



Unit Coolers





80 Brine Unit Coolers

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

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

What the market demands

Noiselessness

In processing rooms and even in cold rooms noiselessness guarantees operator's 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 (TD) 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.

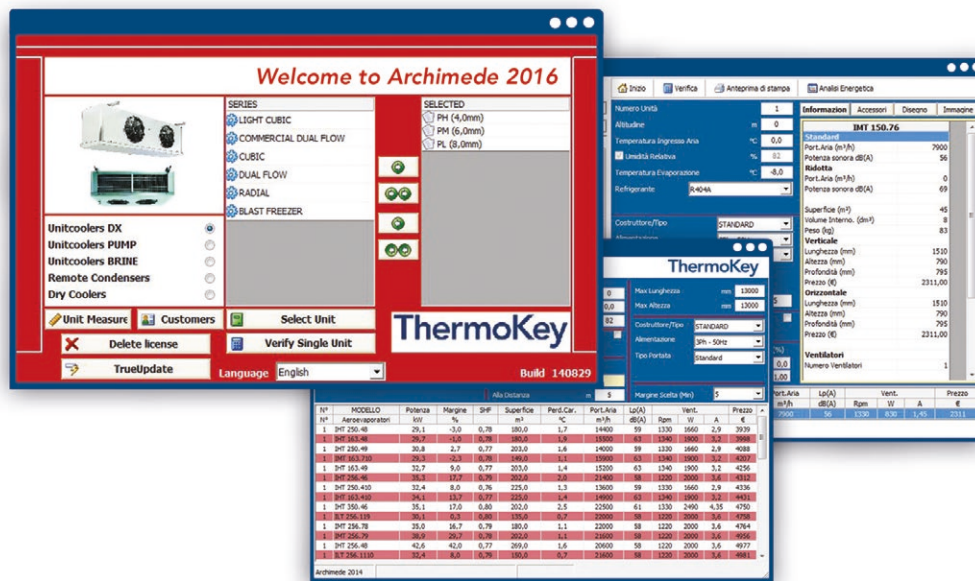




Dual Flow
Unit Coolers

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

Over 30,000 unit cooler solutions



ARCHIMEDE SOFTWARE

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

Range from
1.44 kW to 200 kW

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



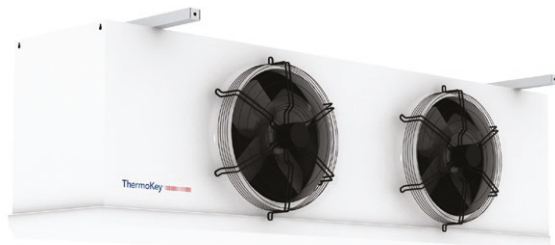
COMMERCIAL DUAL FLOW UNIT COOLERS

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, $T_e = -8^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, RH = 85%)

Fin spacing: 4.5 - 7 - 11 mm

Brine Operation: capacity from 7 to 240 kW (Glycol 30%, $TW_1 = -10^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, RH = 85%)

Fin spacing: 4.5 - 6 - 8 mm

Ammonia Operation: capacity from 8 to 262 kW (NH_3 , $T_e = -8^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, 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



NEW 2016

NEW 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, $T_e = -8^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, RH = 85%)

Brine Operation: capacity up to 160 kW

(Glycol 30%, $TW_1 = -10^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, RH = 85%)

Ammonia Operation: capacity up to 170 kW

(NH_3 , $T_e = -8^\circ\text{C}$, $T_1 = 0^\circ\text{C}$, 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 ($T_e = -40^\circ\text{C}$, $T_1 = -35^\circ\text{C}$, 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, $T_e = -8\text{ }^{\circ}\text{C}$, $T_1 = 0\text{ }^{\circ}\text{C}$, 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, $T_e = 2\text{ }^{\circ}\text{C}$, $T_1 = 12\text{ }^{\circ}\text{C}$, RH = 75%) Brine Operation: capacity from 7 to 135 kW (Glycol 30%, $T_{W1} = 0\text{ }^{\circ}\text{C}$, $T_1 = 12\text{ }^{\circ}\text{C}$, 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, $T_e = -5\text{ }^{\circ}\text{C}$, $T_1 = 0\text{ }^{\circ}\text{C}$, 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.

A	AIR DEFROSTING
W	WATER DEFROSTING
F	WATER DEFROSTING WITH HEATING ELEMENTS
E	ELECTRICAL DEFROSTING
H	HOT GAS DEFROSTING
G	HOT GAS DEFROSTING WITH HEATING ELEMENTS

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.

COWLING HEATING ELEMENTS

To prevent ice formation near the fans.

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)

Said materials on the heat exchanger 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 aluminum, 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

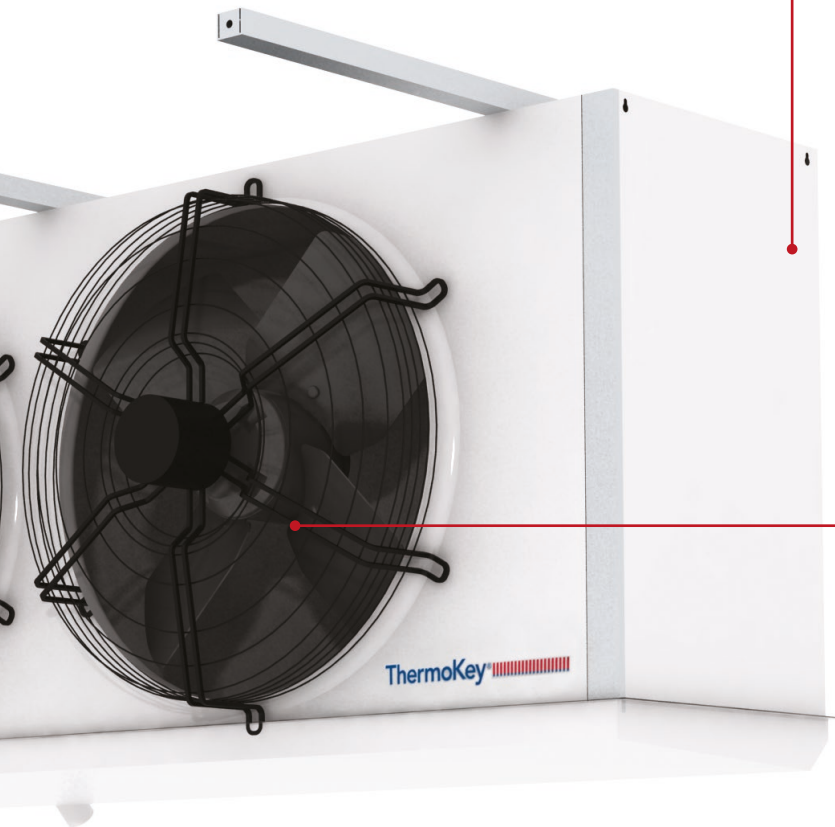
A great solution, simplifying and reducing time of the unit wiring on the plant.

INSPECTIONABLE FANS

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

AIR-THROW COWLS AND AIR STREAMERS

To increase fan air projection, eliminating the turbulent motion of air itself.



Unit coolers

		IMT	3	56	7	6	D	6	E	R	(EC)
DIRECT EXPANSION	• CONFIGURATION										
	PH	LIGHT CUBIC unit cooler (4 mm fin spacing)									
	PM	PM LIGHT CUBIC unit cooler (6 mm fin spacing)									
	PL	LIGHT CUBIC unit cooler (8 mm fin spacing)									
	SHS	COMMERCIAL DUAL FLOW unit cooler (3 mm fin spacing)									
	SMS	COMMERCIAL DUAL FLOW unit cooler (6 mm fin spacing)									
	SHL	COMMERCIAL DUAL FLOW unit cooler (3 mm fin spacing)									
	SML	COMMERCIAL DUAL FLOW unit cooler (6 mm fin spacing)									
	IHT	INDUSTRIAL unit cooler (4.5 mm fin spacing)									
	IMT	INDUSTRIAL unit cooler (7 mm fin spacing)									
	ILT	INDUSTRIAL unit cooler (11 mm fin spacing)									
	THT	RADIAL unit cooler (4.5 mm fin spacing)									
AMMONIA	TMT	RADIAL unit cooler (7 mm fin spacing)									
	FLT	BLAST FREEZER unit cooler (12 mm fin spacing)									
	AHT	INDUSTRIAL unit cooler for NH3 (4.5 mm fin spacing)									
	AMT	INDUSTRIAL unit cooler for NH3 (7 mm fin spacing)									
	ALT	INDUSTRIAL unit cooler for NH3 (11 mm fin spacing)									
	FLA	BLAST FREEZER unit cooler for NH3 (12 mm fin spacing)									
	AMC	INDUSTRIAL unit cooler for CO2 (7 mm fin spacing)									
	ALC	INDUSTRIAL unit cooler for CO2 (11 mm fin spacing)									
	FLC	BLAST FREEZER unit cooler for CO2 (12 mm fin spacing)									
CO2	PH	LIGHT CUBIC unit cooler (4 mm fin spacing)									
	PM	LIGHT CUBIC unit cooler (6 mm fin spacing)									
	BHT	INDUSTRIAL unit cooler (4.5 mm fin spacing)									
	BFT	INDUSTRIAL unit cooler (6 mm fin spacing)									
	BMT	INDUSTRIAL unit cooler (8 mm fin spacing)									
	THB	RADIAL unit cooler (4.5 mm fin spacing)									
	TMB	RADIAL unit cooler (7 mm fin spacing)									
BRINE	• NUMBER OF FAN										
	• FAN DIAMETERS										
		30=300mm, 35=350mm, 40=400mm, 45=450mm, 50=500mm									
		56=560mm, 63=630mm, 80=800mm									
	• FIN SPACING										
		3 - 4 - 4.5 - 6 - 7 - 8 - 11 - 12									
	• ROW NUMBER										
	• OPERATION SYSTEM										
	D	Direct Expansion									
	P	Pump									
	N	Flooded									
	• REFRIGERANT CONNECTIONS										
	5	right looking at finned pack									
	6	left looking at finned pack									
	• DEFROST SYSTEMS										
	G	Hot gas with heater elements									
	F	Water with heater elements									
	H	Hot gas									
	W	Water									
	A	Air									
	E	Electric									
	• HEATER ELEMENT ON DRAIN LINE										
	R	100 W									
	• FAN TYPE										
	-	AC fans									
	(EC)	EC fans									

* Characters always present in the code

New Dual Flow Unit Cooler

• CONFIGURATION

DFX **DIRECT EXPANSION** unit cooler for standard refrigerants

DFB **BRINE** standard brine unit cooler

DFN **AMMONIA** ammonia unit cooler

DFC **CO2** carbon dioxide unit cooler

• NUMBER OF FAN

1, 2, 3, 4, 5

• FAN DIAMETERS

50=500mm, 56=560mm, 63=630mm

• FIN SPACING

45= 4.5 mm, 70=7 mm, 10=10 mm

• ROW NUMBER

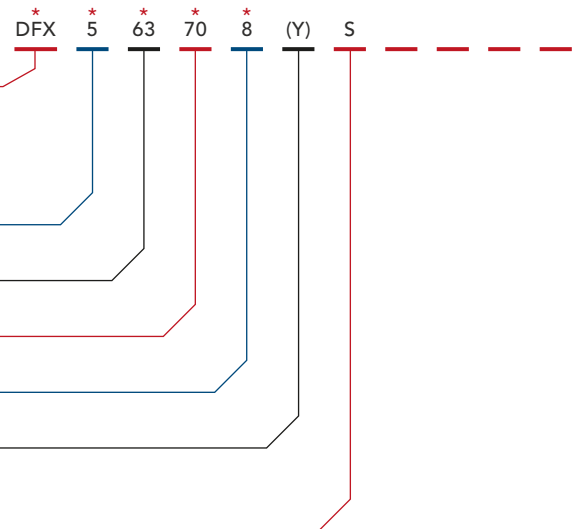
04, 06, 08

• FAN MOTOR CONNECTION

(Y) Star

(D) Delta

• S+4 NUMBERS - COMBINATION OF STANDARD OR SPECIAL OPTIONS



* 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 m² 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 m² 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.

Direction

Acrobatik

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