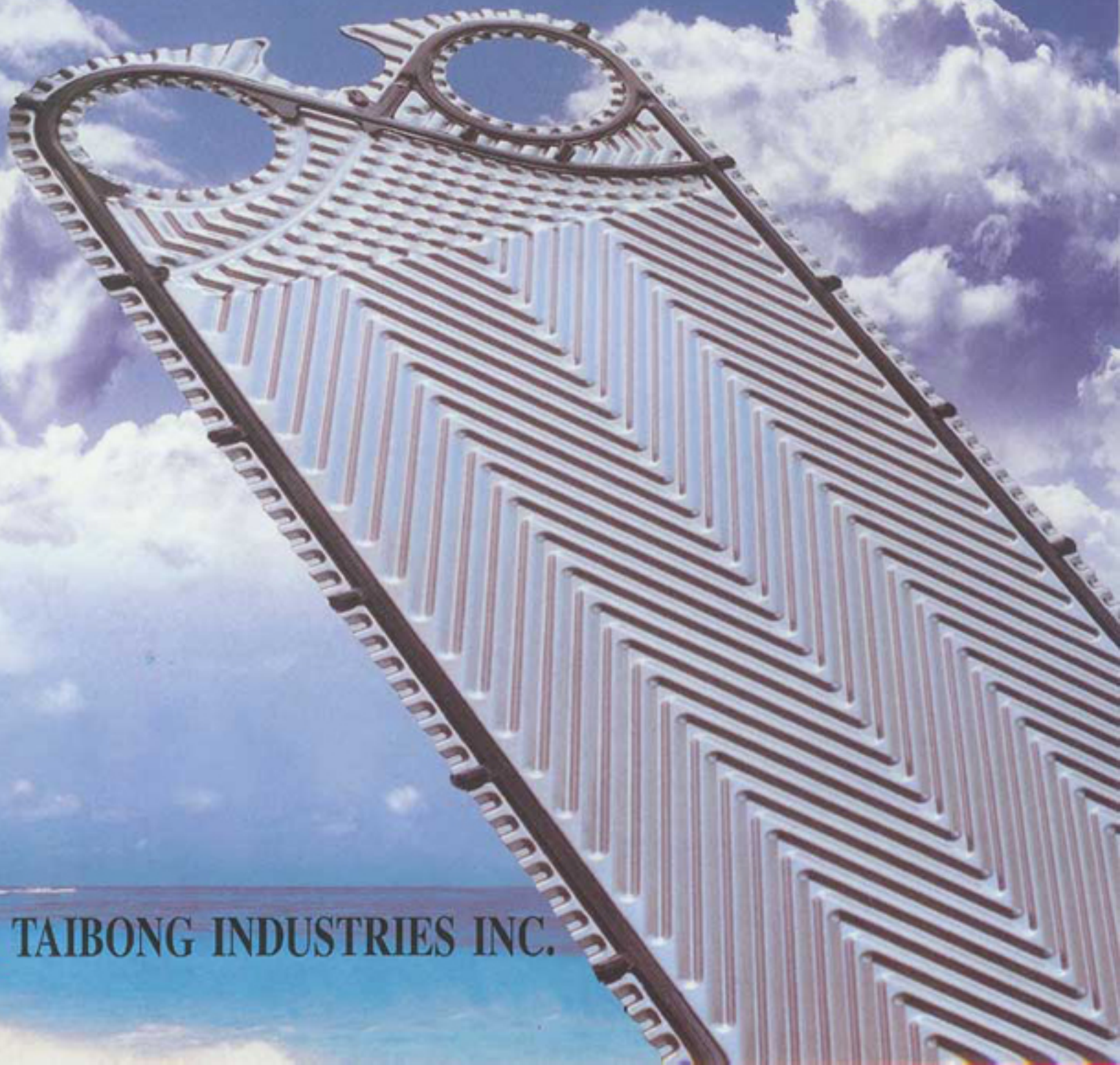
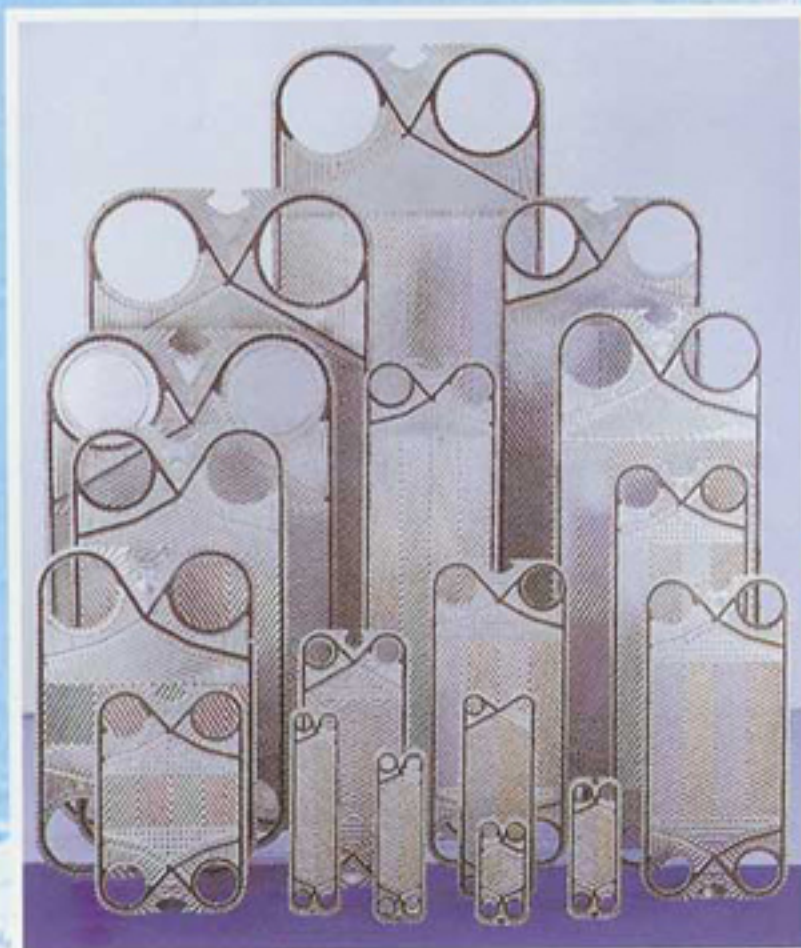


PLATE HEAT EXCHANGER



TAIBONG INDUSTRIES INC.



Cooling and Heating? TAIBONG is ready to help you.

There are many heat exchanging processes in various industrial fields.

From small residential heating to total plant cooling, compact and efficient heat exchanging is essential for economic investment and comprehensive operations.

TAIBONG INDUSTRIES INC. Since it's first product for industrial application in 1982, supplied more than 10,000 plate heat exchangers in various industrial areas and enjoys good reputation.

TAIBONG'S range of products are distinguished by high efficiency and compactness for extensive range of thermal duties.

When you require new heat exchanging process or improve thermal efficiencies, we are always ready to help you.

TAIBONG

plate heat exchangers

Operating principles

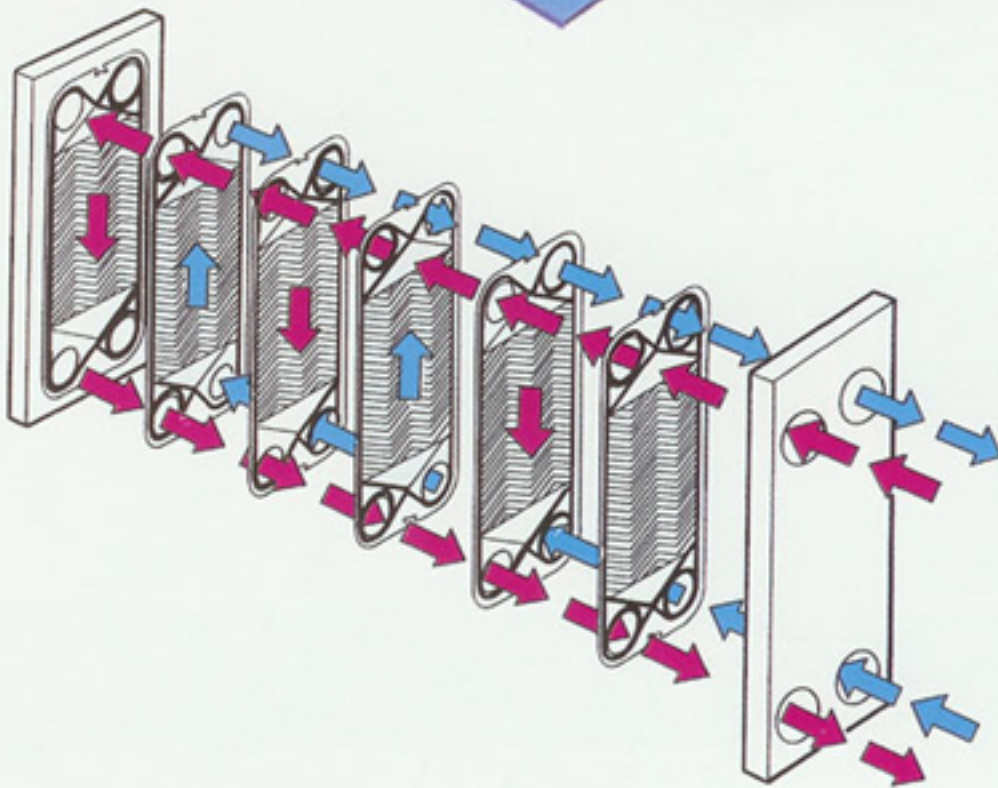
Plate heat exchanger consists of a frame in which independent metal plates supported by rails are clamped between a head and follower.

The plates are sealed at their outer edges and around the ports by gaskets which are so arranged that the liquid and the heating or cooling medium are directed alternately into the passages formed between plates.

A double sealing system forming pockets open to atmosphere prevents mixing of the liquids in the rare event of leakage past a gasket.

The closely spaced plates have troughs which produce turbulence in the liquids flowing between the plates in thin streams of large area. The resultant rapid transfer of heat is further enhanced in most applications by arranging the liquid to flow counter-currently.

End plate ports lead to connections in the frame head and follower and, in the case of multi-duty plate heat exchanger, to an intermediate header known as a connector plate.



Advantages

High heat transfer coefficients

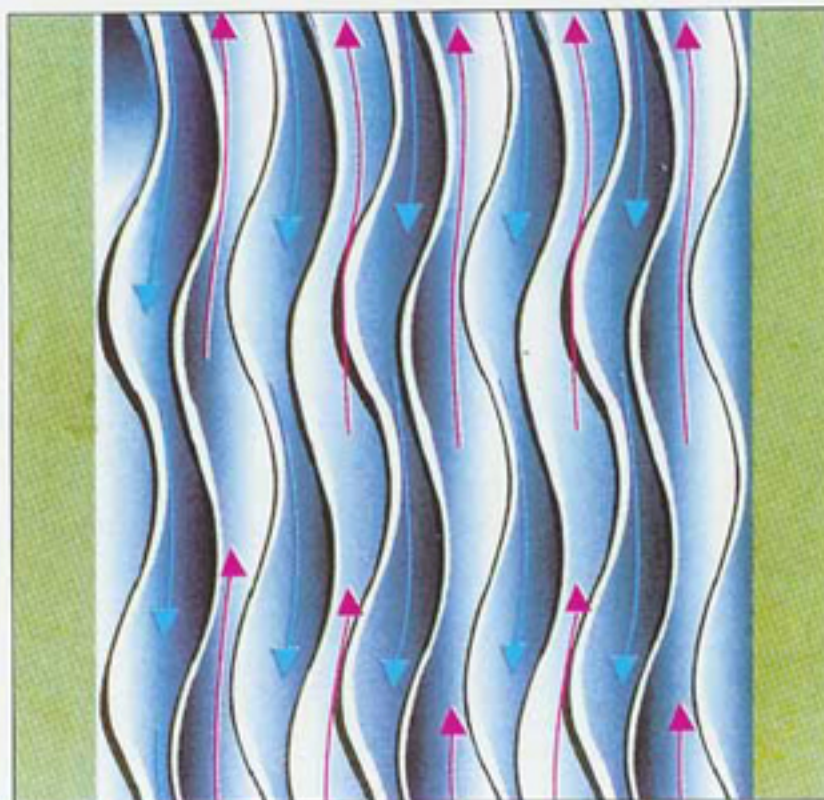
Ranging from 3000-6000kcal/m²hr. °C on water / water applications.

Much less space

Requires only fraction of the space taken by other heat exchangers. Plates give a very large heat transfer area in a small frame volume. No extra space required for opening.

Easy access

Full accessibility to both sides of each plate for inspection or cleaning. Any plate can be rapidly replaced without removing the others.

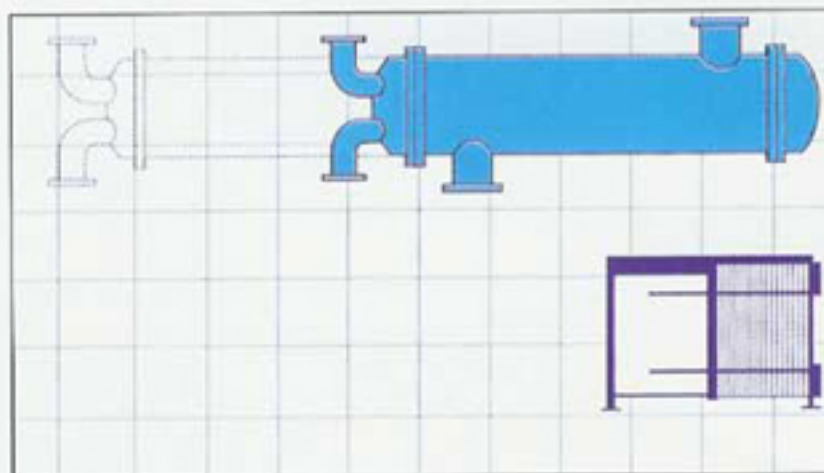


Economies in heating costs

High heat transfer rates assisted by counter-current flows produce minimum end temperature differences. Heat recovery can be obtained as high as 90 per cent.

Adaptability

The plates are independent units which can be removed, added to or re-arranged as desired. Thus the plate heat exchanger can be respecified for any new process requirement or for completely new duties. Economies can be obtained by using the connector grid to combine more than one duty in a single frame.



Low liquid hold-up

In plate heat exchangers, liquid hold-up of both fluids is low. Additionally, for any given duty the smaller total surface area required by plate heat exchangers results in an even more favourable comparison of liquid hold-up.

Minimum fouling

The turbulent flow over plate heat exchanger plates keep solids in suspension, minimizing fouling with slurries such as titanium dioxide, lime or cooling water with a high mud content. Where fouling is unavoidable, plates are easily removable for cleaning.

Lower capital cost

Where corrosion-resistant materials are essential, capital costs are considerably less than those of conventional heat exchangers and even for non-corrosive duties, plate heat exchanger can be competitive in price.

High turbulence

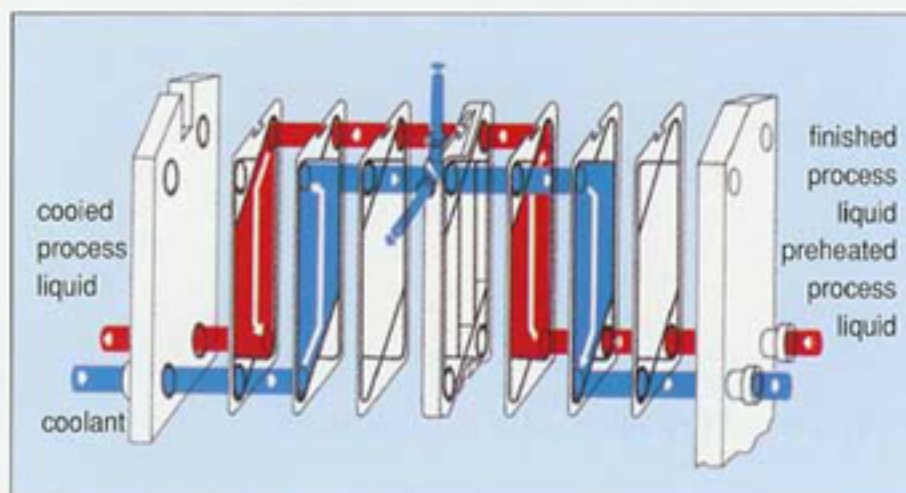
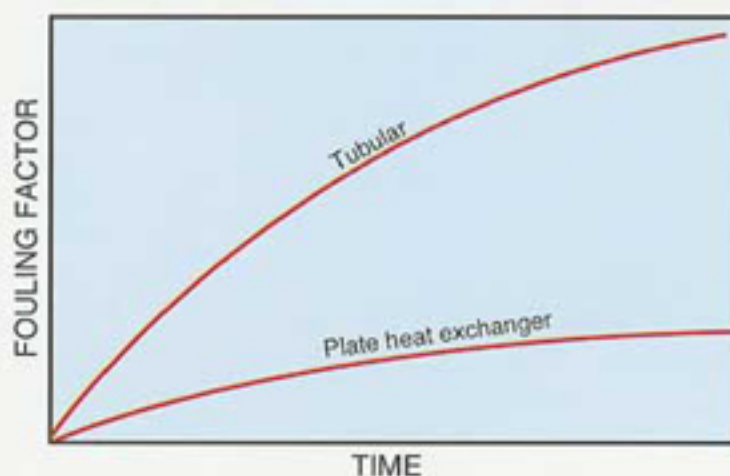
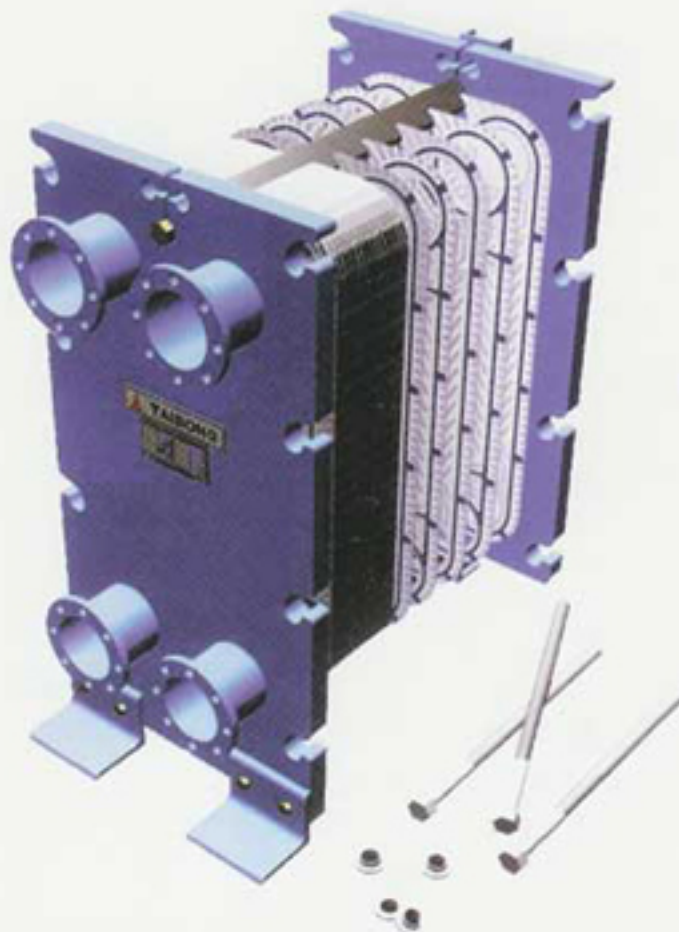
Plate heat exchangers plate form can induce turbulent flow at Reynolds numbers as low as 10, while in tubular exchangers velocities must be increased to attain Reynolds numbers of 2300 in order to prevent laminar flow.

Standardized components

Plate heat exchangers are built from standard components, which are interchangeable and replaceable from stock-yet each unit is tailored exactly to meet customer requirements.

Versatility of duty

Plate heat exchanger can be divided into separate sections by the use of connector plates(right) to accommodate more than one heating or cooling stage.



Our Design is Steps Ahead

In Efficiency, Operation Stability and Maintenance Convenience

Thermal length : θ

In every heat exchanging process, thermal lengths are different depending upon the various process conditions.

Fig.1 shows two different thermal length cases. Left side of the figure is very short thermal length case while right side is very long thermal length case. Passage length of right side requires 12 times (3/0.25) longer than that of left side.

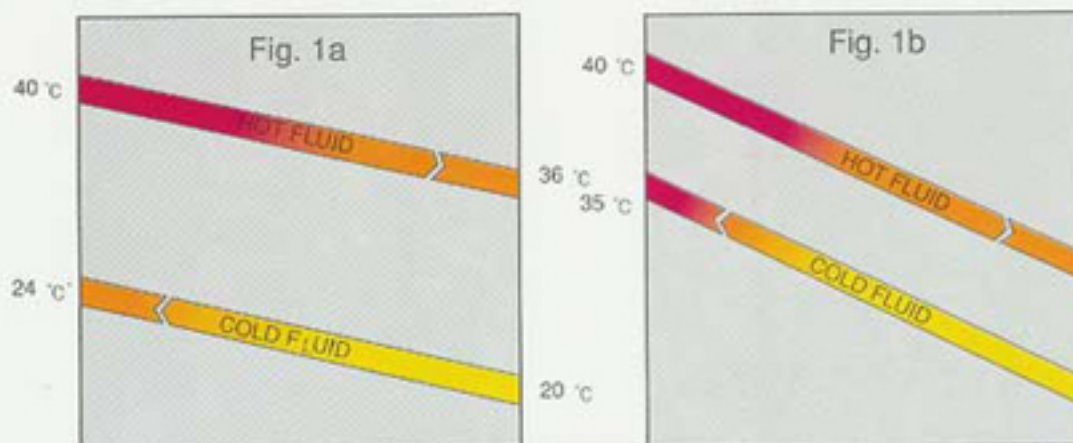
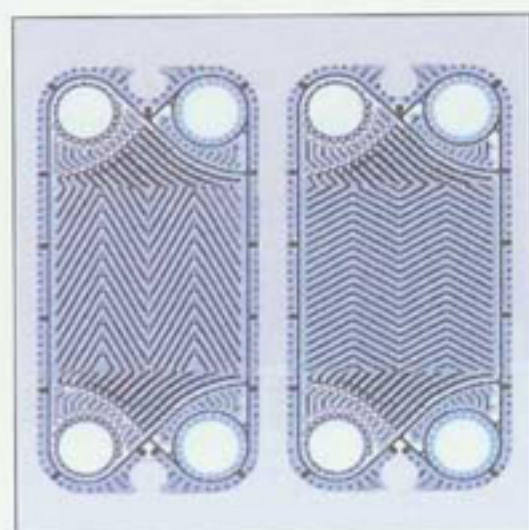


	Fig. 1a	Fig. 1b
MEAN TEMPERATURE DIFFERENCE	$36 - 20 = 16^{\circ}\text{C}$	$25 - 20 = 5^{\circ}\text{C}$
TEMPERATURE CHANGE	$40 - 36 = 4^{\circ}\text{C}$	$40 - 25 = 15^{\circ}\text{C}$
THERMAL LENGTH - θ	$4/16 = 0.25$	$15/5 = 3.0$



LOW θ PLATE HIGH θ PLATE

Fig.2

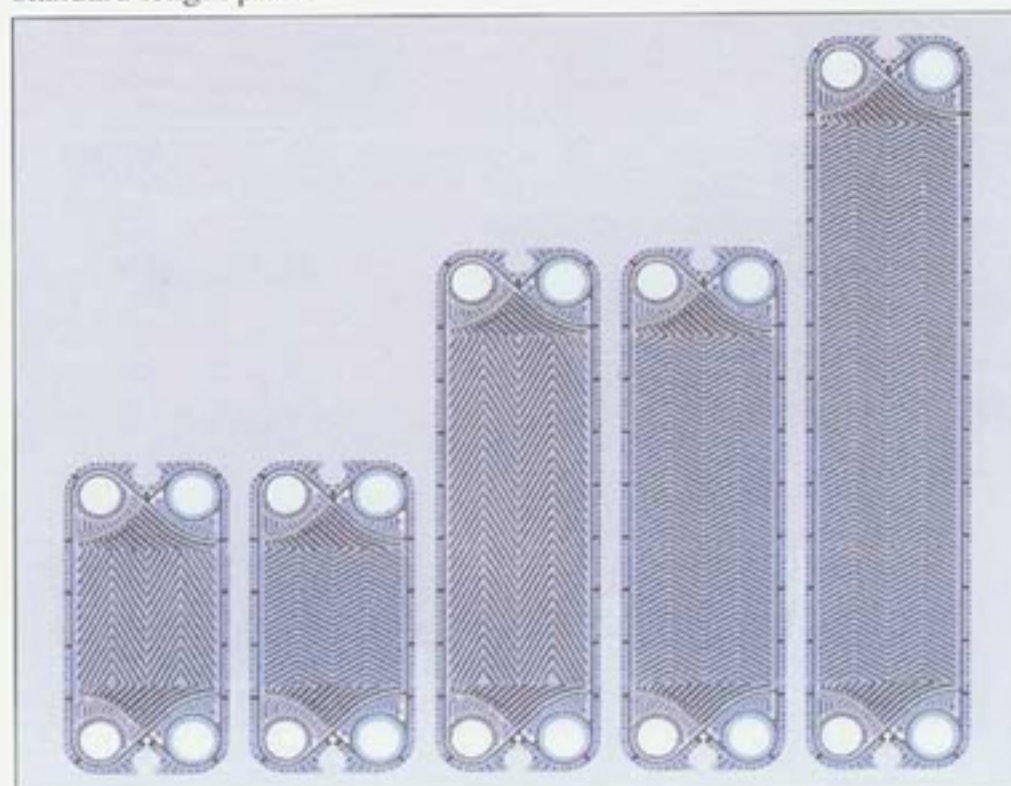
Dual chevron angle

For the plates of same dimensions, we have two different chevron angles. In fig.2, the left plate has short flow length and thermal length is short. The right side, it requires longer length for fluid to pass through the plate and thermal length is long. Depending upon the process thermal length requirements, low θ and high θ plates are appropriately selected to meet heat duty within allowable pressure drop ranges.

Multiple length plates

In addition to dual chevron angles, TAIBONG has mini and maxi length plates. For very short thermal length duties, heat exchanger can be designed very compact with mini length plates without unnecessary extra surfaces required by standard length plates.

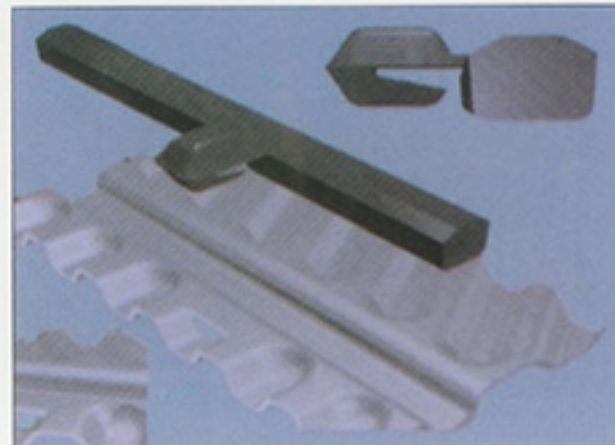
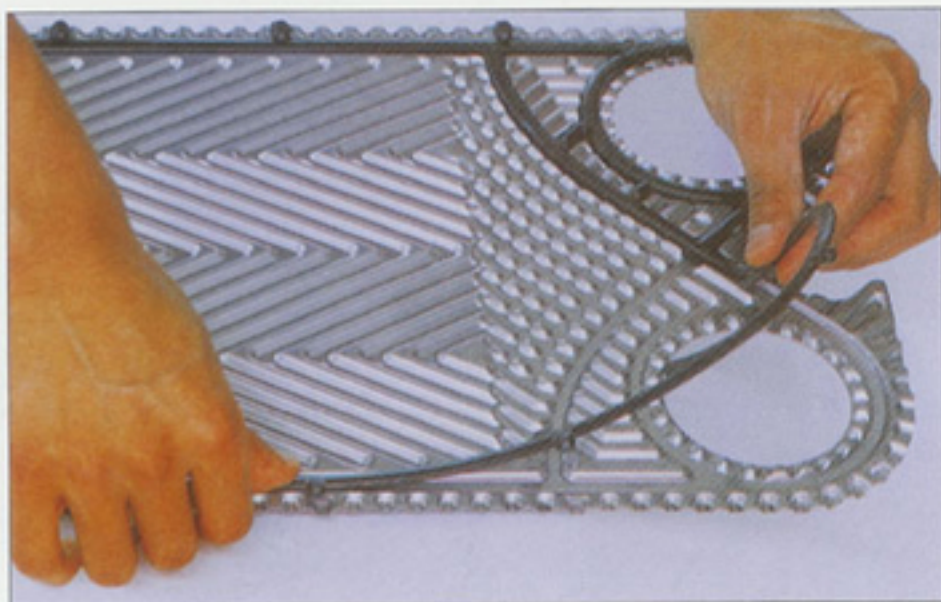
For long thermal lengths, heat exchanger can be designed by single pass arrangement enabling better maintenance and connection provisions where multi pass arrangement is required by standard length plates.



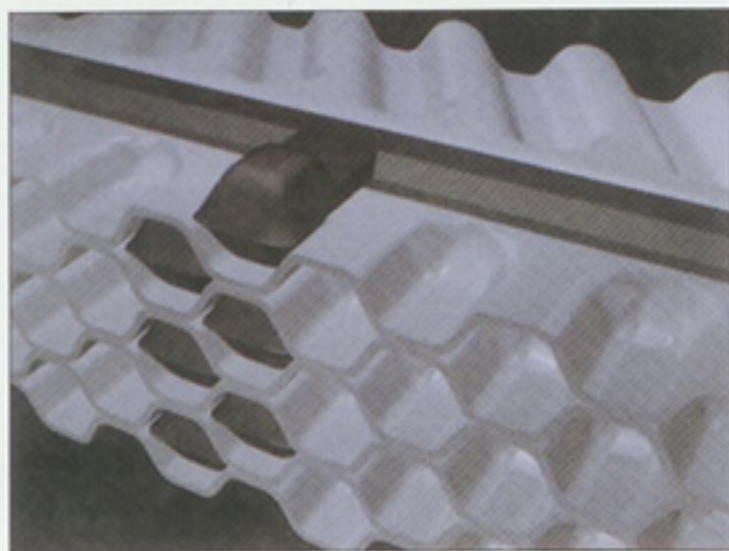
Easy-Hook Gasket

Gaskets are joined to plates by specially designed hook. This ideal structure is very convenient and saves amount of time in cleaning or gasket replacement which user can abbreviate troublesome adhesive jobs.

(Patented in many countries of the world.)



Improved Pressure Holding Rigidity



High pressure applications are often required in processes or high-rise building air-conditioning systems.

The gaskets, resisting against fluid pressures, is supported by peripheral shapes of metal surrounding the gasket.

Honeycombed support is effective structure for resisting against bursting out forces by internal pressure.

However due to elastic deformation of metals with hollow honeycombs, maximum applicable pressure is limited to 20~25 bars with well designed plate heat exchangers.

Taibong's unique feature - intervally solid honeycombs significantly improves pressure holding capability.

It also guarantees stability and safety at severe conditions where thermal and pressure fluctuations are frequent and leak tight is of most essence.

(Patented in many countries of the world.)

OUR RANGE OF PRODUCTS

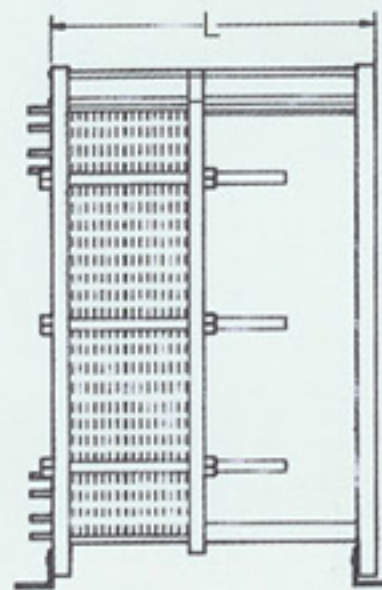
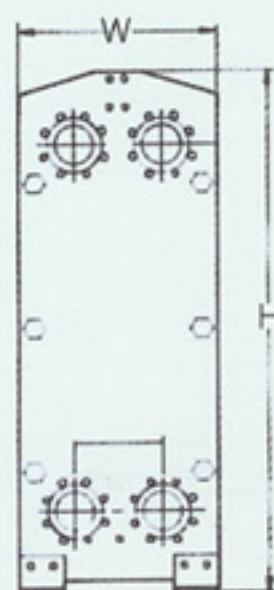
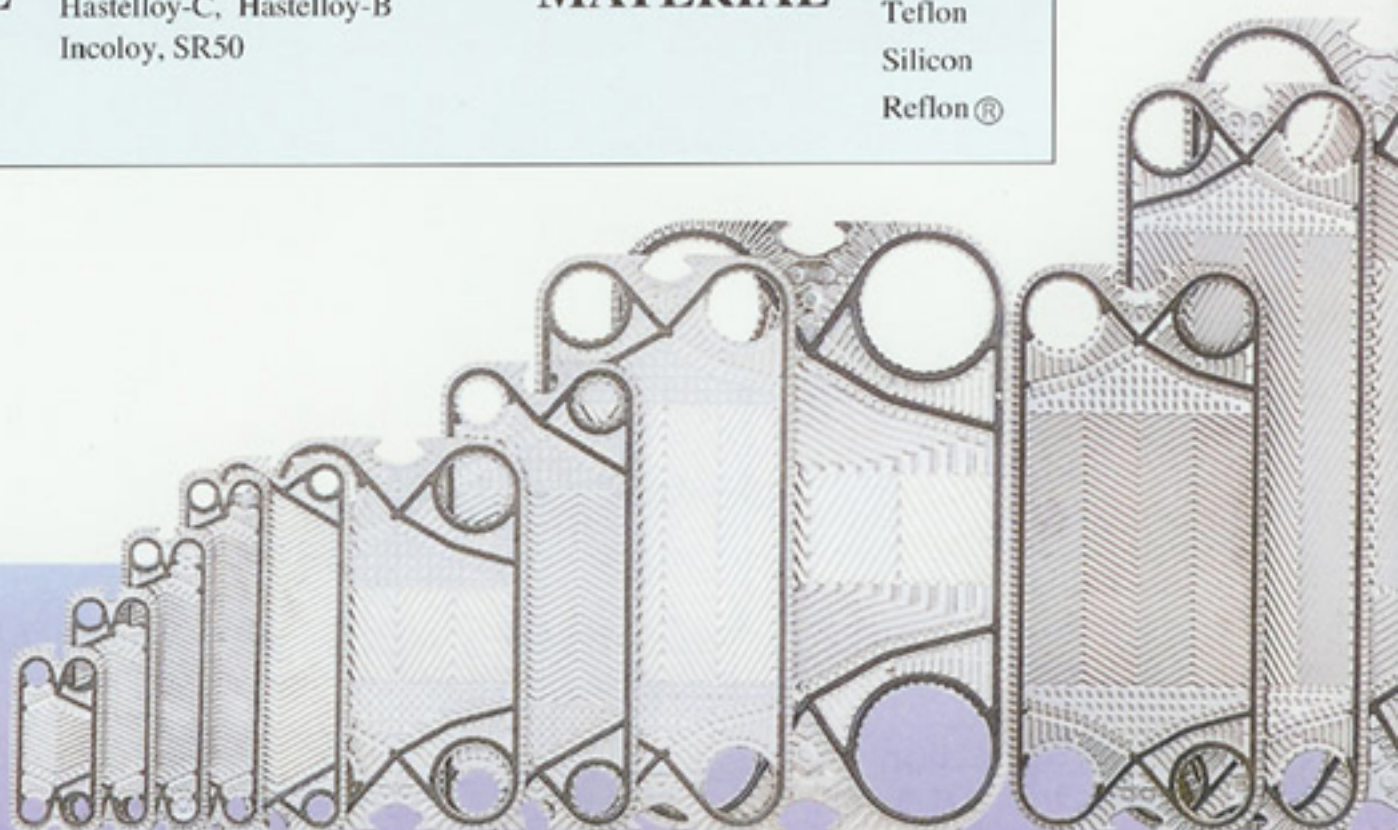
The Idealized Product Match returns most efficient design
for extensive range of thermal duties

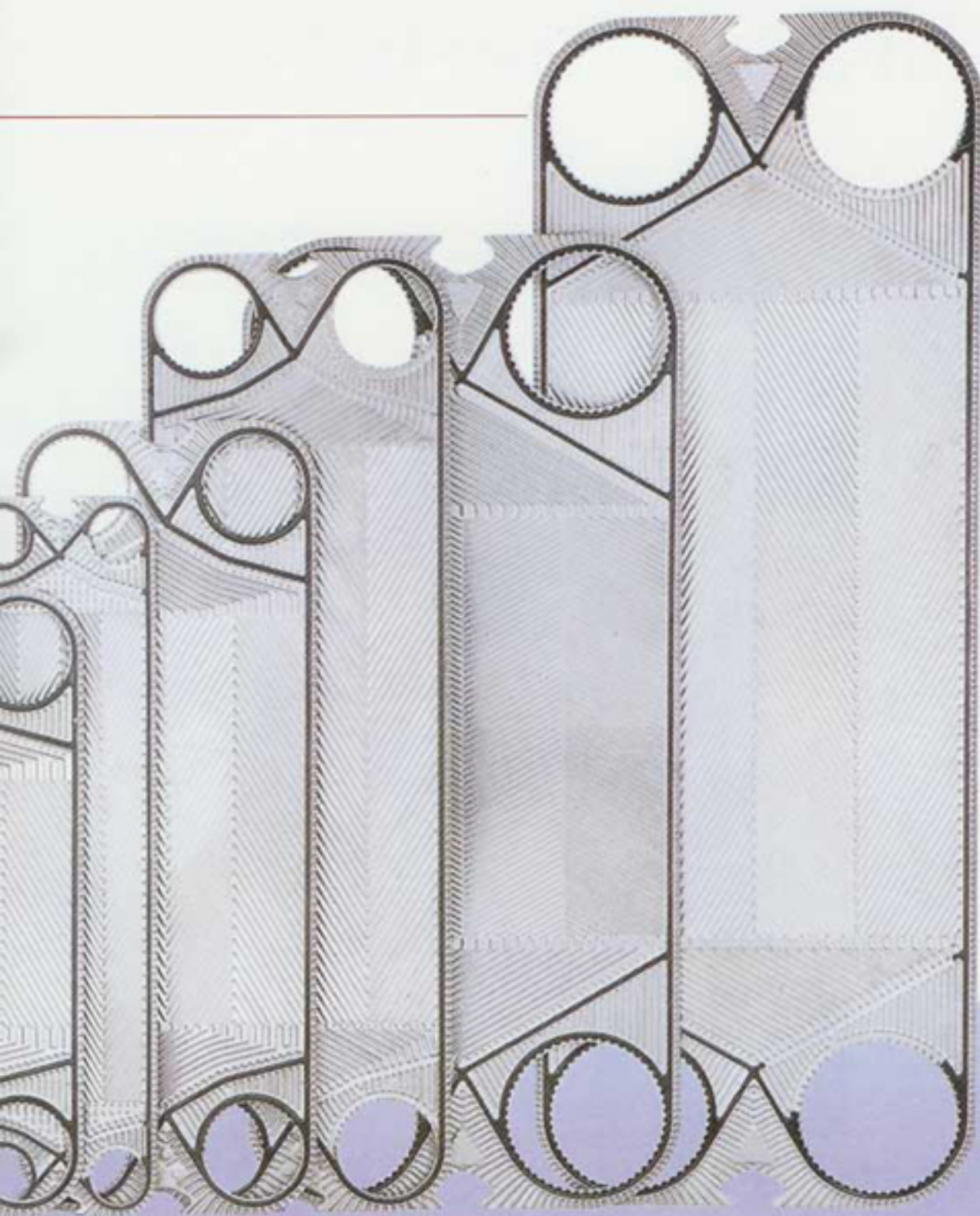
PLATE MATERIAL

STAINLESS STEEL
SMO254, SLX904
Titanium, Titanium-Paladium
Nickel, Nickel alloy
Hastelloy-C, Hastelloy-B
Incoloy, SR50

GASKET MATERIAL

NBR
EPDM
CR, Butyl
Viton®
Teflon
Silicon
Reflon®





MODEL		AREA/PLATE m ²	STANDARD NOZZLE SIZE	MAX FLOW m ³ /HR	SIZE mm			
					W	H	L min	L max
TX05		0.0152	3/4" (20A)	4	105	300	70	320
TX1		0.0855	1 1/2" (40A)	21	290	740	517	1217
TX3	GD	0.09	2 1/2" (65A)	60	346	720	517	1680
	AP	0.13				900		
	AN	0.17				1080		
	AX	0.25				1440		
TX4	GD	0.101	4" (100A)	160	495	874	780	1680
	AP	0.228				1151		
	AN	0.348				1428		
	AX	0.467				1705		
TX9	GD	0.27	8" (200A)	640	740	1297	1150	2770
	AP	0.47				1620		
	AN	0.68				1944		
	AX	0.89				2267		
TX14	GD	0.84	12" (300A)	2000	1012	1922	1360	4060
	AP	1.23				2338		
	AN	1.62				2754		
	AX	2.4				3586		

Applications



District heating substation

The olympic family apartment in seoul suburbs, with residences of 4,494 families with total heating space of 600,000 m² and total heat load of 40,000,000 kcal/hr is district heating network. Heats for total apartment heating and tapping water is generated by 45 TAIBONG plate heat exchangers with high pressure hot water sent by pipings from power station 18 km away.



Air Conditioning

Condenser Protection and free cooling:

Plate heat exchanger between cooling tower and condenser closed condenser circuit can be made, preventing from corrosion and fouling problems.

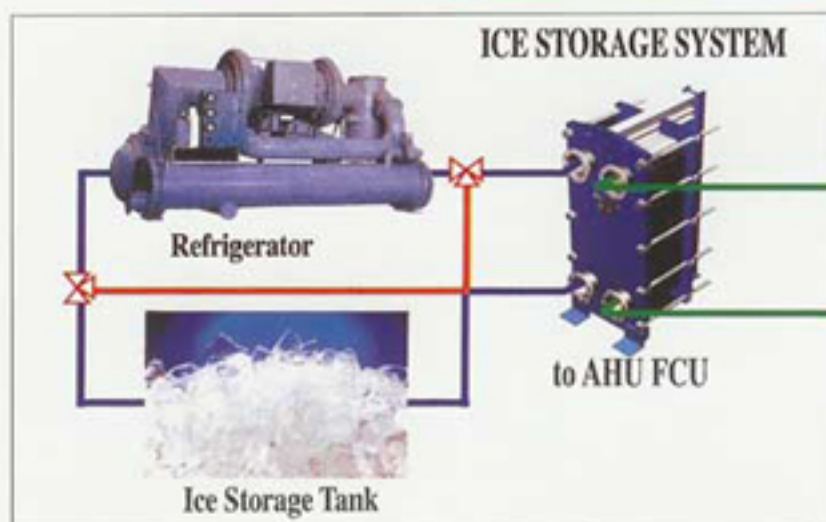
This system also enables free cooling at intermediate seasons.

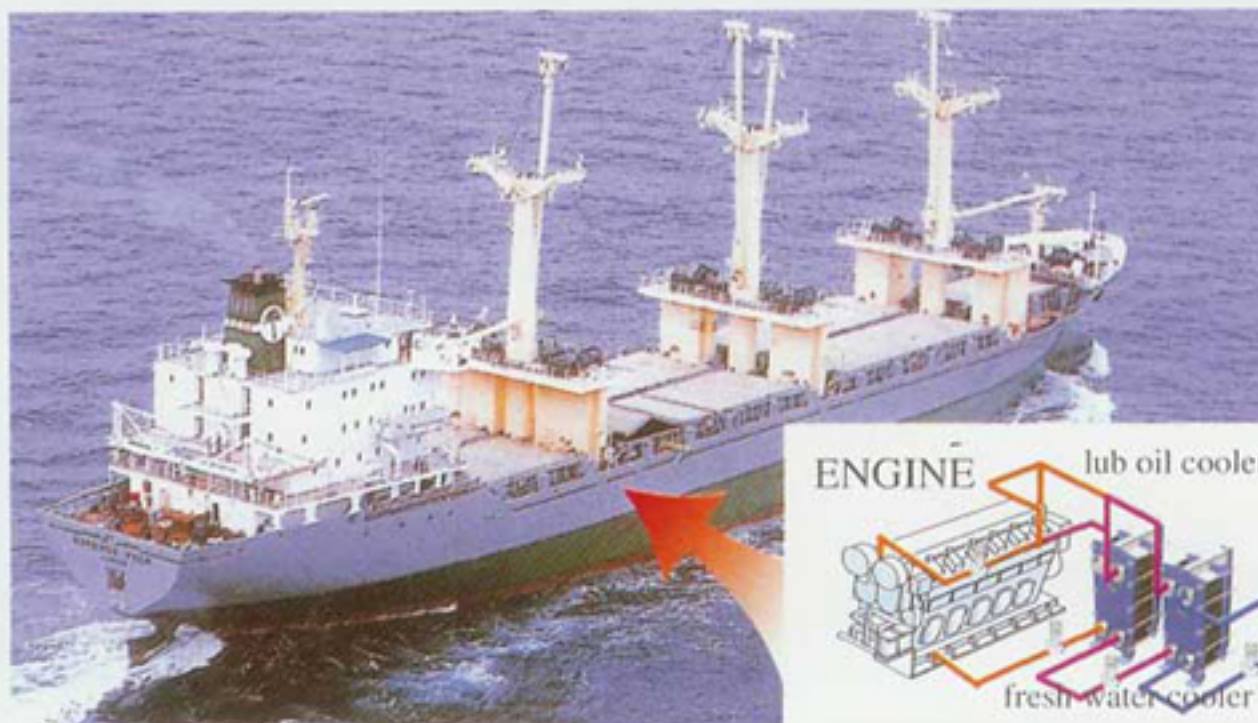
Pressure Interceptor

At high-rise buildings, plate heat exchanger can be installed as pressure Interceptor, preventing from unnecessary high pressure for chillers or air-conditioning units.

Ice storage system

Plate heat exchanger is most appropriate in transferring heat from air-conditioning to ice generated at night-time in ice storage system. Korea telecommunication association bulding, with TAIBONG plate heat exchanger installed, saves 600 kw of peak-time load for air-conditioning.

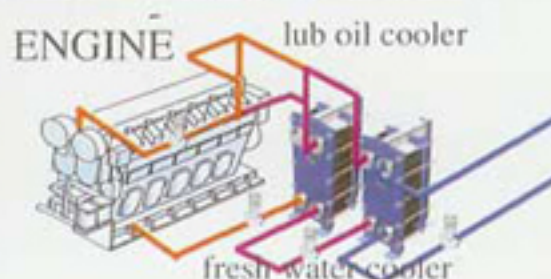




Marines

From coastal fishing boats to ocean-going oil tankers, plate heat exchanger is best choice for engine jacket water, lub-oil cooling by sea water.

It is very efficient, space saving, easy for maintenance, and low installation cost.



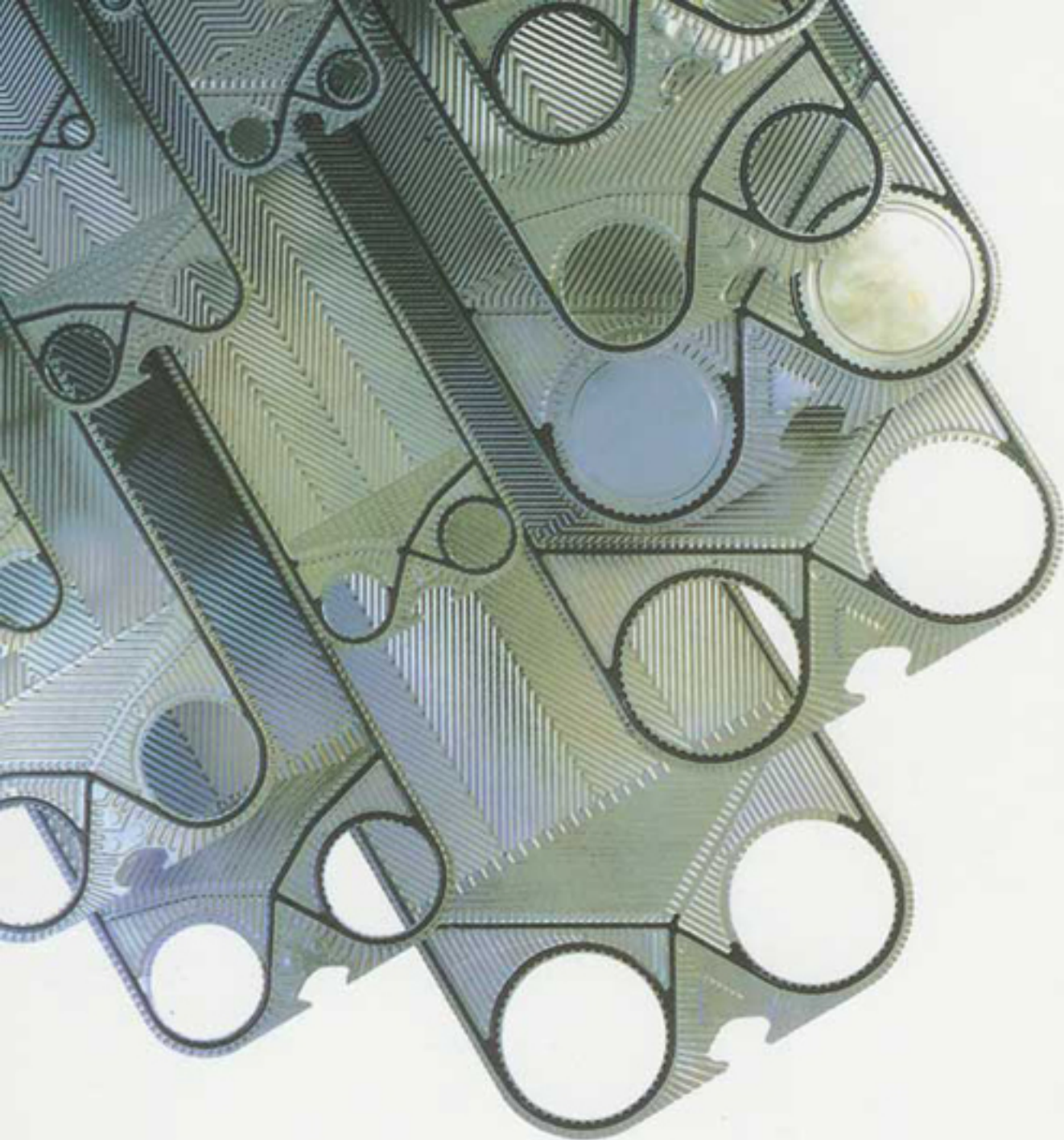
Food Processing

Plate heat exchanger is simple solution for heat treatment of liquid phase foods.



Industrial plants

In Chemical plants, steel works, electronics, beverage and food plants and almost every industries, plate heat exchanger is best choice in process heating and cooling, dissipating heat from hot spots, heat recovery etc. TAIBONG enjoys its good reputation in every field of industries.



TAIBONG INDUSTRIES INC.

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