating the product, voting, cooling, shocking, packaging and even logistics. The two most important points in the design of the Food Conveyors are the belt material used on the Food Conveyor and the hygienic design of the entire construction. It is very important to use certified material because the material used here comes into contact with the product. It is extremely important that the construction is easy to clean, does not have indented protrusions that will allow bacteria, fungi and microorganisms to form on it, and it is certified in the welding shape of the metal material and other materials such as bearings and fasteners used.

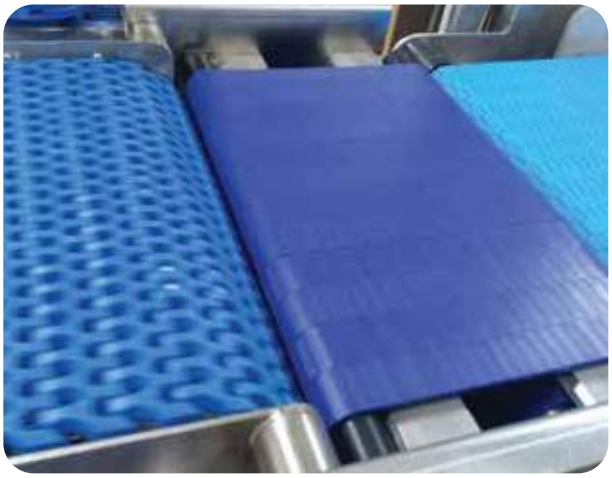
Although we examine the food Food Conveyors in 2 groups as flat Food Conveyors and rotational Food Conveyors, it is possible to separate hundreds of types according to the belt patterns or the quality of the belts, whether the belts are modular plastic and stainless. In the production of NHR Food Food Conveyors, both in the belts that contact the product and in other constructions and materials, we use products that are branded in the world and have all kinds of certificates, and every design is designed according to the principle of hygiene, easy use and cleaning. Thermoplastic belt Food Conveyor technologies provide predictable and reliable usage while reducing hygiene operation processes due to its hygienic design and easy cleaning, beyond providing unmatched belt life thanks to its positive drive system and non-tensioned belt. Certified for direct product contact surfaces.



Modular plastic belt Food Conveyors provide predictable and reliable use for food manufacturers to improve their operational processes, thanks to simplified cleaning and maintenance, less product loss and contamination risk, improved work safety designs, applications for all types of transport that do not require lubrication and tension. Stainless wire belt Food Conveyors are designed for seamless use by food producers with their stainless raw material quality and application properties, especially in hot and cold product transportation, oily or glazingd applications. PVC Belt Food Conveyors are used for the transportation of bakery products, parcels, packages or packaged products. It is designed for trouble-free use in straight line, inclined and elevator Food Conveyors thanks to its stainless, hygienic design and easy use, with numerous belt types for all kinds of food products.

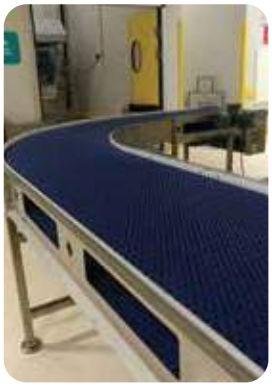


Thermoplastic belt Food Conveyors provide hygiene advantage thanks to their flat surface with low food safety risk, while positive drive like modular plastic belts do not work with tension, the belt life is extended and the drive is easier. The most common problem in stressed systems is the inability to manage the movement of the belt in one axis. The tension belt on the Food Conveyor is deformed by friction from its right and left sides and there is a risk that the yarn knits inside will dissolve and interfere with the food product. Thanks to its positive drive structure, Thermoplastic belt Food Conveyors provide endless use in a single axis, while there is no risk of plastic material mixing into the product due to belt deformation. The system working without tension reduces the maintenance and operation costs by extending the life of the belt, so the highest cost for a food manufacturer is the number of stops in production.



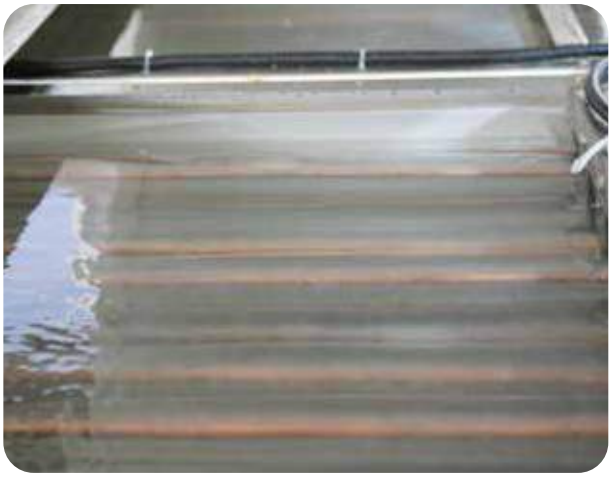
Thermoplastic belt Food Conveyors are ideal for applications that come into direct contact with the food product. Certified food contact tape structure prevents a bacterial load on the belt. Thanks to its flat belt structure, it reduces product accumulation and waste on the belt. It limits product build-up in return parts on the belt and in pans. They are ideal applications for the transportation of filled products. The fact that the belt edges can be bent at certain angles ensures correct transport of the product. The products are limited on the belt and do not protrude. Thermoplastic belt Food Conveyors can be used in flat Food Conveyors and elevator systems. It provides the opportunity to place Food Conveyors in desired gaps and heights on the belt. In addition, by placing limiters on the sides of the belt, product transportation is facilitated.

While NHR Food Food Conveyors increase efficiency, they offer the advantage of easy service and maintenance thanks to the reduction in operation and maintenance costs, high standard in terms of food safety risk, effective hygiene cleaning and simple operation. They are the most preferred Food Conveyors in terms of hygienic transportation of seafood, red and white meat products, dairy products, fruits and vegetables, bakery products and snack food groups. NHR Food Food Conveyors can be designed not only for food product transportation or cooling applications, but also for packaged product transportation, packing, production process, according to Kaizen -5S studies. We have products that provide 100% solutions to problems such as sorting and distribution of products, especially in spiral application.



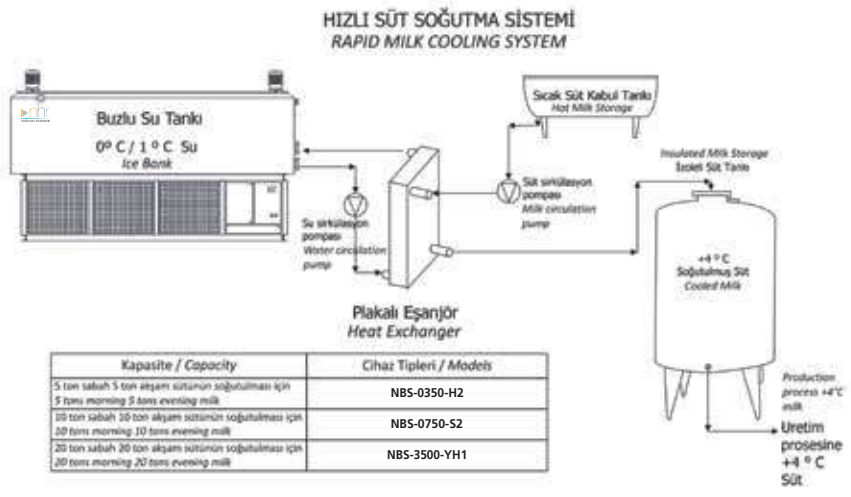
Although ice water producers are generally used in the dairy industry, they are suitable for all kinds of production that require high cold and ice water. Cooling takes place by colliding the water at a temperature of ~ 1 ° C in the ice water tank with the product to be cooled by means of a plate heat exchanger. Ice bank, which is a closed circuit system, ice water producer, re-cooling occurs when the heated water returning from the product it cools passes over the ice that was previously accumulated while passing through the tank. As the amount of ice in the insulated tank decreases, the cooling system steps in and ensures that the ice reaches the desired amount. It is an advantageous system for productions that require cold water in certain periods. With its low compressor power and insulated tank, it is a more economical solution compared to the chiller cooling system.

Ice water systems (Ice Bank) provide loaded capacity for emergency cooling needs. It provides a problem-free solution as it stores the sudden and very high cooling load that must be met in the production process. For example, a tonnage milk purchase coming to the dairy facility should be given to the production process in a very short time at 4 ° C. The cooling capacity required to reduce the milk intake of 20 tons twice a day from 30 ° C to 4 ° C is approximately 1.200.000 W. The chiller system to meet this need is unimaginably large. However, our system with 35 Hp compressor power provides a total of 1.300.000 W of cooling power when used twice a day.



The investment cost of ice water systems (Ice Bank) is low. This is because it produces ice at night when there is no production for cooling accumulation. Ice water systems (Ice Bank) operating expenses are low. Ice water producers work at night when there is no production. Since the outside temperature is lower at night, the cooling system will work more efficiently than during the day.

Buzlu Su Tankları / *Ice Banks*

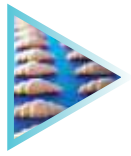


Kapasite / *Capacity*	Cihaz Tipleri / *Models*
5 ton sabah 5 ton akşam sütümün soğutulması için *5 tons morning 5 tons evening milk*	NBS-0350-H2
10 ton sabah 10 ton akşam sütümün soğutulması için *10 tons morning 10 tons evening milk*	NBS-0750-S2
20 ton sabah 20 ton akşam sütümün soğutulması için *20 tons morning 20 tons evening milk*	NBS-3500-YH1



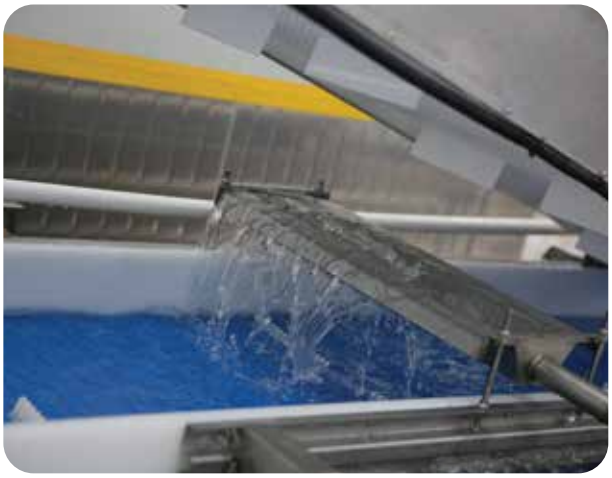






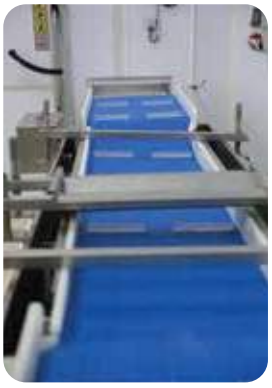
GLAZİNG MACHINES

It is the process of covering the outer surface of the fish with a thin layer of ice by immersing them in 0 degree cold water or spraying water on them after the fish are frozen. glazingd fish are packed and stored at at least -18 ° C. The glazing process prevents the fish from losing moisture during storage, and also delays lipid oxidation in fish by cutting off its contact with air. glazing machines are used especially in the seafood industry. The products coming out of the blast freezers are passed through the cooled glazing pool by means of a Food Conveyor. The aim is to cover the products with a core temperature of -18 ° C with a thin layer of ice and cut off their contact with air. In this way, by preventing oxidation, both product quality is preserved and shelf life is extended.



Our glazing machines are available in dipping and semi-dipping types. The glazing process is completed by passing water from every surface of the upper part of the semi-immersed types with the water waterfall. All of our machines are made of 304 stainless material, according to need, and adjustable in speed and height. The purpose of glazing machines is to prevent moisture loss, prevent oil oxidation and provide a more attractive appearance. The best condition for the fish to get glazingd is that the fish are very well frozen and meet 0.5 degrees of water without traveling any distance from the freezer outlet. The products coming out of the glazing machine have the same attractive appearance and are transported by specially designed comb Food Conveyors to prevent the ice from breaking.

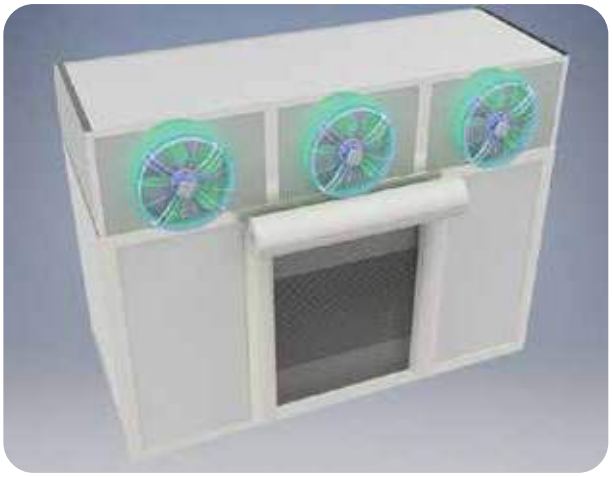
NHR glazing machines are Food Conveyor and water-cooled as standard. The depth of the pool is approximately 80 cm, 45 cm of it has a stainless coil and approximately -10 degrees of glycol is passed through this coil. The thickness of the ice formed around the serpentine pipes is controlled and thanks to the mixing with air, water at 0.5 degrees is provided at every point of the water tank. Approximately 15-20 cm water thickness on the Food Conveyor can be adjusted according to the size of the fish. At this point, the fish both enter the water and pass through the water curtain in case some points do not touch the water.



COOLING SYSTEMS WITH MOISTURISED AIR

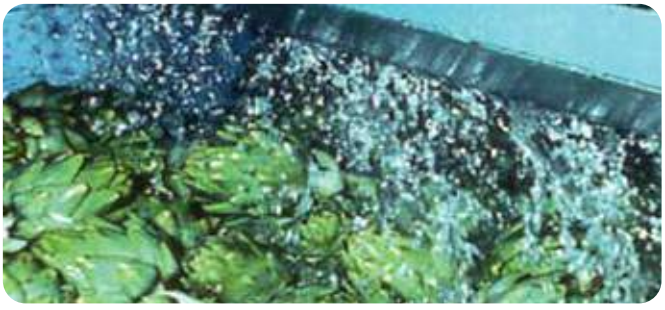
For fruit and vegetable producers, extending the shelf life of the products, reaching farther markets and producing quality products is the primary goal. Reducing the temperature of the products and reducing the moisture loss will make a difference. These are special applications that are used to prevent the loss of moisture, especially during the cooling of fruits with high moisture values. With a special system placed in the cold room, the high flow air blown on the product to cool it is passed through the cold water waterfall and saturated with moisture. This prevents the moisture saturated air from absorbing the moisture of the product as it passes over the product.

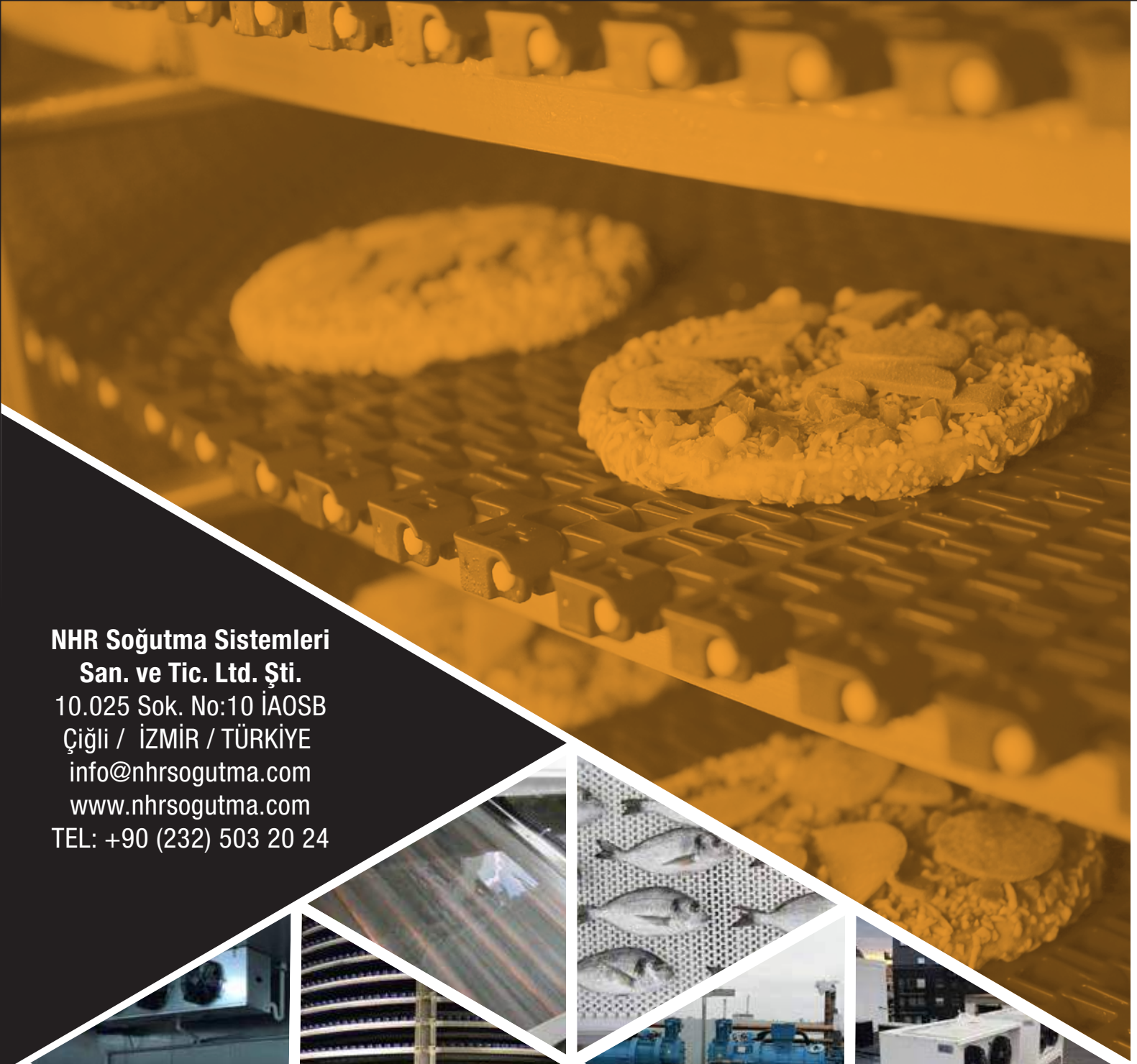
Ice and cold water devices are designed to meet two basic industrial needs. The first is that the plate heat exchanger and tube evaporator used in standard chiller applications for cold water needs up to 0 / + 10 ° C will cause blockage due to the formation of ice in the chiller cooling system. Ice water systems (Ice Bank) are a problem-free solution for required water temperatures in the range of 0-8 degrees. Water in the range of 0-8 ° C allows the system to fall to the low pressure point of the system to blockage where water passes to the formation of ice in the plate heat exchanger or tube evaporator used with the conventional chiller method. In ice water systems, the ice accumulating around the pipe does not close the water passage area and the water can fall down to 0.5 ° C range and can be transferred to the system in a healthy way.



COOLING SYSTEMS WITH COLD WASHING

In order to prevent water loss in the unpackaged storage of fruits and vegetables with high water content, the relative humidity in the room should be kept as high as possible. Loss of water leads to loss of quality as a secondary damage, as well as causing damage in products. In other words, the weight of the product entering the cold room with low relative humidity decreases and its quality decreases. The purpose of this type of systems is to quickly cool fruits and vegetables without losing moisture. Products are made by passing them through chilled water from an area such as a shower or a pool by means of crates or a Food Conveyor.





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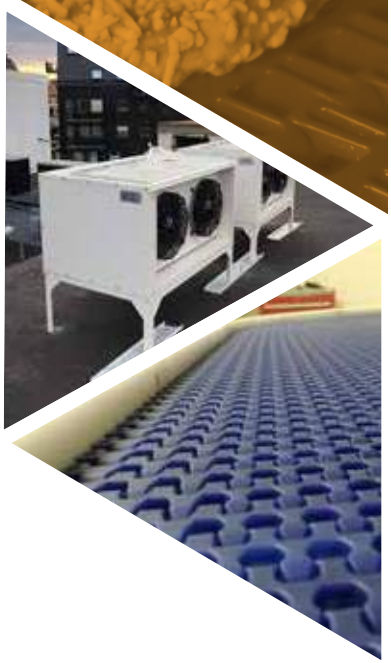

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