ThermoKey®
Heat Exchange Solutions

ThermoKey Standards

Unit coolers

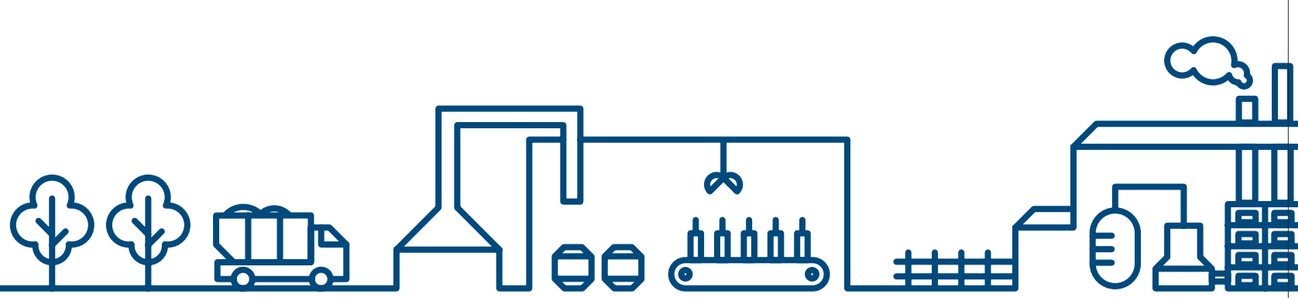
Standard ThermoKey solutions.
Our 25-year experience
is at your disposal for the selection
of the materials.

Specific contexts require specific solutions

When choosing the heat exchanger, it is important to keep in mind, apart from one's needs and technical requirements, the context in which the unit will be installed.

During our 25-year experience we have tested different combinations of materials for our heat exchangers, designed to meet the different needs of our customers.

In this document we present our Standard solutions, that is our combinations of materials when there are no special conditions.
In these pages you will find some examples of contexts and working processes that may be corrosive for the plants and their components, which therefore require a combination of specific materials.



HUMIDITY

High humidity can damage the installations in the long period

CLEANING AGENTS

Particularly aggressive sanitizing products and the high frequency of cleaning procedures of the installations can be corrosive for the materials

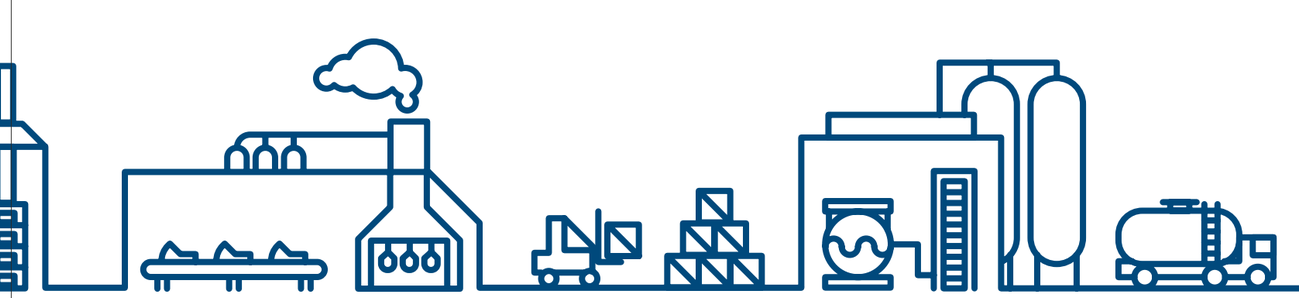
FOOD PROCESSING

Some of the working process and of food products can be corrosive for the air cooled units. Among these there are the smoking and the fermentation processes

Customized solutions

To avoid corrosion, maintain the functionality of the systems in time and the tightness of the refrigeration systems, the first thing to do is to choose the correct combination of materials and possible dedicated specific protection systems.

We are at your disposal to guide you in this choice.



FOOD CONSERVATION

Some preservation processes of food products can be corrosive for the air cooled units. Among these there are the preservation in salt e under vinegar

CHEMICAL

Some management processes of chemicals (e.g. pharmaceutical productions etc.) could be corrosive for the air cooled units

Unit coolers

Unit coolers are air cooled units used in air conditioning and refrigeration. They can have different shapes, but in any case they are composed by one or more heat exchangers, inserted in a structure including also electrical-fans.
The function of the unit coolers is to maintain the design conditions of temperature, humidity and air throw within a system (cold rooms, etc.). The Industrial Refrigeration (which can be defined up to an evaporation temperature of -60 ° C, above which we enter the field of cryogenics), in particular, is aimed not only to food industry but also to chemical and process applications.

This document specifically deals with Industrial Refrigeration for food products of agricultural origin, whereas the other applications will be taken into consideration from time to time separately.
Food products of agricultural origin are: starch products; seeds and nuts; vegetables and spices; fruit; animal origin products; milk and dairies. All these products of agricultural origin will be indicated onwards in this document as "food products".

FOR THE PRESERVATION OF FOOD PRODUCTS THE CHOICE OF THE BEST UNIT COOLER FOR YOUR NEEDS MUST TAKE INTO CONSIDERATION DIFFERENT FACTORS, IN ADDITION TO THE ENVIRONMENTAL CONDITIONS

Commodity factors: different food products require specific thermo-hygrometric conditions.
In some cases the preservation of these products is also carried out with the use of chemical additives.

Plant Factors: different food products are stored using different methods

- in direct contact with the cold rooms environment;
- not in direct contact with the cold rooms environment because they are packed in containers or bags;
- mixed systems.

Regulatory factors: there are national directives which define, in the case of direct chemical additives inputs on the product, safety limits for health protection. These guidelines may differ from country to country and can undergo updating within the same country as a result of new security standards.

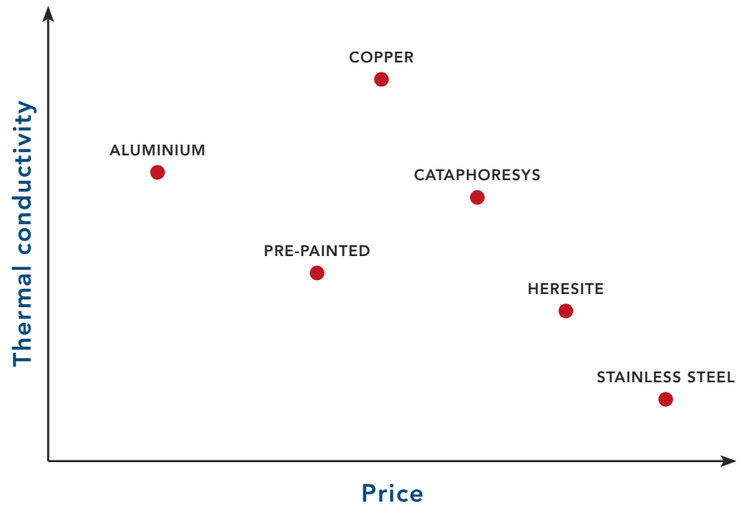
Globalization has implicated that food products are manufactured, stored and consumed in very distant places.
To ensure that food products, stored in one country and placed on the market in other countries, can be "commercially acceptable" (therefore without deteriorated parts), technical plant solutions could be used (with or without chemical additives) to guarantee an increase in conservation time. Some of these solutions could be aggressive for the Refrigeration air cooled units.

ThermoKey offers a wide range of technical solutions

For what explained above, there are no constructive univocities of the unit coolers for the same food product. It is essential to consider the corrosive aspects present in the preservation cold rooms and the application limits of the various construction types of the air cooled units.
ThermoKey offers a wide range of technical solutions able to meet the application needs. For example, it is possible to realize both the standard copper-aluminium heat exchanger and various protective treatments (cataphoresis, blygold, heresite, etc.) and the exchanger entirely manufactured in stainless steel. The choice between these different technical choices has both thermodynamic and cost effects. Therefore, a heat exchanger with stainless steel tubes and fins will certainly have a higher chemical resistance compared to a heat exchanger with copper tubes and aluminium fins, but with a lower specific heat exchange.

HOW TO CHOOSE THE RIGHT MATERIAL

The choice between the different combinations of materials influences both the thermal conductivity and the cost of the unit coolers.



THERMOKEY STANDARD SOLUTIONS

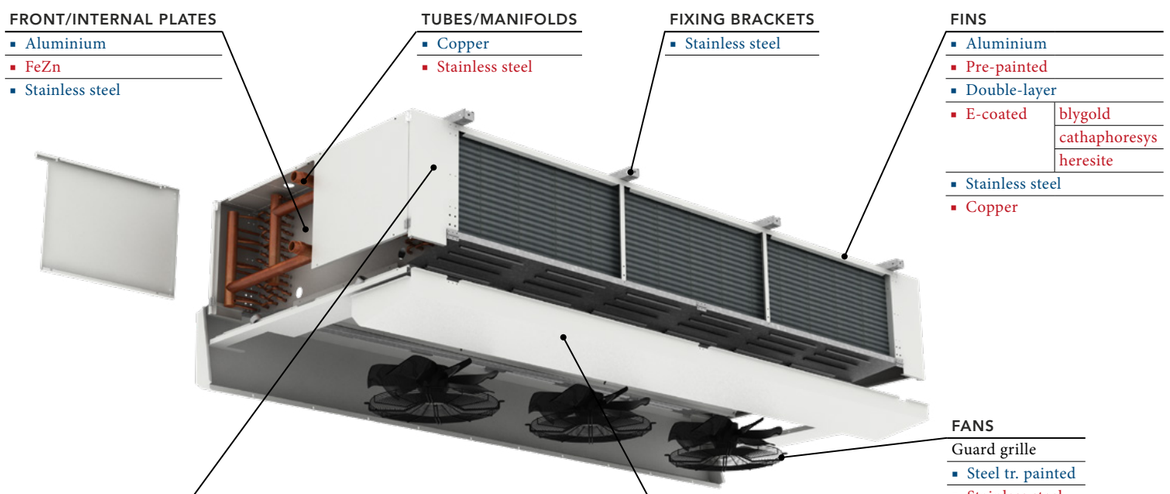
The correct technical choice, from the corrosive point of view, must take into consideration not only the use of the heat exchanger, but also the maintenance of the same that will necessarily be carried out. Therefore it is important to verify that the cleaning products used are compatible with the materials of the unit cooler.

Dual flow

Models	Tubes	Fins	Internal metal sheets	Metal cowling	External metal sheets /Drip tray
DUAL FLOW	Copper	Aluminium	FeZn	Aluminium	Aluminium
INDUSTRIAL DUAL FLOW	Copper	Aluminium	Structural aluminium	Painted FeZn	Painted aluminium
COMMERCIAL DUAL FLOW	Copper	Aluminium	FeZn	Aluminium	Aluminium

EACH COMPONENT CAN BE CUSTOMIZED FOLLOWING SPECIFIC NEEDS

We are at your disposal to assist you in the most suitable choice, for example stainless steel tubes for applications with NH_3 or copper tubes with increased thicknesses for CO_2, etc.



The following indications are valid for all constructive configurations and not only for Dual flow and Cubic therefore also for Radial, Blast Freezer and Fruit Cooler.

Cubic

Models	Tubes	Fins	Internal metal sheets	Metal cowling	External metal sheets /Drip tray
CUBIC D500-D560-D630	Copper	Aluminium	FeZn	Aluminium	Aluminium
CUBICI D800	Copper	Aluminium	FeZn	Painted FeZn	Painted aluminium
RADIAL	Copper	Aluminium	FeZn	Painted FeZn	Aluminium
LIGHT CUBIC	Copper	Aluminium	FeZn	Painted FeZn	Painted aluminium
FRUIT COOLER	Copper	Aluminium	FeZn	Painted aluminium	Painted aluminium

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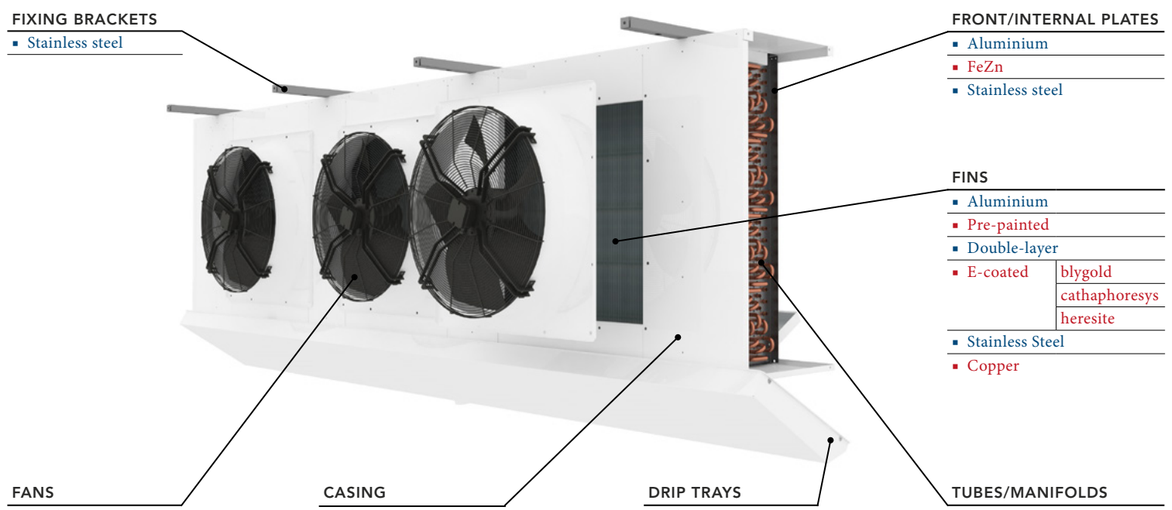

ThermoKey Standard solutions have been identified during our 25-year experience in the field of heat exchangers.
Our standards propose the correct material combinations in the absence of needs or particular environmental contexts.
Our technical staff provides individual assistance; analyses the context and accompanies the customer to find a tailor-made solution.

We design customized products to meet every need

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

Our technicians assist the customer in the choice

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

After sales

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

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