



# Tunelgroup

Industrial Cooling Systems

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**PIONEER IN INDUSTRIAL DESIGN**

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**Tunelgroup**  
Industrial Cooling Systems

## WHO ARE WE?

Tunelgroup was founded in 2012 to produce innovative and ergonomic solutions in the industrial cooling sector and became one of the leading representatives of the sector in a short time thanks to the successful projects it implemented. Tunelgroup, which offers tailor-made, rational and permanent solutions by combining its expertise in production with its success in turnkey project applications, creates applications that provide maximum efficiency with its experience in cold storage facility production and innovative designs. By developing Tunelgroup R&D based products; It offers a wide range of solutions in the food, agriculture, animal husbandry, health, IT and logistics sectors.



## VISION

To be a highly competitive, leading company that stands out with its brand value in the national and international markets with the innovative solutions it brings to the industrial cooling sector.

## MISSION

By adapting to constantly developing and changing sectoral needs, to its domestic and foreign customers; To offer high value-added, innovative, environmentally friendly and energy efficient products and solutions.

## OUR SERVICES



### Production and Supply

All products related to cold storage, selected on the basis of energy efficiency, with the foreseen capacity and high quality, come together under the roof of our company.

❄ Many products such as refrigeration machinery and equipment, cold store panels, cold store doors, cold store installation accessories, modular cold rooms, remote monitoring and control systems, humidification systems, cold store ventilation systems, cold store lighting systems, cold store door and panel protection barriers. We offer service in a wide range of products without compromising on high quality and affordable costs.



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## Design and Project Planning


Our first goal in project design is to understand our customer's needs and to determine solutions that can make an aesthetic and economic difference in accordance with the needs.

Following R&D (Research - Development) activities, product or system design is carried out by our expert engineer staff. After the design phase is verified with the relevant engineering calculations, project work is started. Our company concludes its activities by making the necessary calculations and modeling on refrigeration and air conditioning with engineers who are experts in their fields.





## Turnkey Project

 Tunelgroup implements turnkey projects both at homeland and abroad by designing project design, material production and supply, installation and commissioning processes to ensure maximum efficiency.



## AFTER SALES SERVICE



### Experienced Staff

As a manufacturer of mechanical cooling units, we are ready to offer technical advice and solutions with our most professional team.



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### Support After Sale

One of the most important factors that make our customers choose Tunelgroup in the cooling industry is the after-sales technical service support provided by our company.

**The quality of the service and maintenance we provide throughout the life of the products; It is offered at the highest level with its continuity, reliability and spare parts warranty.**



### Quality Control

Tunelgroup uses the ISO 9001 standard for continuous monitoring and optimization of all business processes and production methods within the scope of R&D, sales, marketing, production.



## Investment and Grant Consultancy



We provide you with the most accurate guidance and advice by producing solutions to your requests within the scope of Development Agency Projects, Agricultural Grant Projects and EU Grant Projects, in line with the standards determined by the grant institutions.





## Installation and Operation Activities

Our company provides installation and assembly services of our cooling machines and equipment in your turnkey projects.

After completing the testing phases by commissioning the projects with completed machinery and equipment installation, we make sure that the system works smoothly and deliver the project.



## FIELDS OF ACTIVITY

### Food Distribution Facilities and Food & Beverage Warehouses

Microorganisms reproduce in a wide temperature range and cause foodspoilage. For this reason, products must be stored in appropriate environmental conditions. Their shelf life is also determined by storing under these conditions. Cold chain is defined as storing food products under appropriate environmental conditions at all stages, starting from the production stage, until they reach the customer, such as shipment and storage. Leaving food products under direct sunlight causes their properties to disappear and deteriorate.

# AGRICULTURE

## Controlled Growing and Maturation Rooms

A suitable atmosphere is created in the warehouse so that fruits and vegetables can be stored for a long time without spoiling. This environment is an environment where oxygen (O<sub>2</sub>) is almost eliminated, a nitrogenous (N) environment is created, harmful carbon dioxide (CO<sub>2</sub>) and ethylene (C<sub>2</sub>H<sub>4</sub>) produced from stored vegetables and fruits are absorbed, and the ideal temperature is maintained.



## Fruit and Vegetable Storage Rooms

When harvested fruits and vegetables are stored under appropriate conditions, they retain their fresh qualities to a significant extent for a while. Suitable conditions are achieved by adjusting the temperature and relative humidity. There is a certain temperature and relative humidity at which each fruit and vegetable can be stored in the best way. In fact, the optimum storage requirements of the same fruit or vegetable may vary depending on the variety and the ecological conditions in which it is grown.

No matter how well the optimum conditions in storage are provided, each fruit and vegetable can only last for a certain period of time. This period; It varies from a few days to 5-6 months. At the end of these certain periods specific to each product, the stored product rapidly loses its quality and eventually deteriorates completely. Therefore, the shelf life of fruits and vegetables in cold storage is limited.



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## Mushroom Growing Rooms

Although the growth of mushrooms naturally depends on the conditions desired by the mushrooms, these conditions are created artificially in commercial enterprises. Temperature, humidity and ventilation are the most important ecological factors in mushroom cultivation and greatly affect yield and quality. Mushrooms are very selective in terms of their climate demands, and they also have different ecological demands in different periods. For this reason, commercial cultivation areas must be air-conditioned in accordance with the requirements of the mushrooms.



## Potato and Onion Storage Rooms

Potato tubers; They are living, "breathing" organisms. "While breathing"; They give off carbon dioxide, moisture and heat. In order to prevent the proliferation of these three products at extremely high levels and to provide a suitable environment for living potato tubers, potato tubers are ventilated. Ventilation and cooling of the potato warehouse; It can be defined as ensuring the correct air temperature, air circulation and distribution throughout the warehouse and tubers. The purpose of these three factors is; It is to obtain uniform tuber temperature, humidity and air throughout the potatoes in the warehouse. By providing these environmental conditions, potatoes can be stored for a long period of 10 = 12 months in high quality, depending on the variety characteristics.

## Meat Products Processing and Preservation

The purpose of preserving meat and meat products is to prevent putrefaction and spoilage that may occur in the products and to make the conditions for the reproduction and multiplication of the microorganisms that cause this unfavorable. When this is achieved, the effects of microorganisms as well as physical, chemical and enzymatic factors that cause spoilage of meat and meat products can be greatly slowed down or stopped. Methods used to increase the durability of meat and meat products can be classified as physical and chemical methods.



Physical methods: Cooling, Freezing, Drying, Heating

Chemical Methods: Salting, Curing, Smoking, Irradiation, Using Chemical Preservatives, Fermentation

The purpose of cooling is to reduce the internal temperature of rigor mortis-formed carcasses (whole) or pieces of meat to +4°C. Cattle and buffalo carcasses are chilled as 1/2 or 1/4 body, and veal, sheep and goat carcasses are chilled as full body.

## Dairy Processing and Preservation

In order for milk to be offered directly for consumption, it must be subjected to heat treatment under controlled conditions and thus become safe for public health. No matter how good the raw milk production conditions are, it is inevitable that there will be different types and numbers of microorganisms in the milk. These microorganisms can multiply in raw milk in a short time under suitable conditions, causing the milk's qualities to deteriorate and eventually become unconsumable.



Raw milk may also contain pathogenic microorganisms that cause disease in humans. With controlled heat application, pathogenic microorganisms are completely destroyed and other microorganisms that deteriorate the qualities of milk are destroyed to a large extent. In this way, milk is made microbiologically safe, but at the same time, it is aimed to prevent its nutritional value from being damaged as much as possible and to preserve its natural qualities, especially its taste and smell, at the highest possible level.

## Poultry Processing and Preservation

Rapid cooling of meat after slaughter is very important in terms of obtaining a healthy product, improving taste, maintaining quality, and delaying enzymatic and microbial spoilage. The cooling process prevents the growth of pathogenic bacteria that cause many food poisonings and extends the shelf life of the product by delaying the proliferation of psychrophile bacteria. As the carcass temperature decreases, the development and reproduction rates of microorganisms decrease, the activities of enzymes that break down protein and fat decrease, and as a result, the quality and health of meat during storage and marketing is prolonged. For this reason, whether it is a product to be marketed or a product to be frozen, cleaned poultry meat should be immediately cooled to 4°C or lower.

After the carcass temperature, which is 35-40°C after slaughter, is cooled to 4°C, it should be kept at the same temperature until freezing or another process is applied.

When air is used to cool poultry meat, adequate bleeding is important to prevent discoloration during cooling. In the air cooling method, the carcass is cooled until its midpoint temperature drops to 0°C. Keeping the temperature of the cooling environment at -0.5°C is sufficient to provide cooling. During cooling, the relative humidity is tried to be kept at 100% or close to it. Keeping the relative humidity high is done to reduce moisture loss during cooling. Cooling of carcasses in a still air environment is completed in 12-16 hours, depending on species, weight, gender and age.

### Seafood Processing and Preservation

Seafood is the most valuable food item in terms of the nutritional components it contains. The fact that it has a very high protein ratio, contains almost all amino acids found in nature, is rich in vitamins and has a high biological value makes aquatic products valuable. Aquatic products, which are so valuable, are among the nutrients that spoil the fastest and go bad the quickest. If the fish is not protected under appropriate conditions after being caught, it may become stinky within a few hours. For this reason, seafood products must be protected, transported and processed with appropriate techniques after they are caught or harvested.

In order to preserve seafood without spoiling and deliver it to the consumer in a healthy way, the correct seafood processing technology must be applied, taking into account the characteristics of the raw material.

### Shellfish Processing and Enclosure

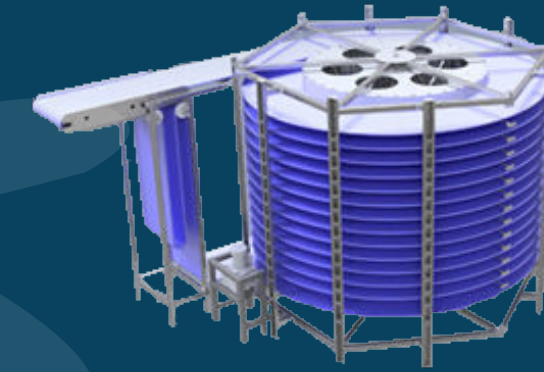
The freezing method applied when freezing food affects the size of the ice crystals formed. If food is quickly frozen, especially if the range between -10C and -50C is crossed in a short time, the ice crystals formed will be small. The crystals remain inside the cell. It does not rupture the cell membrane. It does not tear the connective tissues between cells. Since the connective tissue and cells in the food do not break down, the quality of the food is preserved.

# IQF Systems

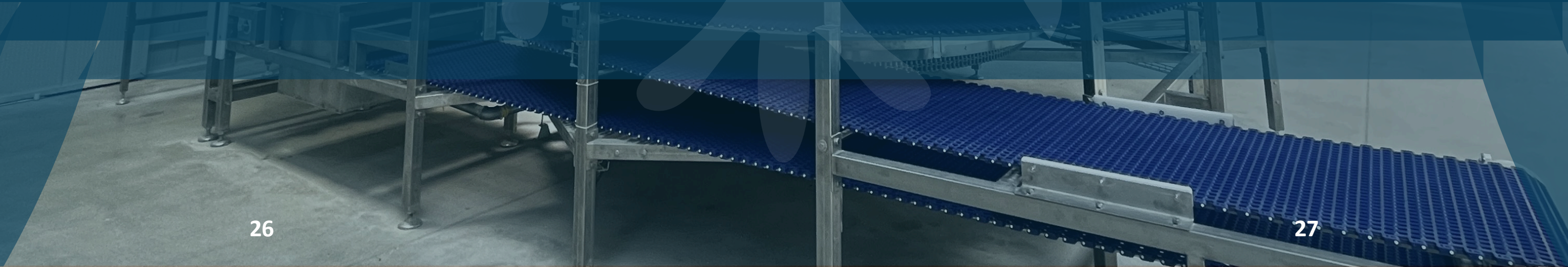
IQF-Food products are frozen individually at  $-40^{\circ}\text{C}$  in a very short time without crystallization of the water inside. This process occurs by freezing the water inside the products, and in this way, food products are ensured to have a long life without additives. Since they are flash frozen at  $-40^{\circ}\text{C}$  with the IQF method and stored at  $-18^{\circ}\text{C}$ , it is not possible for microorganisms that cause decay to grow in frozen foods, resulting in the products deteriorating and losing their nutritional values.

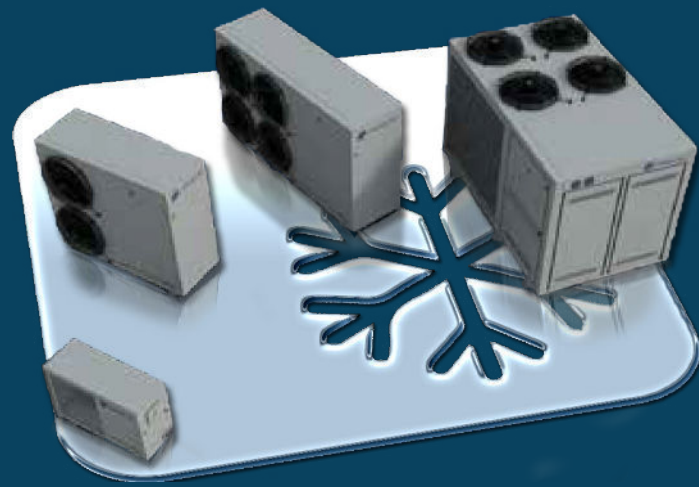


**Tunnel Shocking (Blast Freezing)**



**Spiral Freezing**





✓ Innovative Technology

✓ High Product Quality

✓ Easy Setup

✓ Environmentally Friendly Products



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## PRODUCTS



Central Cooling Units



Split Cooling Units



Monoblock Units



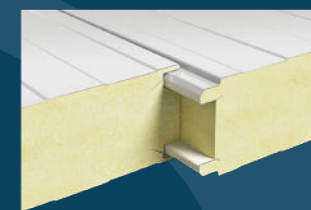
Control Elements And Automation Systems



Evaporators



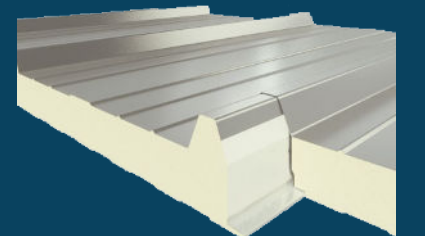
Modular Cold Rooms



Cold Room Panels



Hidden Screw Facade Panels



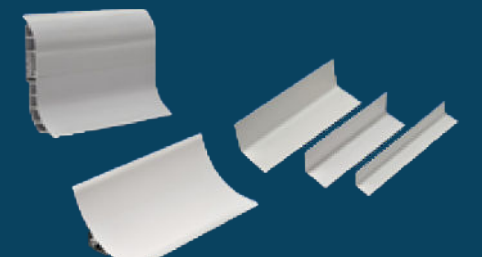
Roof Panels



Container Cold Storages



Cold Room Doors



Accessories and Assembly Products

## Industrial and Split Cooling Units

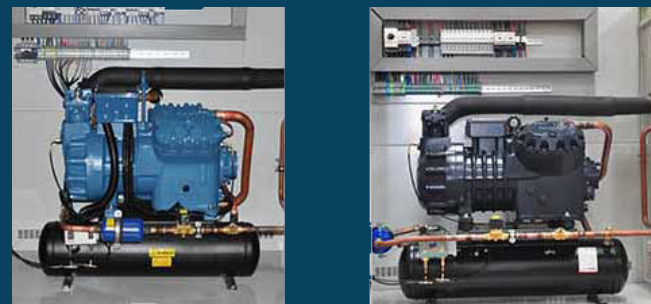


Industrial refrigeration units, showcase type refrigerators, cold rooms, ice machines, ice cream machines, etc. They are condensing units that can be used in all commercial and industrial cooling applications. It is especially designed to operate quietly. In order to reduce the sound level to minimum levels, silent fans were used in the units, and acoustic insulation was applied by mounting the compressors in a separate compartment. Industrial cooling units are produced in a wide range of models and offer special models depending on changing areas of use.

Industrial type units are suitable for industrial facilities with medium and high capacity cooling needs. Thanks to its compact design, it is easy to install and maintain. Efficiency is at a high level in cooling devices where high capacity compressors are used.

### Advantages

- ✓ Compliance with standards
- ✓ Quality equipment
- ✓ Cabin resistant to external factors
- ✓ Easy installation-assembly
- ✓ Floor or wall mounting
- ✓ Wide selection range
- ✓ Complete ready-to-install unit
- ✓ Special models depending on the area of use
- ✓ Low sound level
- ✓ Ease of maintenance



### TECHNICAL SPECIFICATIONS

- ✓ Electrostatic Powder Coated Cabin
- ✓ Phase Protection Relay
- ✓ Contactor and Thermal Conditioner
- ✓ Thermostatic Digital Control Panel
- ✓ Crankcase Heater
- ✓ High Pressure Switch
- ✓ Low Pressure Switch
- ✓ Fan Switch
- ✓ Fan Speed Control (Optional) 9 Liquid Tank
- ✓ Drayer
- ✓ Gas Indicator with Humidity Indicator
- ✓ Service and Maintenance Valve on Liquid Line
- ✓ Integrated Electrical Panel
- ✓ Liquid Flow Control Solenoid

## Central System Cooling Units (Screw, Scroll and Semi-Hermetic)

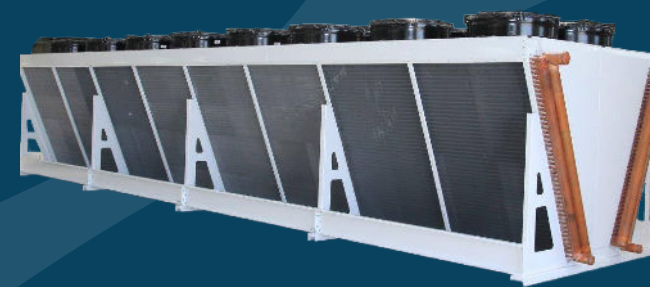


Central cooling units are suitable for industrial facilities and supermarkets that require high capacity cooling. The condenser is shipped separately. There is a wide selection range in capacities from 2 to 6 compressors. The condenser unit is specifically designed to operate quietly. Industrial cooling units are produced in a wide range of models and offer special models depending on changing areas of use.

Central cooling units are manufactured using vibration dampening elements on a durable chassis and multiple hermetic, semi-hermetic, scroll or screw compressors to ensure parallel operation of the compressors. Efficiency is at a high level in cooling devices where high capacity compressors are used.

### Advantages

- ✓ Compliance with standards
- ✓ High efficiency
- ✓ Durable cabin suitable for outdoor environments
- ✓ Minimum noise level
- ✓ Reliable quality equipment
- ✓ Low initial investment cost
- ✓ Easy assembly and installation
- ✓ Easy maintenance
- ✓ Product variety
- ✓ Special model design opportunity



### TECHNICAL SPECIFICATIONS

- ✓ Electrostatic powder coated steel chassis
- ✓ Phase Protection Role
- ✓ Contactor and Thermal Conditioner
- ✓ Thermostatic Digital Control Panel
- ✓ Crankcase Heater
- ✓ On – Off Compact Conditional
- ✓ Cartridge Filter
- ✓ Liquid Storage
- ✓ Service and maintenance valve on the liquid line
- ✓ Low – High Pressure Prostate
- ✓ Service Valve on Suction and Pressure Line
- ✓ Fan Speed Control (optional)
- ✓ Semi-Hermetic, scroll or screw compressor
- ✓ Air or water cooled condenser
- ✓ Electrical and all automatic control elements
- ✓ Gradually activated compressor system



## ❄️ Monoblock Cooling Units



Monoblock cooling units have hermetic compressors and air-cooled condensers. The device is a compact type and is shipped with all its equipment assembled and gas charged. It is cassette suitable for outdoor weather conditions. Hot gas defrost system is available.

In order to reduce the sound level to minimum levels, silent fans are used in the units, and acoustic insulation is applied to the cabin where the compressor is located. His work is very quiet. They provide a comfortable installation advantage by being easily hung on the warehouses where they are used. With their effective performance, they safely store all kinds of products in the warehouse. Depending on the characteristics of the warehouse, it is also possible to produce the ceiling type horizontally. Monoblock cooling devices have an automatic fan control system.



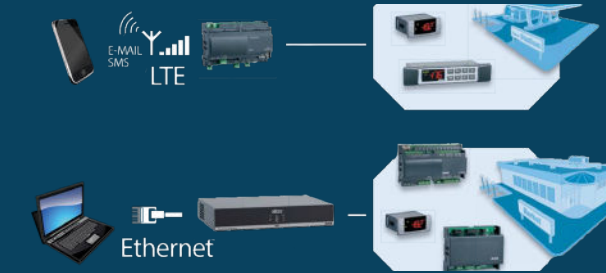
### ⚙️ Advantages

- ✓ It has a hermetic compressor and air-cooled condenser.
- ✓ It is shipped compactly with the electrical panel and all control elements.
- ✓ The device is a compact type and is shipped with all its equipment assembled and gas charged.
- ✓ Taped in accordance with outside weather conditions.
- ✓ Hot gas defrost system is available.

### 🔧 TECHNICAL SPECIFICATIONS

- ✓ Service and maintenance valve on the liquid line
- ✓ Electrical panel
- ✓ All automatic control elements
- ✓ Low - High pressure prostate
- ✓ Dryer Filter

## ❄️ Control Elements and Automation Systems



Cold room control elements are a type of control tools that can keep the room temperature and humidity constant at the desired level. Control devices are used in places where temperature and humidity need to be adjustable, such as cold rooms and cold storages.

It is used to increase the efficiency of both small and large applications. Additionally, systems can be shaped as desired. It is designed to increase energy saving. Thus, it reduces operating costs and helps protect the environment. Our solutions focus on end-user needs; It is synonymous with quality, ease of use and efficiency.

### 🔔 Alarm Management

An effective alarm management system easily detects alarm conditions and sends the necessary alerts to ensure optimum operation of the application.

### 📱 Multiple Integration

The user interface can be used with all new web browsers. There is no need to install additional software. It is also fully compatible with touch screen technologies.

### 🌱 Energy-Saving

Thanks to special algorithms and permanent energy consumption monitoring, it optimizes the functionality of the application by increasing energy efficiency, reducing costs.

### 🔌 Multiple Connection Possibility

It has maximum connectivity with hardware equipped with USB, Ethernet, RS485 and modem connection ports.

### 🥬 Food Quality

Continuous information recording, HACCP reports and timely alarm notifications guarantee the quality of fresh and frozen foods and ensure compliance with standards.

### 🌿 Environmentally Friendly

It optimizes consumption with environmentally friendly, innovative and efficient practices, and is an environmentally friendly system that reduces waste, environmental pollution and gas emissions.

## Evaporators (Indoor Units)



Cold room evaporators can meet small, medium and large cooling demands in all capacity ranges. The batteries included in the units are highly thermally efficient and are also compactly designed. Special models are available for project-specific needs.

Fan diameters are 300mm, 350mm, 400mm, 450mm, 500mm and 630mm and are used in sizes appropriate to the room volume.

It is manufactured with galvanized sheet metal, painted in aesthetic electrostatic white against rust, and exhibits a decorative feature as well as its durability. However, the side covers and drain pan are designed to be easily removable for installation and maintenance work. It can be produced from stainless material and with epoxy battery upon special request.

## TECHNICAL SPECIFICATIONS

- ✓ Different pipe wall thickness and pitch of 4-6-8-10 mm
- ✓ Single-phase 220V 1~ 50Hz–Three-phase 400V 3~ 50 Hz fan options
- ✓ Drain pan
- ✓ Stainless steel cabin (Optional)
- ✓ Epoxy paint (Optional)
- ✓ Fan cable resistance
- ✓ Drain line cable resistance
- ✓ Heating resistance defrost system in the battery and pan (Electric Defrost)



## Battery

- ✓ Lamel spacing is designed as 4-6-8-10 mm.
- ✓ Input-output collector material is copper
- ✓ The highest allowable working pressure  $P_s=21$  Bar.
- ✓ Staggered pipe arrangement.
- ✓ Refrigerants are designed to work with R404A, R507C, R22, R134A, R407C, R449A, R448A refrigerants

## Taping

- ✓ Electrostatic painted on galvanized steel.
- ✓ Optional stainless cassette option
- ✓ Removable side covers.
- ✓ Hinged / Folding drain pan is standard on all models.
- ✓ Intermediate drain pan.

## Fan

- ✓ Cooler options with different fan diameters and number of fans depending on room sizes
- ✓ Standard or low noise maintenance-free fan option.
- ✓ Optional AC or EC fan motor options.
- ✓ Optionally selectable fan accessory types
- ✓ Axicool fans
- ✓ FlowGrid noise reducers
- ✓ Operating range is  $-45^{\circ}\text{C} / +50^{\circ}\text{C}$ .

## Defrost

- ✓ B1 Defrost system for application range at room temperature  $0^{\circ}\text{C} / +5^{\circ}\text{C}$
- ✓ Defrost heaters are only installed on the battery
- ✓ B2 Defrost system is for  $-34^{\circ}\text{C} / 0^{\circ}\text{C}$  room temperature application range.
- ✓ Defrost heaters mounted on the battery and drain pan
- ✓ Drain line heater, hot gas defrost system and water defrost system optional



Modular cold storages are prefabricated rooms consisting of demountable panels that allow all foods, chemicals and medical products to be stored without spoiling for a long time. Modular rooms are systems that can be easily assembled due to their prefabricated structure, can be dismantled and moved to another place when necessary, and can be expanded as needed.

80 mm thick panels are used in cold rooms and 120 mm thick panels are used in frozen storage rooms. Depending on the area of use, the surface material of wall and ceiling panels may be polyester, PVC or CrNi. In floor panels, it is used with galvanized, PVC or CrNi sheet on plywood.

**i Installation Detail**

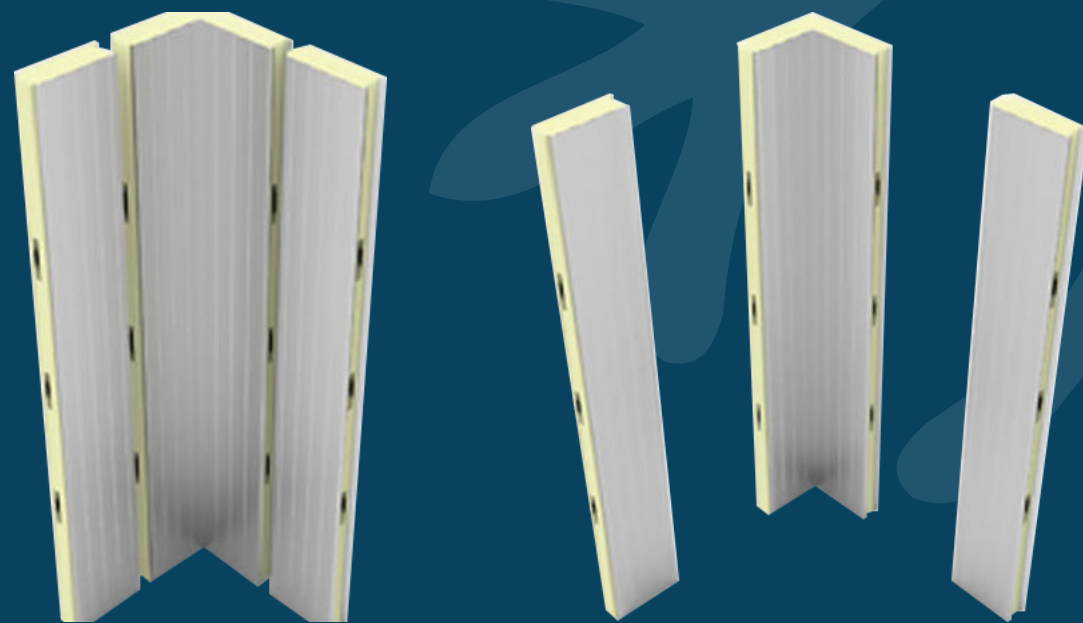
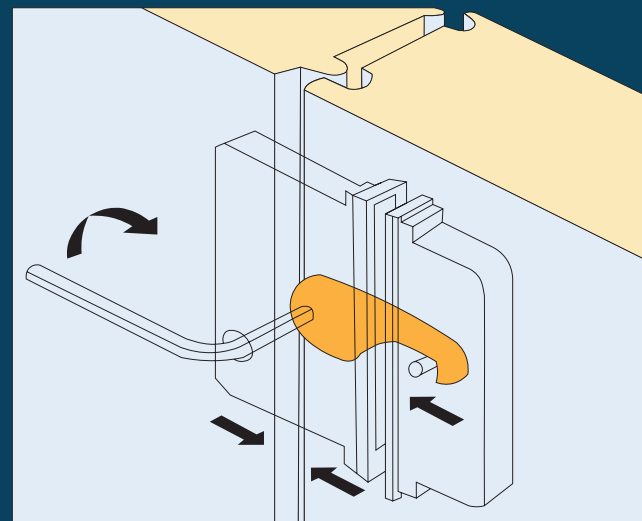
Modular rooms are systems that can be easily assembled due to their prefabricated structure, can be dismantled and moved to another place when necessary, and can be enlarged as needed.

**Joint Detail**

By interlocking the modular room panels thanks to their male-female form, they are installed quickly and practically, without the need for interconnecting elements.

**Lock Detail**

Sandwich panels can be easily combined with the eccentric locking system. Thanks to the male-female connection detail between the two connection surfaces, a perfectly leak-proof connection is achieved after application.



1



2



3



4

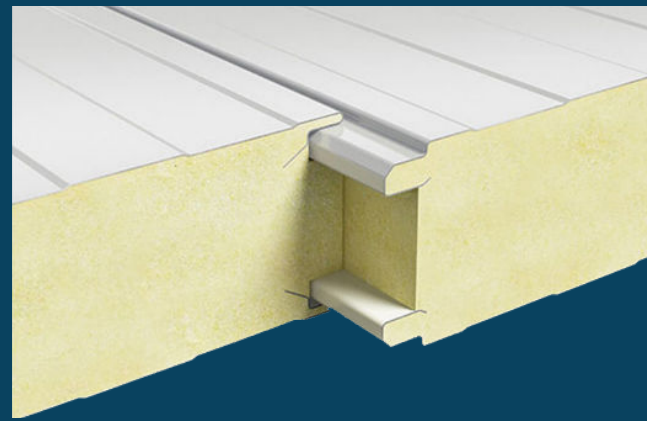


5



6

## ❄️ Cold Room Panels



Polyurethane filled sandwich panels are used in industrial cold storages. Polyurethane, used as the core material, does not contain harmful organisms due to its chemical structure. It provides excellent thermal insulation due to its low thermal conductivity coefficient.

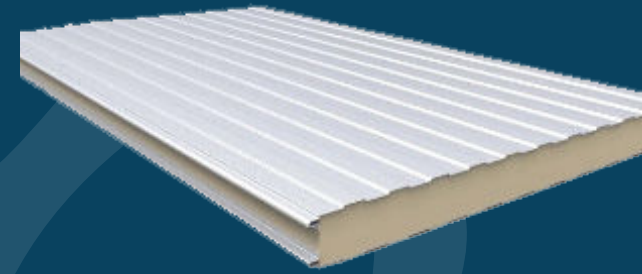
Thermal insulated sandwich panels provide solutions to many insulation problems with their low heat conduction coefficient. It finds wide use in the cooling industry with its feature of providing maximum thermal insulation.

Polyurethane panels have a monolithic sandwich structure created by injecting high density liquid polyurethane foam between metal coatings. Depending on the application area, cold stores can be used to control temperatures ranging from -45°C/+15°C.

Thickness mm	m <sup>2</sup> K	m <sup>2</sup> h°C	°C
50mm			
60mm	0.315	0.270	+10°C / +5°C
80mm	0.238	0.205	+5°C / -5°C
100mm	0.188	0.162	-5°C / -12°C
120mm	0.155	0.132	-12°C / -20°C
150mm	0.126	0.109	-20°C / -30°C
200mm	0.095	0.080	-30°C / -40°C

LAMBDA =  $\frac{K}{0.0185 \text{ mK}}$

## ❄️ Wall and Ceiling Panels

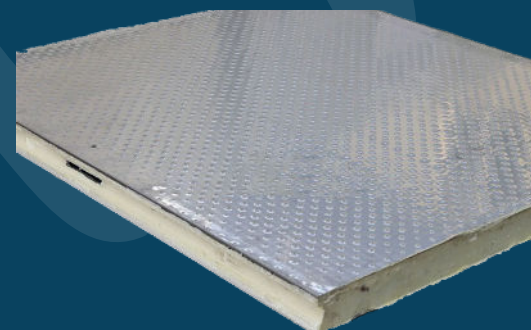
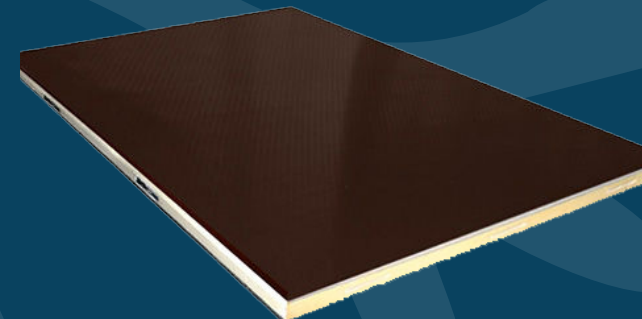


Flat surface sandwich panels are produced without forming on the surface sheet. It is preferred to create a hygienic environment since there are no grooves on the panel surface. The locking system is available on panels 80 mm and thicker.

Corrugated or trapezoidal sandwich panels are produced by forming them on the surface sheet in order to increase the panel strength. The locking system is available on panels 80 mm and thicker.

- ✓ Panel Width : 1000 mm / 1110 mm
- ✓ Panel Thickness : 50 – 200 mm
- ✓ Maximum Panel Length : 13,5 m
- ✓ Sheet Thickness : 0,5 mm
- ✓ Thermal Conductivity : ≤ 0,023 W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 40 – 42 kg/m<sup>3</sup>

## ❄️ Floor Panels



It is used on cold room floors. It has a distributed load carrying capacity of 2000 kg / cm<sup>2</sup>. The upper surface of the panel is created with 10 mm thick plywood. Optionally, non-slip CrNi or PVC coated sheet can be used on the plywood layer. There is a locking system on the floor panels.

- ✓ Panel Width : 1000 mm / 1110 mm
- ✓ Panel Thickness : 80 – 200 mm
- ✓ Maximum Panel Length : 8 m
- ✓ Sheet Thickness : 0,5 mm
- ✓ Thermal Conductivity : ≤ 0,023 W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 40 – 42 kg/m<sup>3</sup>

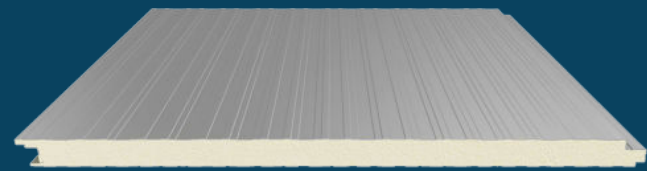
## ❄️ Hidden Screw Facade Panels



Concealed screw facade panels are used to protect industrial facilities from external influences.

The most important feature of our hidden screw facade panels that we produce as Tunnelgroup is that the screw joints are not visible from the outside. It provides high insulation in buildings by allowing easy horizontal and vertical installation. Thanks to its PUR insulation feature, it is watertight and protects from heat and sound, and thanks to its PIR insulation, it prevents fire and ignition, keeping safety at the highest level. It is aesthetic and economical.

- ✓ Panel Width : 1000 mm
- ✓ Panel Thickness : 40 – 200 mm
- ✓ Maximum Panel Length : 13,5 m
- ✓ Sheet Thickness : 0,30 mm - 0,45 mm
- ✓ Thermal Conductivity :  $\leq 0,023$  W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 30-36 kg/m<sup>3</sup>



### High Density

Optimum polyurethane with no air



### Thermal Insulation

With its dense raw material Provides minimal heat leakage



### Sound Insulation

What happens inside stays inside, What's outside stays outside

### Fireproof

High quality sheet metal delivers performance



### Waterproof

The only liquid inside you may have products

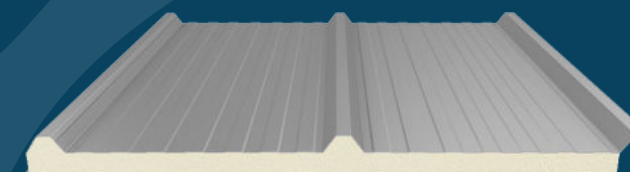


### Easy Setup

Even amateurs can feel expert It has a setup that will make you



## ❄️ 3 Ribbed Roof Panel



Roof panels are used to protect industrial facilities from external effects.

Our 3-ribbed roof panels do not have the ability to absorb or absorb water, thanks to the load-bearing performance and superior performance of polyurethane insulated roof panels against moisture. It can be produced in different forms according to your wishes, allowing you to choose the most economical form. It has high resistance to heat and does not sustain the flame when ignition occurs.

- ✓ Panel Width : 1000 mm
- ✓ Panel Thickness : 40 – 200 mm
- ✓ Sheet Thickness : 0,30 mm - 0,45 mm
- ✓ Thermal Conductivity :  $\leq 0,023$  W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 30 – 36 kg/m<sup>3</sup>

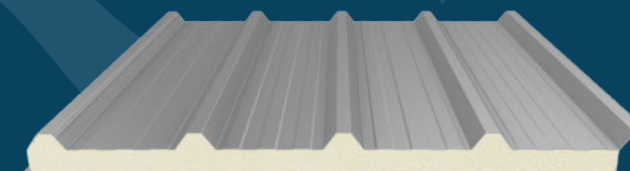
## ❄️ 4 Ribbed Solar Compatible Roof Panel



Our 4-ribbed solar energy system compatible roof panels do not have the ability to draw or absorb water, thanks to the load carrying performance and superior performance of polyurethane insulated roof panels against moisture. It can be produced in different forms according to your wishes, allowing you to choose the most economical form. It has high resistance to heat and does not sustain the flame when ignition occurs.

- ✓ Panel Width : 1000 mm
- ✓ Panel Thickness : 40 – 200 mm
- ✓ Sheet Thickness : 0,30 mm - 0,45 mm
- ✓ Thermal Conductivity :  $\leq 0,023$  W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 30 – 36 kg/m<sup>3</sup>

## ❄️ 5 Ribbed Roof Panel



Our 5-ribbed roof panels do not absorb or absorb water, thanks to the load-bearing performance and superior performance of polyurethane insulated roof panels against moisture. It can be produced in different forms according to your wishes, allowing you to choose the most economical form. It has high resistance to heat and does not sustain the flame when ignition occurs.

- ✓ Panel Width : 1000 mm
- ✓ Panel Thickness : 40 – 200 mm
- ✓ Sheet Thickness : 0,30 mm - 0,45 mm
- ✓ Thermal Conductivity :  $\leq 0,023$  W/m.K
- ✓ Sound Insulation : 21,5 dB
- ✓ Density : 30 – 36 kg/m<sup>3</sup>

## ❄️ 40HC Container Cold Storage



Container cold storages are delivered ready for use, installed and tested. Optionally, it can be produced with generator and / or solar energy systems.

The most important feature of the container cold rooms that we offer for production as Tunelgroup is that they are cold rooms that can be used in domestic and international transportation with all the installed documents. It is aesthetic and economical. Our customers who want to utilize open spaces in their facilities can use container cold storages without any construction work.

- ✓ Container Dimensions : 12,00\*2,40\*2,60(h)
- ✓ Volume : 74,90m<sup>3</sup>
- ✓ Operating Temperature : -5/+5°C & -18/-22°C & -40°C
- ✓ Panel Thickness : Between 80mm and 180mm
- ✓ Cooling Devices : Tecumseh & Dorin & Bitzer
- ✓ Door : Hinged Cold Room Door
- ✓ Lighting System : Including LED Lighting

**Maintenance Cost**  
Economical price  
economical maintenance cost

**Thermal Insulation**  
With its dense raw material  
Provides minimal heat leakage

**Sound Insulation**  
What happens inside stays inside,  
What's outside stays outside

**Fireproof**  
High quality sheet metal  
delivers performance

**Waterproof**  
The only liquid inside  
you may have products

**Easy Setup**  
Even amateurs can feel expert  
It has a setup that will make you

## ❄️ 20DC Container Cold Storage



20Dc Container cold storages are delivered ready for use, installed and tested. Optionally, it can be produced with generator and / or solar energy systems.

The biggest advantage of 20Dc container cold rooms is that they can be used in smaller spaces thanks to their more compact structure and can be easily transported and used wherever desired. It is aesthetic and economical. Since they are compact and ready to use, they can be used without the need for additional construction work.

- ✓ Container Dimensions : 6,00\*2,40\*2,40(h)
- ✓ Volume : 34,55m<sup>3</sup>
- ✓ Operating Temperature : -5/+5°C & -18/-22°C & -40°C
- ✓ Panel Thickness : Between 80mm and 180mm
- ✓ Cooling Devices : Tecumseh & Dorin & Bitzer
- ✓ Door : Hinged Cold Room Door
- ✓ Lighting System : Including LED Lighting

## ❄️ 10DC Container Cold Storage



10Dc Container cold storages are delivered ready for use, installed and tested. Optionally, it can be produced with generator and / or solar energy systems.

The biggest advantage of 10Dc container cold rooms is that, thanks to their much smaller structure, they can be stacked as desired and can be easily transported and used wherever desired. It is aesthetic and economical. Since they are compact and ready to use, they can be used without the need for additional construction work.

- ✓ Container Dimensions : 3,00\*2,40\*2,40(h)
- ✓ Volume : 17,30m<sup>3</sup>
- ✓ Operating Temperature : -5/+5°C & -18/-22°C
- ✓ Panel Thickness : Between 80mm and 180mm
- ✓ Cooling Devices : Tecumseh & Dorin & Bitzer
- ✓ Door : Hinged Cold Room Door
- ✓ Lighting System : Including LED Lighting

## Cold Room Doors



- ✓ It is manufactured using hygienic materials in accordance with European standards. It does not contain any organic products.
- ✓ It does not undergo any deformation when washed with all kinds of chemical disinfectants.
- ✓ There are 3 different case options: aluminum, PVC and stainless case.
- ✓ Our door frames can be mounted on panels or walls of any thickness.
- ✓ Support sheets are applied inside the case for all apparatus mounted on the case.
- ✓ All thermal bridges in our aluminum and stainless cases are prevented thanks to the special design of the cases.
- ✓ The desired thermostat, pressure valve, instrument panel, etc. to be applied on the case. Collaborative work can be carried out with the project for applications such as.
- ✓ Door wings are produced as monoblock. Frame anodized aluminum profiles, sheet metal and all internal support sheets are combined and polyurethane is injected into this structure to ensure holistic strength.
- ✓ Cold room door leaf thicknesses are 70mm, 90mm and 120mm in terms of the temperature value to be protected. Frozen preservation door leaf thicknesses are 90mm, 120mm and 150mm, depending on the temperature to be protected.
- ✓ Door wings are filled with polyurethane foam with a density of 40-43 kg/m<sup>3</sup>.
- ✓ The inner surfaces of all sheets used in door wings are produced with a primer to ensure the adhesion of polyurethane.
- ✓ For all parts mounted on the wing, 2-3mm thick support sheets are used on the inner surface of the wing. Optionally, a utility window, observation window or door of desired dimensions can be applied to the wing. Transport apparatus consists of hygienic reinforced composite plastic or stainless steel materials.
- ✓ A single row of gaskets is used on all 4 sides of the cold storage doors. In our 90 mm thick frozen storage doors, a single row of gaskets and resistance inside the gasket are used on all 4 sides, and in our 120mm and 150mm thick doors, a double seal and a single row of resistance are used.
- ✓ An optional oil threshold heater is recommended for frozen storage doors. Dia thermal oil in 50x50mm profile is heated by resistance.
- ✓ Optionally, a sliding door lock (internal safety release lever) or an automatic lock system can be added to our doors.
- ✓ The motor system used in sliding doors that are opened and closed frequently provides complete insulation and enables the process to be carried out quickly.
- ✓ Polyethylene or stainless kick plates can be added to the interior and exterior surfaces to protect the door surfaces from impacts due to operating conditions.
- ✓ In cold air conditioning applications, a single row of gaskets is placed on all four sides of the door. However, in freezer air conditioners, there is an additional heater inside the gasket.

## Hinged Cold Room Door



It works as a single wing with the principle of opening to the right or left. Hinge systems facilitate operation by providing a height of 12 mm in the open position. External locking system and internal opening handles with panic buttons are standard. The door leaf is produced as a monoblock. Frame anodized aluminum profiles, sheet metal and all internal support sheets are combined in a way that does not create a thermal bridge, and polyurethane is injected into this structure to ensure holistic strength.

It is manufactured using hygienic materials in accordance with European standards. It does not contain any organic products. It does not undergo any deformation when washed with all kinds of chemical disinfectants.

## Sliding Cold Room Door



Sliding cold room doors operate as a single wing with the principle of sliding to the right or left. Door wings are produced as monoblock. Frame anodized aluminum profiles, sheet metal and all internal support sheets are combined in a way that does not create a thermal bridge, and polyurethane is injected into this structure to ensure holistic strength. It is manufactured using hygienic materials in accordance with European standards. It does not contain any organic products. It does not undergo any deformation when washed with all kinds of chemical disinfectants.

Cold room doors are used for storing red meat, fish, white meat, vegetables, fruits, etc. that need to be stored at plus room temperature. Frozen storage room doors are used to preserve food products that need to be stored at minus degrees room temperature.



## ❄️ Monorail Cold Room Door



In general, the processing and storage areas connected to each other by monorail lines in red meat production and processing facilities operate as passage doors, with the principle of sliding to the right or left, in the form of a single wing or with hinges opening to the right or left. We have solutions for interrupted (jointed, elbowed) and continuous monorail lines. The door leaf is produced as a monoblock. Frame anodized aluminum profiles, sheet metal and all internal support sheets are combined in a way that does not create a thermal bridge, and polyurethane is injected into this structure to ensure holistic strength.



## ❄️ Flip-Flap (Bar Type) Service Door



It is used as a passage between production, processing, corridors and work areas with little or no temperature difference between them. It is in the semi-insulated door class. Forklift, pallet truck etc. It is suitable for separating areas where transport and freight vehicles pass. The door leaf is produced as a monoblock. Frame anodized aluminum profiles, sheet metal and all internal support sheets are combined in a way that does not create a thermal bridge, and polyurethane is injected into this structure to ensure holistic strength.

It is manufactured using hygienic materials in accordance with European standards. It does not contain any organic products. It does not undergo any deformation when washed with all kinds of chemical disinfectants.

## ❄️ Sectional Transferring Door



Sectional door systems are designed for factory, warehouse and car park entrances. It is also used at material and vehicle entry and exit points. Our sectional doors, produced from steel polyurethane filled sandwich panels, provide the highest level of security and energy saving. Sectional doors, which can also be manufactured using transparent plexiglass, are preferred in showroom and service entrances thanks to the transparency they provide.

Industrial sectional doors are the most suitable door system that prioritizes insulation for loading and unloading operations that require medium speed in your facility. It is extremely durable and long-lasting, with polyurethane filling on the inside and steel or optional aluminum coated panels on the outside. Sectional doors with increased insulation with rubber seals are very leak-proof.

Sectional doors with standard speed (0.25 mt/sec) have a very solid body and provide maximum security.



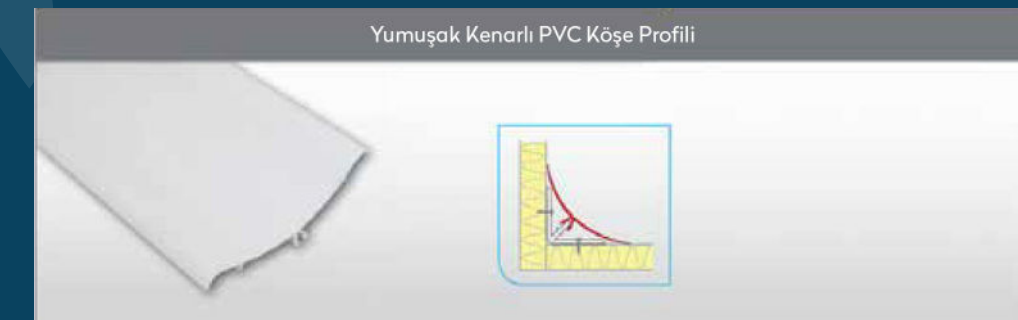
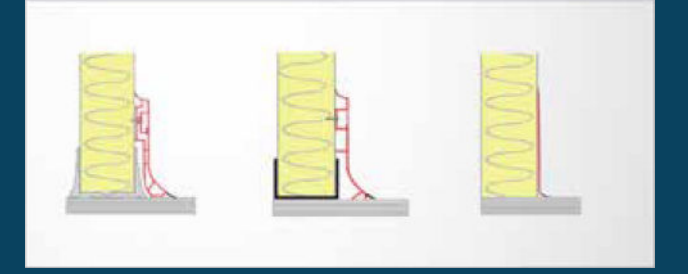
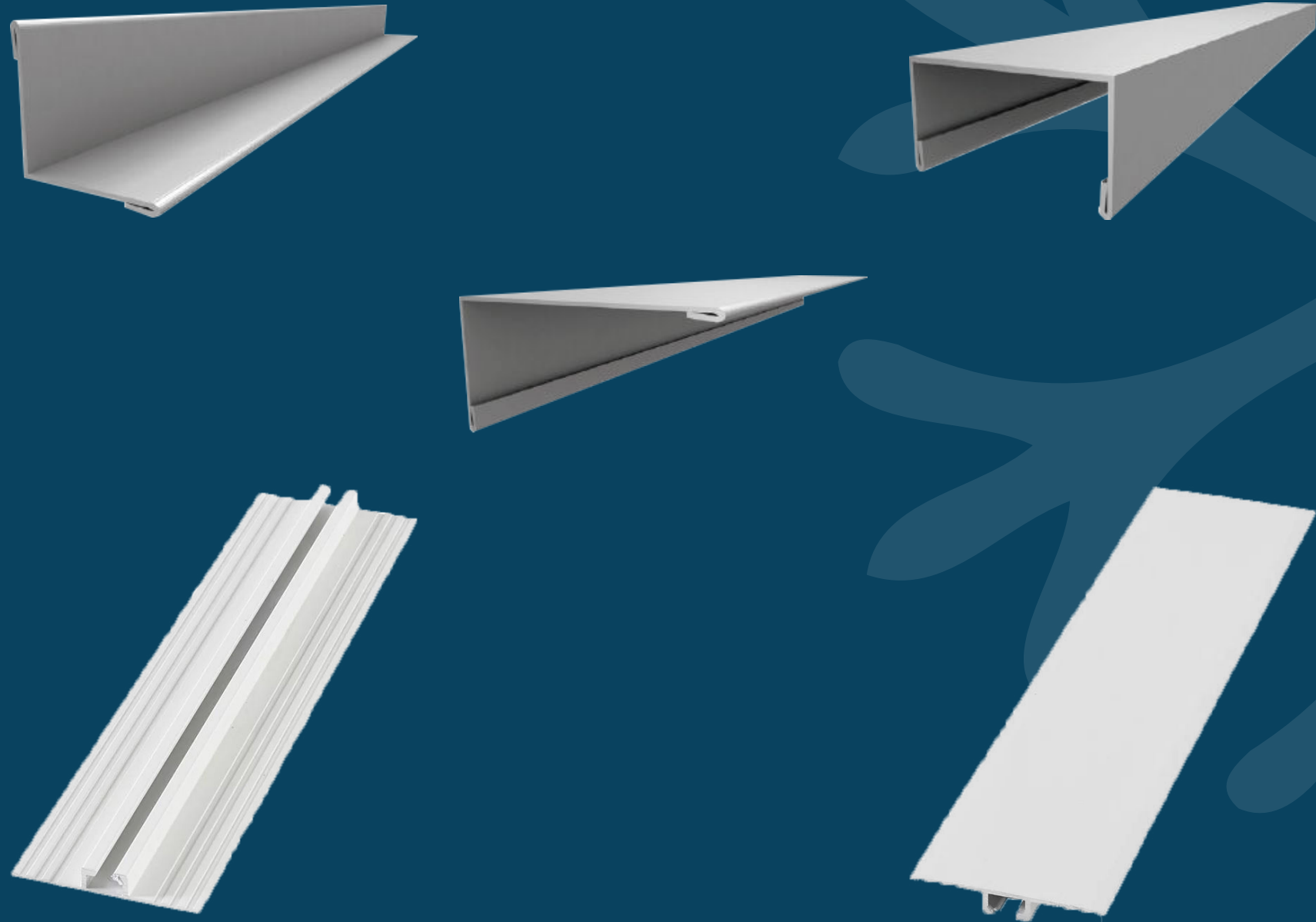


## Accessories and Assembly Products

Hygienic cold room accessories are products that economically respond to customer needs with high performance in environmental conditions with a design that prioritizes quality and hygiene in cold rooms. These are the products that food businesses should use to provide a more hygienic environment in product processing and storage areas and to meet HACCP requirements. It provides a hygienic environment in the assembly of floor, wall and ceiling panels in cold rooms and in the created area.

The materials used in cold room hygienic profiles can be used easily at low temperatures.

Mounting profiles are accessories of various sizes and features developed to adjust the floor seating arrangement of the panels in cold room installation, to eliminate visual pollution that may occur at edge and corner joints, to ensure hygiene and to mount ceiling panels.



## Ultrasonic Humidification Devices



Ensuring the correct humidity level increases production efficiency, sustainability and quality of products. Ultrasonic Humidifiers are suitable for use in many sectors and are especially designed for food storage and places requiring small tolerances, such as cold stores, vegetable bars, meat storage areas, dairy products, bakery storage areas.

Ultrasonic humidification units are a humidification system that uses ultrasonic sound waves to transform water from liquid to cold vapor. Ultrasonic sound propagating in the liquid gives a certain energy and movement to the liquid molecules. The humidity obtained by this process is distributed throughout the room via an internal fan. With the help of the oscillator it uses, it releases water particles smaller than 10  $\mu\text{m}$  (3-5  $\mu\text{m}$  on average) into the air to increase the ambient humidity by creating a more balanced humidity area. It has a compact appearance with its stainless steel case and digital control screen.

### Advantages

- ✓ Compliance with standards
- ✓ Quality equipment
- ✓ Cabin resistant to external factors
- ✓ Easy installation-assembly
- ✓ Electronic control system
- ✓ Automatic water level control
- ✓ Complete ready-to-install unit
- ✓ Special models depending on the area of use
- ✓ Low sound level
- ✓ Ease of maintenance

### TECHNICAL SPECIFICATIONS

- ✓ Digital control LED display
- ✓ Droplet size less than 10  $\mu\text{m}$  (3-5  $\mu\text{m}$  on average)
- ✓ 25%-95% humidity control
- ✓ Automatic water level alert
- ✓ Automatic water filling
- ✓ 8000 hours oscillator life
- ✓ 1 °C-50 °C operating temperature
- ✓ Dry contact connection
- ✓ MODBUS communication (TWH Premium)

## Chrome (Stainless Steel) Shelf Systems



Cold room shelves are among the indispensable fixtures in the warehouse cooling systems of our age. They provide a great advantage for the continuity of cooling systems and to prevent heat loss from the cold air in the area. These specially produced shelf models are designed by calculating each point.

It is important to distribute and maintain the coldness evenly in cold storages. These shelves are produced based on the maximum use of cold air in the warehouse and provide equal distribution everywhere. Its most important feature is that it is stainless. They have a structure that is resistant to oxidation and possible bacterial formation that may occur in humid environments.

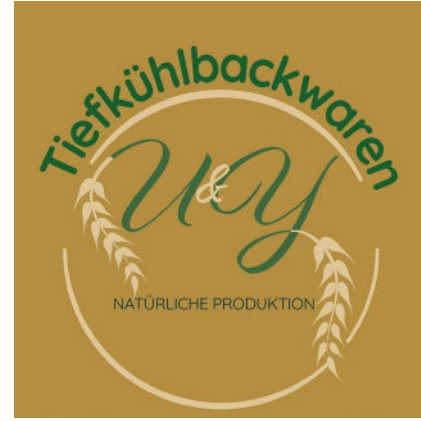
### Advantages

- ✓ Compliance with standards
- ✓ High efficiency
- ✓ Durable material suitable for outdoor environments
- ✓ Reliable quality equipment
- ✓ Low initial investment cost
- ✓ Easy assembly and installation
- ✓ Easy maintenance
- ✓ Product variety
- ✓ Special model design opportunity

### TECHNICAL SPECIFICATIONS

- ✓ It has a hygienic structure.
- ✓ It does not harbor bacteria.
- ✓ It is easy to clean.
- ✓ Disassembly and assembly are simple.
- ✓ It is long lasting.
- ✓ It can be produced in different sizes.
- ✓ Provides healthy storage.
- ✓ It does not cause heat loss due to its structure.

❄️ Some of Our References;





**Tunelgroup**  
Industrial Cooling Systems

**WE DESIGN AND PRODUCE  
COLD ROOMS FOR YOU**



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