



**ThermoKey**<sup>®</sup>  
Heat Exchange Solutions

# Unit Coolers



**Preserving food freshness  
and properties  
is an indispensable mission.**

**80 Brine Unit Coolers**

Keeping temperature  
constant and preserving  
the freshness of 14,000  
tons of apples

## What the market demands

### Noiselessness

In processing rooms and even in cold rooms noiselessness guarantees operators' wellbeing and health at their workplace.

### Resistant and easy to sanitize

Sanitizing or cleaning substances, food-processing substances (salt, vinegar, smoke) and / or substances released by the very processed products (e.g.: cheese ripening, hide processing) are often present in cold rooms. Appropriate materials and eased servicing work guarantee the cooling unit's long life, cleanliness and hygiene.

### Minimum product weight loss

In cold rooms, especially for the prolonged conservation in a controlled atmosphere, for many preserved products, a high level of humidity has to be guaranteed. Low temperature deltas ( $\Delta T$ ) and low air speed prevent the product from being dehydrated, as well as its ensuing loss of weight, and going off.

### Controlled frosting

Minimizing brine presence in order to guarantee maximum cooling efficiency is required in cold rooms with temperatures close to, or below, 0° C.

### Fast cooling and freezing

High air-throws and homogeneous air circulation to ensure the rapid freezing of goods, in order to maintain their original properties.

## ThermoKey responses

### Dual Flow Unit Cooler Radial Unit Cooler

ThermoKey offers products equipped with highly-efficient, low-noise fans; also low air-speed dual flow unit coolers are available, preventing direct air-flow onto the operators. Furthermore, for plants using canalized air distribution, ThermoKey provides cooling units equipped with radial fans, whose functioning is guaranteed with additional static pressures of at least 150 Pa, while maintaining low noise levels.

### Inspectionable, stainless steel units

ThermoKey produces stainless steel unit coolers, whose finned pack heat exchangers are thoroughly accessible thanks to hinged drip trays, covers and easy-to-open fan cowlings.

### Fruit Cooler

ThermoKey provides cooling units with big surface geometries guaranteeing the expected capacities, with low temperature deltas. Specific units have been developed to preserve fruit and vegetables with blow-through fans, optimising air distribution.

### Defrosting systems

ThermoKey offers a wide range of defrosting systems to ensure the best solution for every type of application.

### Blast Freezer

ThermoKey offers Blast Freezer unit coolers equipped with high, external static pressure (from 100 to 400 Pa) fans, wide fin-spacing to minimize defrosting cycles.



**Dual Flow  
Unit Coolers**

A single intelligent platform offering a wide range of solutions for industrial refrigeration

## Over 30,000 unit cooler solutions

### ARCHIMEDE SOFTWARE

ThermoKey's Archimede software guides you in selecting the most suitable air heat exchangers and automatically elaborates a technical data sheet.

It selects the best solutions among more than 100 accessories and many possible combinations.

Range from 1.44 kW to 200 kW



**TK Archimede**  
precision and reliability

Scan the QR code or use the website link to download the Archimede software:  
[www.thermokey.com/download/software](http://www.thermokey.com/download/software)



## General product features

### FINNED PACK HEAT EXCHANGERS:

- Made with specific geometries for refrigeration.
- They are characterized by a high ratio between the secondary exchange surface of the fins and the primary one of the tubes.
- Very thick aluminium fins and highly efficient, internally grooved copper tubes are used for direct expansion unit coolers; plain tubes for brine unit coolers.
- Tubes with diameters from 1/2" or 5/8" are available and various fin spacing combinations - up to 12 mm - are provided, to optimize different applications and operating conditions.

### CASINGS

Our casings are made of an aluminum alloy and galvanized steel in order to ensure excellent strength and corrosion resistance. Moreover, casings made of painted metal sheet or stainless steel are available for use in especially aggressive environments.

### FANS

- Fans can be either standard axial AC type or electronically commutated EC.
- Special fans to meet different application needs can also be supplied.



# Unit Coolers range

Used for food preservation in cold rooms, fast freezing tunnels, greenhouses temperature control and other applications.

## LIGHT CUBIC UNIT COOLERS



**Area of use** Small and medium cold rooms to preserve fresh or frozen products

**Performance range** **Direct Expansion operation:** capacity from 1,44 to 47 kW (R404A, Te= -8° C, T1= 0° C, RH= 85%)  
**Brine Operation:** capacity from 1 to 20 kW (Glycol 30%, TW1= -10 °C, T1= 0 °C, RH = 85%)

**Fans** Diameter Ø 300, 350, 400 and 450 mm

**Benefits** High efficiency in compact sizes  
 Modular design, 1-4 fans  
 Fin spacing: 4 mm, 6 mm or 8mm  
 Solid frame in galvanized steel, cowlings in ABS (on request complete unit in galvanised steel) RAL 9010  
 Electric defrosting system available on request

## COMMERCIAL DUAL FLOW UNIT COOLERS



**Area of use** Small and medium cold rooms to preserve fresh or frozen products  
 Small and medium processing rooms

**Performance range** Capacity from 1,5 to 20 kW (R404A, Te = -8 °C, T1= 0 °C, RH = 85%)

**Fans** Mono-phase, Ø 350 mm

**Benefits** Modular design, 1-4 fans  
 Fin spacing: 3 mm 6 mm  
 Electric defrosting system available on request  
 Casing: available in aluminium, in stainless steel AISI 304 or RAL9010 painted

## INDUSTRIAL UNIT COOLERS



**Area of use** Medium and large cold rooms and large refrigerated warehouses to preserve fresh or frozen products

**Performance range** **Direct Expansion operation:** capacity from 7 to 209 kW (R404A, Te= -8° C, T1= 0° C, RH= 85%)  
 Fin spacing: 4.5 - 7 - 11 mm  
**Brine Operation:** capacity from 7 to 240 kW (Glycol 30%, TW1= -10 °C, T1= 0 °C, RH = 85%)  
 Fin spacing: 4.5 - 6 - 8 mm

**Ammonia Operation:** capacity from 8 to 262 kW (NH3, Te= -8 °C, T1= 0 °C, RH = 85%)  
 Fin spacing: 4.5 - 7 - 11 mm

**Fans** Diameter Ø 500, 560, 630 and 800 mm, AC or EC motor

**Benefits** Modular design, 1-5 fans  
 Piping in copper or in AISI 304 stainless steel  
 Finned pack available in a wide range of materials  
 Various defrosting systems available  
 Casing: available in aluminium, in AISI 304 stainless steel or RAL 9010 painted

## INDUSTRIAL CUBIC UNIT COOLERS



**Area of use** Medium and large cold rooms and large refrigerated warehouses to preserve fresh or frozen products

**Performance range** **ICX evaporator for standard refrigerants:** capacity 6 kW to 141 kW (R404A, Te= -8° C, T1= 0° C, RH= 85%)  
 Fin spacing: 4.5 - 6 - 7 - 10 - 11 mm

**ICB standard Brine Unit Coolers:** capacity from 7 to 166 kW (GE 30%, Ti= -10° C, T1= 0° C, RH= 85%)  
 Fin spacing: 4.5 - 6 - 8 - 10 mm

**ICN Ammonia Unit Cooler:** capacity from 10 to 200 kW (R717, Te= -8° C, Tr= 0° C, RH= 85%, 4 recirculations)  
 Fin spacing: 4.5 - 6 - 7 - 10 - 11 mm

**ICC carbon dioxide evaporators:** capacity from 6 to 150 kW (R744, Te= -8° C, Tr= 0° C, RH= 85%)  
 Fin spacing: 4.5 - 6 - 7 - 10 - 11 mm

**Fans** Diameter Ø 500, 560 and 630 mm, AC or EC motor

**Benefits** Modular design, 1-5 fans  
 Piping in copper or in stainless steel  
 Finned pack available in a wide range of materials  
 Various defrosting systems available  
 Casing: available in aluminium, in AISI 316 stainless steel or RAL 9010 painted

## INDUSTRIAL DUAL FLOW UNIT COOLERS



**Area of use** Medium and large cold rooms and large refrigerated warehouses to preserve fresh or frozen products  
Medium and large processing rooms

**Performance range** **Direct Expansion operation:** capacity up to 115 kW (R404A, Te= -8 °C, T1= 0 °C, RH = 85%)  
**Brine Operation:** capacity up to 160 kW (Glycol 30%, TW1= -10 °C, T1= 0 °C, RH = 85%)  
**Ammonia Operation:** capacity up to 170 kW (NH3, Te= -8 °C, T1= 0 °C, RH = 85%)

**Fans** Diameter Ø 500-560-630 mm, AC motor.

**Benefits** Modular design, 1-5 fans  
Piping in copper or in AISI 304 stainless steel  
Finned pack available in a wide range of materials  
Fin spacing: 4.5 mm - 7 mm  
Various defrosting systems available  
Casing: available in AISI 304 stainless steel or RAL 9010 painted aluminium

## BLAST FREEZER UNIT COOLERS



**Area of use** Cold rooms specific for either product cooling or fast freezing

**Performance range** Capacity from 14 to 107 kW (Te = -40 °C, T1 = -35 °C, RH = 90%)

**Fans** Diameter Ø 630 mm

**Benefits** External static 100 Pa pressure (standard); can reach 400 Pa with special tubular fans  
Piping in copper or in AISI 304 stainless steel  
Finned pack available in a wide range of materials  
Fin spacing: 12 mm  
Various defrosting systems available  
Casing: available in aluminium, in AISI 304 stainless steel or RAL 9010 painted

## FRUIT COOLERS WITH BLOW-THROUGH FANS



**Area of use** Cold rooms specific for the preservation of fruit and vegetables

**Performance range** Capacity from 21 to 50 kW (R404A, Te = -8 °C, T1= 0 °C, RH = 85%)

**Fans** Diameter Ø 400 and 450 mm

**Benefits** Modular design, 3-6 fans  
Fin spacing: 6 mm  
Electric defrosting system available on request  
Solid frame in galvanized, RAL9010 painted steel

## RADIAL UNIT COOLERS



**Area of use** Air ducting

**Performance range** **Direct Expansion operation:** capacity from 10 to 115 kW (R404A, Te= 2° C, T1= 12° C, RH = 75%)  
**Brine Operation:** capacity from 7 to 135 kW (Glycol 30%, TW1= 0 °C, T1= 12 °C, RH = 75%)

**Fans** Radial ducted fans, Diameter Ø 560, 630 mm

**Benefits** Fin spacing: 4.5 mm or 7 mm  
Piping in copper or in AISI 304 stainless steel  
External static 150 Pa pressure  
Modular design, 1-4 fans  
Electric defrosting system available on request  
Casing in aluminium or RAL 9010 painted

## HEN UNIT COOLERS



**Area of use** Potato and vegetables storage

**Performance range** Capacity from 40 to 143 kW (R404A, Te = -5 °C, T1= 0 °C, RH = 90%)

**Fans** Diameter Ø 800 high prevalence with different ESP value

**Benefits** Modular design, 2-4 fans  
Fin spacing 7 mm  
Electric defrosting system available on request  
Solid frame in galvanized steel

## Available accessories

### SEVERAL DEFROSTING SYSTEMS AVAILABLE

To minimize frost presence on the unit cooler and ensure maximum cooling efficiency.

<b>A</b>	AIR DEFROSTING
<b>W</b>	WATER DEFROSTING
<b>F</b>	WATER DEFROSTING WITH HEATING ELEMENTS
<b>E</b>	ELECTRICAL DEFROSTING
<b>H</b>	HOT GAS DEFROSTING
<b>G</b>	HOT GAS DEFROSTING WITH HEATING ELEMENTS
<b>S</b>	IMBRICATED WATER DEFROSTING

### INSULATION

To prevent heat from being lost and flowing towards the cold room during the defrosting stage and to prevent - while the unit cooler is working - the external drip tray from cooling, avoiding condensation and dripping phenomena. Insulated drip tray or double insulation drip tray are available.

### DRAIN HEATING ELEMENT

To prevent ice from returning through the plant condensation drainpipe to the unit cooler drip tray.

### FAN COWLING HEATING ELEMENTS

Low power rubber belt heaters to prevent ice formation near the fans or high power stainless steel sheathed heaters to defrost fan shroud ice growth.

### COWLING ADAPTER FOR TEXTILE DUCT (ONLY FOR RADIAL UNIT COOLERS)

Cowling adapter available when using textile duct.

### STAINLESS STEEL CASING OR RAL 9010 PAINTED CASING

Such two solutions can be chosen as an alternative to our standard aluminium and galvanized steel casing, thus ensuring greater durability especially in particular conditions of the cold room.

### AISI 304 OR 316L STAINLESS STEEL HEAT EXCHANGER (TUBES, CASING, FINS, FAN GUARDS)

Above materials may be selected for particularly aggressive environments, in the food industry and in applications where detergents for heat exchanger cleaning are employed.

### SPECIAL MATERIALS

Several types of material may be chosen - (pre-painted hydrophobic blue, double layer and copper pipes / copper fins) - depending on environment aggressiveness and where extra fin protection is needed.

### EC FANS

These fans use brushless technology ensuring the lowest energy consumption rates on the market nowadays.

### SPECIAL FANS (TUBULAR, WITH HIGH EXTERNAL STATIC PRESSURE, PARTICULAR VOLTAGE)

### FAN WIRING IN JUNCTION BOX

A great solution, simplifying and reducing time of the unit wiring on the plant.

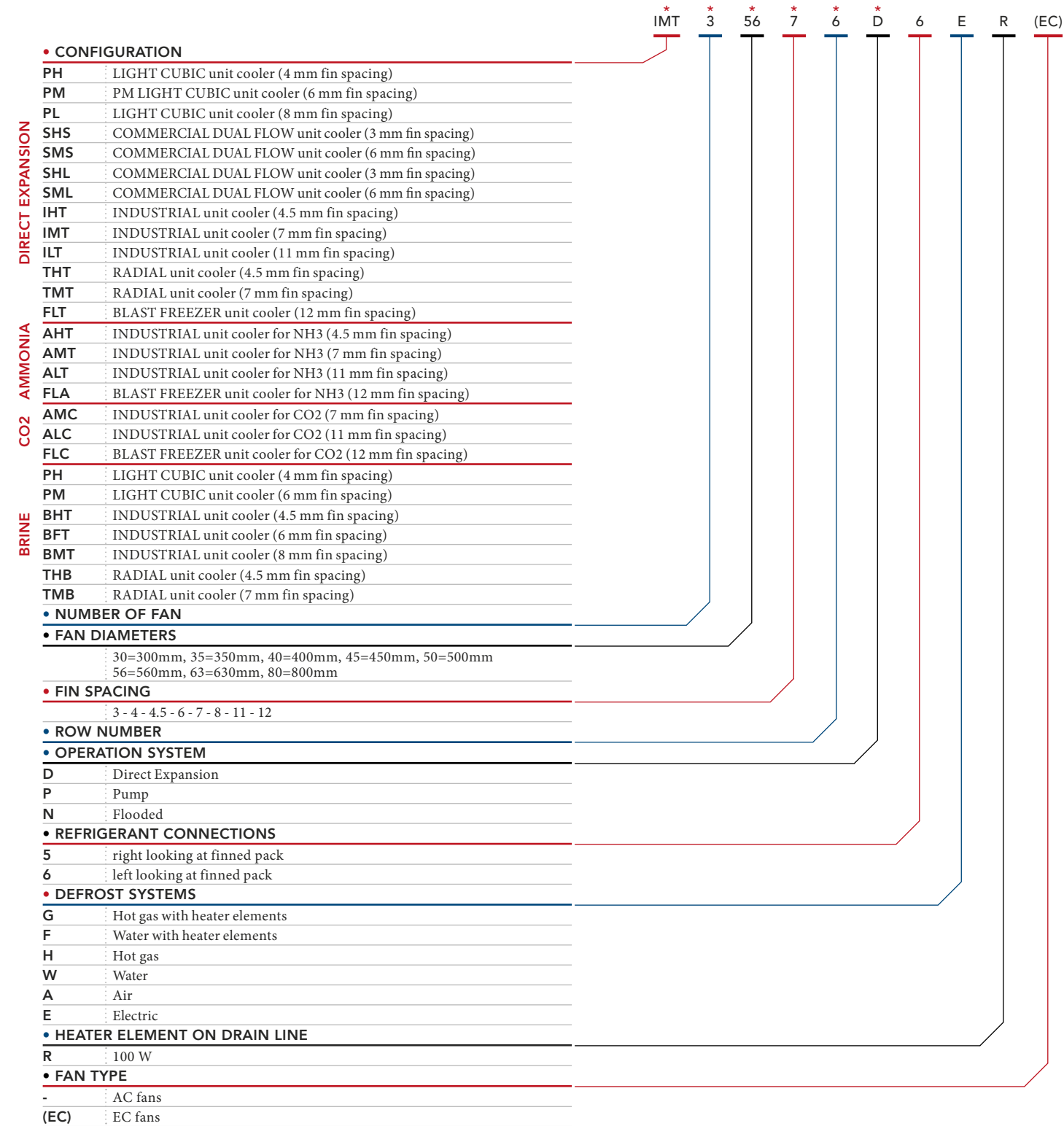
### REMOVABLE FANS

They make finned pack cleaning possible also on the fan side.



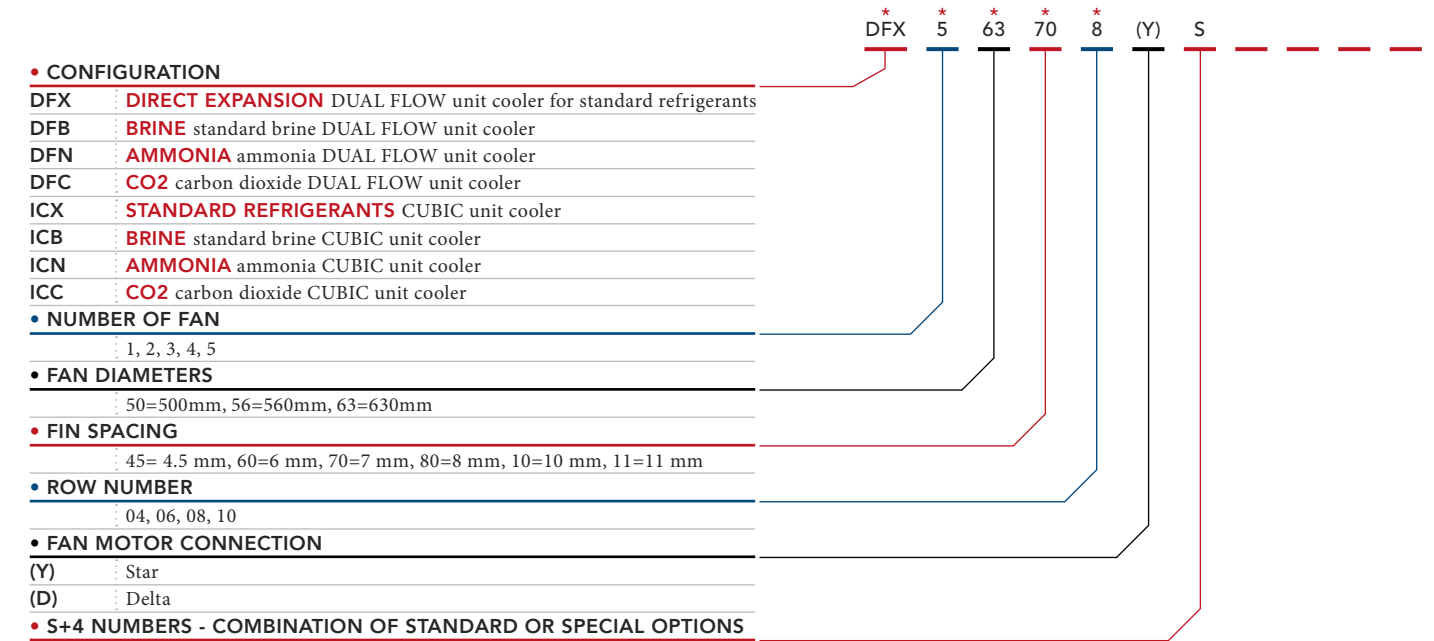


# Unit coolers



\* Characters always present in the code

# Industrial Unit Cooler



\* Characters always present in the code

# Applications



## Cold rooms

Cold rooms for the preservation of apples in Poland.

### NEED

Keeping a constant temperature and preserve the freshness of 14,000 tons of apples (40 cold rooms). Required capacity: 3,680 kW.

### SOLUTION

80 Brine Unit Coolers model BFT550.66PA.



## Green-house

Greenhouse of orchids, installation in Bleiswijk, Holland.

### NEED

Controlling precisely the temperature in a greenhouse with a total surface of 23,500 m<sup>2</sup> for the growth of 2 million orchid plants.

### SOLUTION

21 Brine Unit Coolers model BHT250.310P6AS equipped with Ec fans.



## Food freezing

Plant in France for the processing and preservation of shrimps.

### NEED

Keeping unchanged the freshness of shrimps. 9,000 m<sup>2</sup> plant. 9,000 tons of shrimps per year.

### SOLUTION

16 including Brine Unit Coolers, Industrial Unit Cooler and Dual Flow Brine Unit Coolers equipped with double-insulated drip tray, stainless steel AISI 304 casing and double-layer coated fins.



## Fast freezing

Plant for ice-cream deep-freezing in Austria.

### NEED

Fast freezing ice-cream temperature from -6 °C to -15 °C. Deep-freezing capacity: 1,400 Kg/h. Work cycle: about 16 hours. Average treatment time: 120 min. Required capacity: 90 kW.

### SOLUTION

Blast Freezer Unit with electric defrosting system and 150 Pa external static pressure.



## We design customized products to meet every need

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We at ThermoKey know that specific environments require specific solutions, we are happy to help you to identify the best solution to your needs.



## Our technicians assist the customer in the choice

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Our technical staff is at your complete disposal to identify the best heat exchanger for you. We individually analyze your specific needs and the environment in which the heat exchanger will be installed.for your needs.



## After sales

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ThermoKey stays at your side throughout the product life cycle for spare parts replacement and technical assistance

# ThermoKey®

Heat Exchange Solutions

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