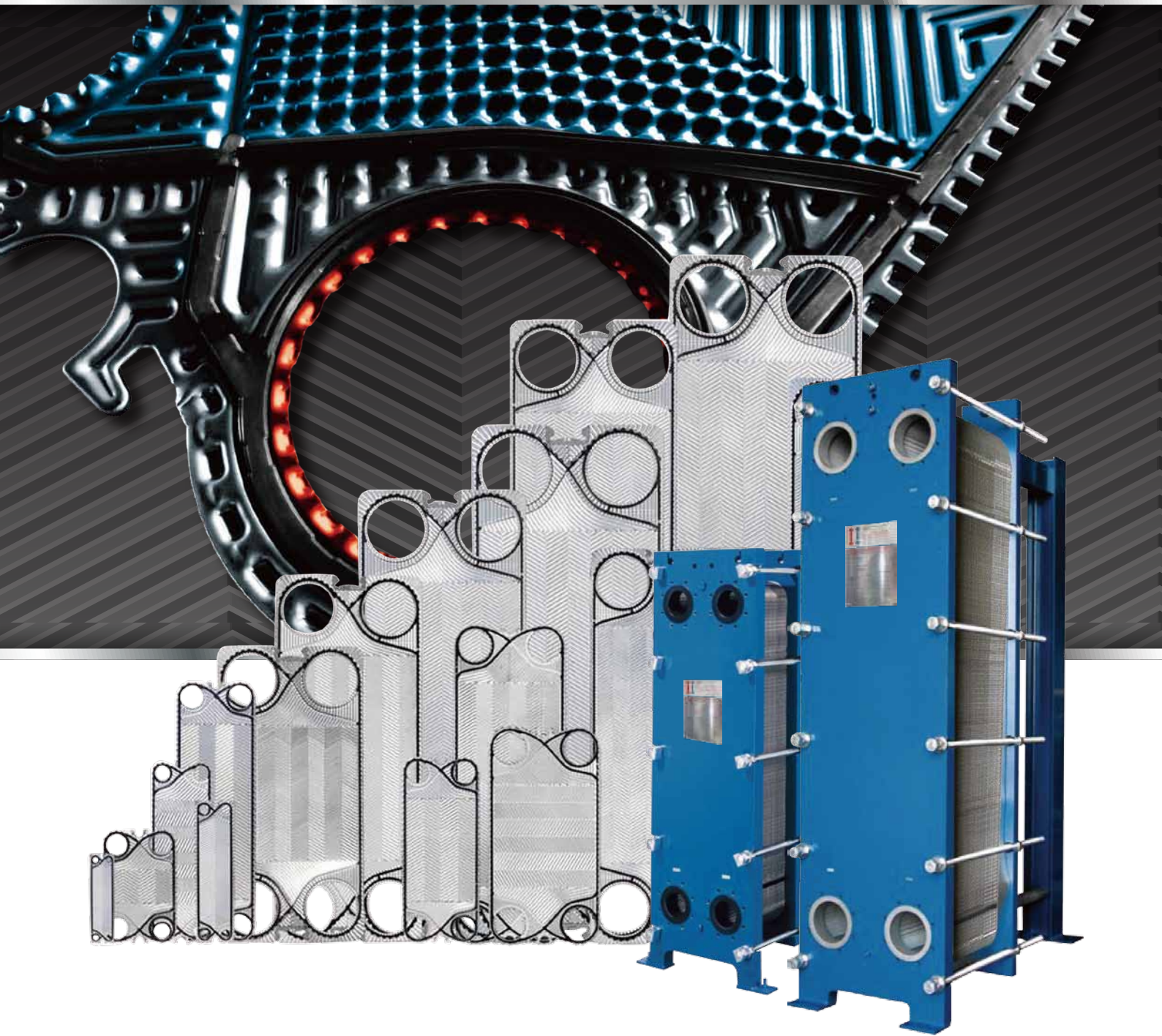


KAORI



組合型板式熱交換器

Gasketed Plate Heat Exchanger

🌐 Website ▶ www.kaori.com.tw

📈 股票代號 ▶ 8996

☎ 服務專線 ▶ 03-4535021



組合式熱交換器 Plate Heat Exchangers

為何使用組合式熱交換器？

- 經設計後能使熱傳更具高效率。
- 容易清洗維修，拆裝方便。
- 保有再擴充之能力及空間。
- 比螺旋式或殼管式熱交換器體積小，且具有更佳之熱傳導能力及擴充空間。
- 遵照 ASME 設計準則與測試標準，具有高度可靠度。

Why use a plate heat exchanger?

The advantages of the plate heat exchanger begin with its design. Plate heat exchangers, or PHEs, deliver greater efficiency, lower cost, easier cleaning and maintenance, and closer approach temperatures than any other heat transfer technology. Compared to spiral and shell-and-tube heat exchangers, PHEs of similar capacity also take up little floor space and are easy to expand. The vertical swing-out plates allow you to pack thousands of square feet of heat transfer area into a small space, while still allowing room for future growth. Each unit built by Kaori is design and pressure tested following ASME standard.

流路設計

板式熱交換器的流動方式可以是單迴路或者是複迴路。單迴路表示每個流體以相同的方向流經機組內所有的板片。而複迴路是可以改變方向的。單迴路適用於各種的熱傳應用，但是在非常低流率或低溫差的情況下則是需要複迴路配置。

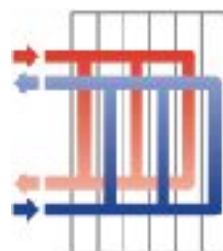
Flow arrangements

While hot and cold fluids flow in opposite directions across a single plate, the flow pattern between plates can vary. Plate heat exchanger flow patterns can be single or multi-pass. A single-pass arrangement means each fluid flows in the same respective direction across all the plates in the unit. A multi-pass arrangement is designed so fluids can change their respective flow directions. Single-pass units are suitable for most applications, but very low flow rates or extremely close-approach temperatures may call for the multi-pass configuration.

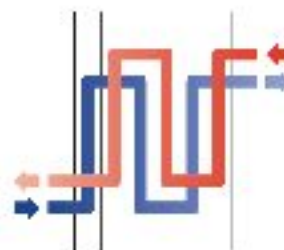
組合式熱交換器 PLATE HEAT EXCHANGERS



AT80 實例圖



單迴路適用於各種的熱傳應用
Single-pass arrangement Suitable for most application.



多迴路適用於流量小、出入口溫差小之熱傳應用
Multi-pass arrangement for application with low flow rates or close-approach temperatures.



板式熱交換器的優點

Plate Heat Exchanger Benefits

高熱傳效能

特殊的紋路設計即使在低流速時也能造成高紊流，這樣的紊流可以產生高於2000的U值效能。



High Efficiency Heat Transfer Performance

The embossed pattern of the Mueller Accu-Therm heat transfer plates promotes high turbulence at low fluid velocities. The high turbulence results in very high heat transfer coefficients. "U" values of 2,000 and greater are common.

低阻塞率

板式熱交換器具有平滑的板面及通暢的流道，可降低阻塞狀況且更易於清洗。

Reduced Fouling

The Accu-Therm plate heat exchanger's high turbulence, uniform fluid flow, and smooth plate surface reduce fouling and the need for frequent cleaning.

體積小

由於板式熱交換器的高熱傳效能，使它可以比一般熱交換器節省20%~50%的體積，同時也更易於現場的維修作業。



Compact Size

Because of the high thermal efficiency and high surface density, the plate heat exchanger requires 1/5 to 1/2 less floor space than other types of equivalent-duty heat transfer equipment. You can also service and maintain the plate heat exchanger in the same area it occupies when in operation.

易於維修檢驗

在關機將機組內的流體排出後，只要將螺栓鬆開，移開板面，就可以檢查並清潔每一板面。這樣對現場檢修來說是既經濟又簡便的方法。

Easy to Inspect and Clean

By simply removing the compression bolts and sliding away the movable end frame, you can visually inspect every square inch of the plate heat transfer surface. The unit also lends itself to easy and economical clean-in-place (CIP) procedures because the amount of retained liquid is very low.

對向流設計

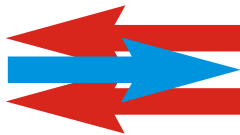
在板式熱交換器中，冷熱流體是依循一種完全逆向的流道來作熱交換，因此可以獲得更有效的熱傳效果，並減少所需的熱傳面積。

True Counterflow

In the plate heat exchanger, fluids flow in opposite directions, resulting in greater effective temperature differences. This reduces the amount of heat transfer surface required.

低溫差的熱傳效能

在熱再生與熱回收的應用上，熱進冷出的溫差是一個非常重要的設計要求，板式熱交換器因為有高熱傳效能的板片與完全對流的設計，可以做到0.5~1.0°C的最小溫差。



Close-Approach Temperatures

An important factor in regeneration and heat recovery applications is the approach temperatures of the heat transfer media. In the Accu-Therm, very close-approach temperatures of 0.5-1.0°C are possible because of the true counterflow and high heat transfer efficiency of the plates.



板式熱交換器的優點

Plate Heat Exchanger Benefits

單機多迴路的設計

只要於熱交換器中間置入一個 " 中



隔板 "，就可以形成多迴路的設計，而利用於同時加熱或冷卻兩種以上的流體運用。

經濟

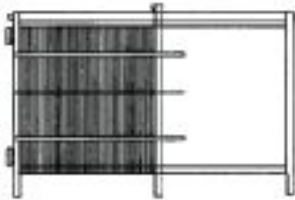
在相同的需求條件下，高效能板式熱交換器比其他熱交換器經濟，因為它的製造成本較低。

質量輕

在相同的熱交換需求條件下，組合型板式熱交換器因為使用的原料少，在機組內的流體也較少，所以比其他熱交換器的重量輕。

可擴充

板式熱交換器的另一個好處是能夠適應熱傳量需求的變化，只要鬆開螺栓，藉由增



加或減少板片，就可以改變其熱傳效能，以節省多餘的開銷。

適用高黏稠度的液體

由於板式熱交換器的性能可以在低流速時製造紊流，所以有利於高黏稠度流體的運用。

排除混淆互通

板式熱交換器板片間的墊圈在組裝時必須保持在一大氣壓，可使冷、熱側的流體在壓力失衡時，藉由 " 導氣孔 " 排出而避免混淆互通的狀況。



Multiple Duties With a Single Unit

It is possible to heat or cool two or more fluids within the same unit by simply installing intermediate divider sections between the heat transfer plates.

Lower Cost

Plate heat exchangers are generally more economical than other types of equivalent-duty heat exchangers due to the higher thermal efficiency and lower manufacturing costs of plate heat exchangers.

Lightweight

The plate heat exchanger is lighter in total weight than other types of heat exchangers because of reduced liquid volume and less surface area for a given application.

Expandable

The expandable feature of the plate heat exchanger protects your investment. If your heat transfer requirements change, your plate heat exchanger will not become obsolete. Instead, you can adjust the unit's thermal performance by releasing the compression bolts, rolling back the end frame, and adding or removing heat transfer plates.

High Viscosity Applications

Because the plate heat exchanger induces turbulence at low fluid velocities, it has practical application for high viscosity fluids.

Cross Contamination Eliminated

In the plate heat exchanger, each medium is individually gasketed. The space between gaskets is vented to atmosphere, eliminating the possibility of any cross contamination of fluids. This feature makes the plate heat exchanger especially ideal for applications where product contamination cannot be tolerated.



板式熱交換器結構特性

Plate Heat Exchanger Construction

多樣的板片選擇

高力提供在板式熱交換器上有更多樣化的選擇，板式熱交換器的單片板片熱傳表面範圍從最小0.02至最大3.0平方公尺。主要尺寸的選擇有組合型式和變化功能型式，在不同的加熱或冷卻需求均有最佳的品質。

高流量率

板式熱交換器的最大流量可達到 60,000 LPM(公升/分)，可省去在大流量需求時，所可能衍生的並聯作業和費用。

框架

高力的框架為直立型式，以前後端板、上下導桿及螺栓將板片固定之構造，結合密實的結構體與精密的尺寸規劃設計，以確保板片的密合，避免側漏與互通的缺失，熱交換板片固定於框架之上下支撐導桿之間。框架之任何部位不與流體接觸，上下導桿具有光滑之不銹鋼表面，且框架尺寸能足夠開啓，以清潔熱交換板片。

Most Extensive Selection

Kaori offers an extensive selection of plate heat exchangers. The single plate heat transfer surface area is available in sizes from less than 0.02 to more than 3.0 square meters. This broad selection of sizes, combined with multiple embossed patterns and varying flow capacities, guarantees the best technical solution to satisfy heating or cooling requirements.

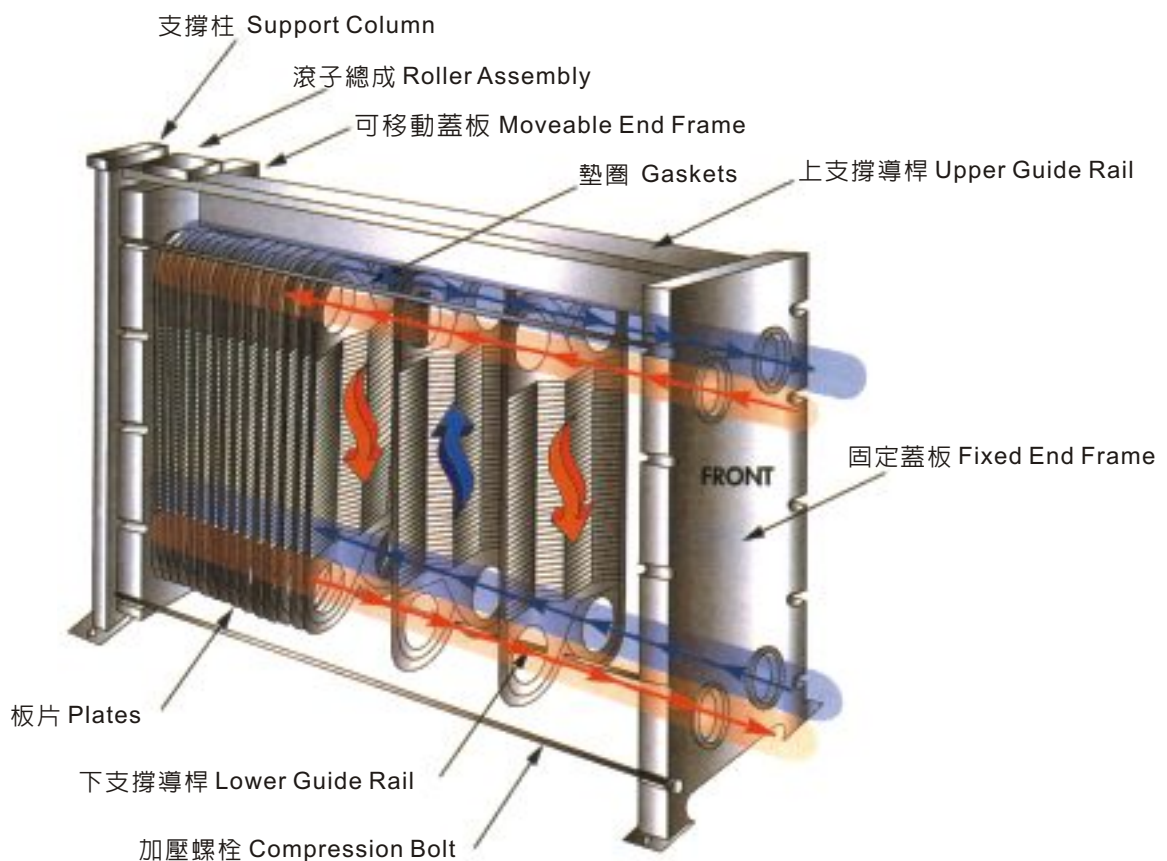
High Flow Rates

Flows up to 60,000 LPM are possible with the largest plate heat exchanger. This high flow capacity generally eliminates the need for multiple units in large flow applications, greatly reducing installation costs.

Frame Assembly

The frame assembly is a heavy-duty construction, built to very strict tolerances. This ensures optimum plate pack compression and leak prevention.

PLATE HEAT EXCHANGER CONSTRUCTION





板式熱交換器結構特性

Plate Heat Exchanger Construction

更多的熱傳面積

一個組合式熱交換器的單機最大可提供 2400 平方米的熱傳面積。表面範圍具高效能傳熱，提供巨大熱傳能力。

熱傳導板片

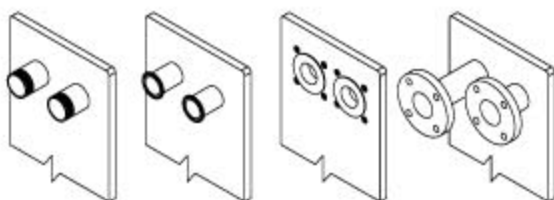
高力組合型板式熱交換器是使用經過精密工程設計的高品質板片，以機械衝壓一次成型。它的標準特性包括高熱傳率、平均流體分佈、最小的阻塞、方便清洗作業以及適用於各種不同的壓力。

墊圈

組合式熱交換器所使用的襯墊，為一體成型，必須能適應流體的化學性質並且密合於板片之間，確保流體不會側漏或互通。同時嵌入式襯墊便於安裝與拆除替換。

接頭

各種尺寸的接頭規格包含PT外牙、衛生級快速接頭、內嵌/外接法蘭，法蘭規格可選 JIS 5K、10K、16K；DIN 2632 / 2633；150 / 300 LB 等，內嵌接頭的喉管材質可選用 NBR、EPDM、不銹鋼304、不銹鋼316、鈦、Viton等材質，均能依客戶需求選用。



PT 外牙 衛生級快速接頭 內嵌法蘭 外接法蘭

護罩

堅固的護罩是每一個熱交換器的選購配備，它的作用是保護板片與墊圈的清潔，並賦予機組一個獨特的外觀。

銘牌

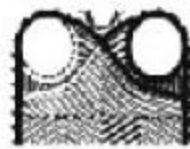
安裝於熱交換器機組前方，上面標示製造商名稱、製造序號、型號、材質、A 值、設計壓力、溫度及製造日期等。

檢驗與測試

每一個組合式熱交換器機組，均在高力工廠整體組裝完成，必須經過嚴格的品管測試。在設計壓力的要求標準下，每一個流體迴路必須先經過單獨的測試，再同時接受壓力測試，不得有滲漏的現象。

More Square Feet of Heat Transfer Surface

A single unit can have up to 2400 square meters of heat transfer surface. This extensive surface area, combined with high thermal efficiency, offers potential for tremendous heat transfer capacity.



Heat Transfer Plate

The plate heat exchanger is a precision-engineered, high-quality plate. Its performance criteria include high thermal efficiency, uniform fluid distribution, minimal fouling, clean operation, and suitability for full differential pressure.

Gaskets

Gaskets are designed to positively locate in gasket grooves. Also, gaskets are fabricated of carefully selected compositions to ensure trouble-free performance. The snap-in Performance (available on most models) is useful for easy gasket removal and replacement.

Connections

The studded port is the standard construction on all but the smallest unit. This design provides absolute protection for heat transfer plates under all pipe loading conditions. In addition, all studded ports can be fully lined to protect against erosion of frame material and corrosion of heat transfer plates. Lap-joint, weld-neck, and ferrule connections are available.



Shrouds

Durable shrouds are option on all units. These shrouds protect plates and gaskets and help to maintain a clean, distinctive appearance for the life of the heat exchanger.

Nameplate

Each KAORI PHE is provided with a nameplate, placed on the outside of the fixed plate. The plate showing the company, serial number, type, material, A value, design and testing pressure, working temperature and manufacturing date.

Inspection and Testing

The unit is subjected to rigorous quality assurance inspections. For example, to ensure all units are leak tight under all possible operating conditions, each circuit is independently tested at full design pressure with the other circuit open to atmosphere.



應用範圍 Applications

汽機車業 AUTOMOTIVE

汽車儲水箱加熱器，水冷器，電解水水冷器，油料加熱器，焊接水冷器，感應加熱(高週波)冷卻器，油壓冷卻器，淬火油熱交換器以及冷卻塔隔離系統。

Phosphate tank heaters, seal water coolers, plating solution cooling, paint heating, welder water cooling, induction heater cooling, hydraulic oil coolers, quench oil heat exchangers, and cooling tower isolation.

釀造業 BREWING

濾水冷卻裝置，苛性鹼冷卻器，酸性物質，氫氣瓦斯冷卻器及鹽水冷熱交換裝置。

Brine cooling, water heating, and wort cooling. Caustic soda coolers, acid coolers, hydrogen gas coolers, and brine heaters and coolers.



化工業 CHEMICAL

製程加工熱交換器，鹽水冷熱交換裝置，鹽提煉，製程水冷凝器，酸性物質冷熱交換裝置及瓦斯洗滌冷熱交換器。

Process interchangers, brine heating and cooling, salt refining, process water isolation vapor condensers, acid heating and cooling, and gas scrubber heaters and coolers.

食品業 FOOD

提煉糖，果糖溶液冷熱交換，威士忌復熱器，酵母冷卻器，玉米糖漿熱交換器，食品油業冷熱交換器。

Sugar refining, fructose solution heating and cooling, whiskey recuperators, yeast coolers, starch coolers and heaters, corn syrup cooling, and edible-oil heaters and coolers.



造紙業 PULP AND PAPER

蒸餾器加熱，吹氣箱液體冷卻，苛性鹼冷卻器，鍋爐吹氣箱加熱，淨水污水處理。

Digester heaters, blowdown liquor coolers, caustic soda coolers, boiler blowdown heat recovery, white water, and black liquor heating.



海運業 MARINE

海水隔離交換器。

Seawater isolation/exchanger.

金屬加工業 METAL WORKING

淬火油冷卻裝置，電鍍加熱及冷卻，鑄液冷凝，酸洗槽加熱裝置。

Quench oil coolers, plating heaters and coolers, anodizer heaters and coolers, strike solution cooling, and pickling tank heating.



石化廠 煉油廠 PETROLEUM

天然瓦斯處理，原油鑽探，石化產品處理。

Oil refining, natural gas processing, offshore drilling, and petrochemical processing.

發電業 POWER

電路冷卻隔離設備，冷凝器水隔離設備，土地熱能應用設備，廢棄物燃燒應用設備，加油設備。

Auxiliary cooling circuit isolation, condenser water isolation, cogeneration applications, geothermal applications, refuse burning applications, lubrication oil cooling, and diesel engine cooling and heat recovery.



紡織業 TEXTILE

加熱回復，鹼液熱交換，洗滌器，染料集中加熱。Heat recovery, caustic solution heating and cooling, washers, and dye concentrate heating.

鋼鐵業 STEEL

清洗機冷卻器，水套水冷器，鋼板加熱器冷卻器，油壓油冷卻器，鑄模冷卻器，耐火襯套冷卻器，軌道油冷卻器，連續設備冷卻器。

Scrubber coolers, jacket water coolers, slab induction heating coolers, hydraulic oil cooling, mold water cooling, refractory liner cooling, roll oil cooling, and cooling of continuous casting installations.

冷凍空調 HVAC

冷卻隔離，自由空調，馬達系統，儲熱系統，冷凝器熱水回復，區域加熱及冷卻，海水隔離，地熱裝置，引擎冷卻裝置，潤滑油冷卻裝置，燃料加熱，發電機冷卻，蒸氣加熱系統。

Cooling tower isolation, free cooling, heat pump systems, thermal storage systems, condenser water heat recovery, district heating and cooling, seawater isolation, geothermal heating, engine cooling, lube oil cooling, fuel oil heating, generator cooling, and heating water with steam.

我們的客戶與實績

台電發(核)電廠、台灣糖業、台灣菸酒、中鋼、中船、中油、銓恩、馬偕淡水醫院、新店慈濟醫院、榮民總院與生技中心、台大等醫院、南港三鐵共構車站、彰化秀傳醫院、台南歷史博物館、中研院人文館、台塑企業、展茂光電、景碩科技、中華凸版、台積12廠、聯電7廠、鴻海精密、日月光半導體中壢廠、彩晶楊梅廠、茂德中科、高橋中科、南科茂矽、南科奇美、德州儀器、竹科南茂科技、敬鵬工業、金車食品、統一食品、味全食品、遠東紡織、屏東海洋博物館、台北海洋館、鴻禧大溪飯店、天籟溫泉會館、宏盛建設台北仁愛帝寶、台灣大學、交通大學、嘉義大學、工研院、核能研究所、中科院等

Our customers and actual business achievement

Taiwan (Nuclear) Power Plant, Taiwan Sugar Corp., Taiwan Tobacco and Liquor Corp., China Steel Corp., China Shipbuilding Corp., China Petroleum Corp., Chuanen Company, Tamsui Mackay Memorial Hospital, Hsindan Tzu Chi Hospital, Veteran General Hospital and Biological Technology Center, National Taiwan University Hospital, Nankang Station of Three Railways, Changhua Show Chwan Memorial Hospital, Tainan Historical Museum, Social Science Building of Academia Sinica, Formosa Plastics Enterprise, Allied Material Technology Corp., Kinsus Interconnect Technology Corp., Toppan Chinghua Electronics, # 12 Factory of TSMC, # 7 Factory of UMC, Honhai Enterprise, ASE Chungli Factory, HannStar Yangmei Factory, ProMOS Technologies at Central Industrial Park, Takahashi Inc. at Central Industrial Park, Mosel Vitelic Inc. at Southern Industrial Park, Chimei Inc. at Southern Industrial Park, Texas Instrument, ChipMOS Technologies at Hsinchu Industrial Park, Chin Poon Industrial, King cat Food, President Food, Weichuan Food, Far East Textile, Pingtung Ocean Museum, Taipei Ocean Museum, Ta Shee Resort, Tien Lai Spring Resort, Taipei Jen-ai Dibao of Hung Sheng Construction, National Taiwan University, National Chiao Tung University, National Chiayi University, Industrial Technology Research Institute, Nuclear Energy Research Institute, Chung-shan Institute of Science and Technology etc.



半焊型板式熱交換器 Laser Semi-Welded Module

背景

在過去，使用墊圈的組合型熱交換器時常無法滿足許多特殊應用或是不穩定性流體的使用，墊圈的應用極限一直是組合式熱交換器在應用上的一個瓶頸，為了這個緣故，高力特別推出一套運用雷射焊接的組合型板片組，並且在環保與安全上達到更高的境界。

工作原理

利用雷射焊接的技術，將兩片板片焊接成密不透風的板片組，高不定性流體（危險流體）便在這兩片板片之中流動，在整組板式熱交換器中，唯一和危險流體接觸的橡膠墊圈是位於兩側進出口處的高級抗腐蝕墊圈。

應用雷射焊接的板片組，一樣可以達到組合式熱交換器的效能彈性的特色，應客戶的要求，熱交換器可以加裝或是減少焊接板片組，達到效能上的變動，雷射焊接板片組的應用溫度範圍為攝氏 -40度到 170度，壓力最高為 25bar。

優點

- 體積小、重量輕、高效能彈性。
- 組合側板片清洗容易。
- 低阻塞率。
- 高熱傳導數。
- 抗腐蝕。
- 不易溢漏。
- 彈性化容量擴充。
- 安裝簡單、費用低。

Background

In the past no satisfying solution was offered using gasketed plate heat exchangers for special process conditions or aggressive media. The limitation was always the gasket material. For this reason, the Kaori plate heat exchanger program was made available in a laser welded configuration, also taking into account en-vironmental and safety requirements.

Working Principle

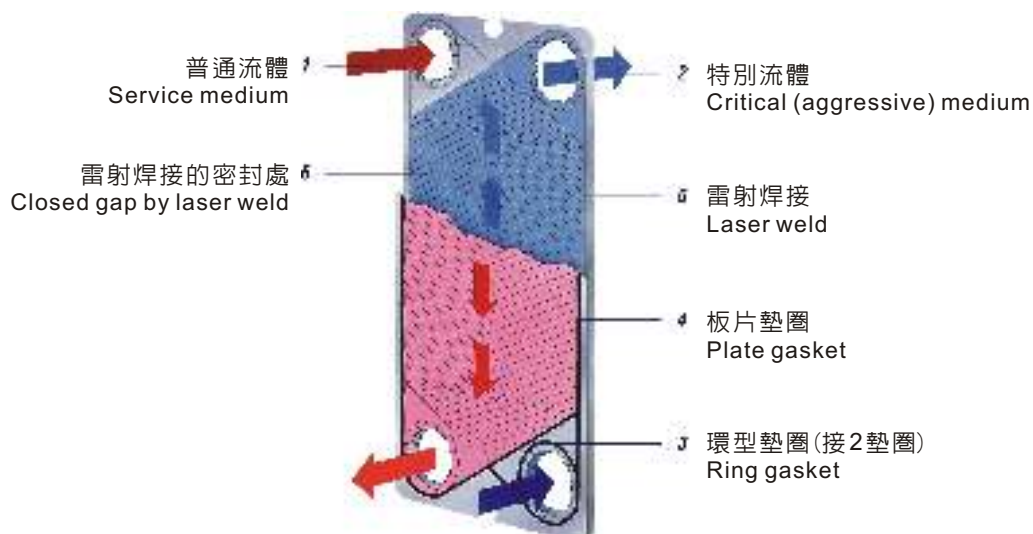
Two heat exchanger plates are welded together to a gas-tight module by means of laser technology. By doing this, a flow channel for the aggressive (or the gasket attacking media) is built, which is hermetically closed to the outside. Only two ring gaskets, made of high resistant material located in the port holes between two welded modules, are in contact with the aggressive media.

In spite of the use of welded modules, the proven flexibility of plate heat exchangers is maintained. By adding or changing modules, the heat exchanger capacity can be adjusted to the individual requirements. The laser welded modules can be used for temperatures from -40°C + 170°C , and for pressures up to 25 bar.

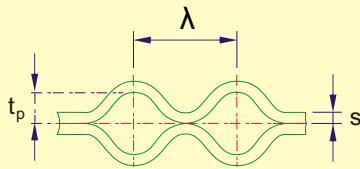
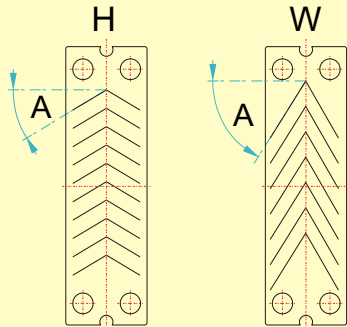
Advantages

- Compact design, low weight, High flexibility.
- Gasketed heat transfer surface easy to clean.
- Low hold-up volume.
- Excellent heat transfer coefficient.
- High corrosion resistance.
- Minimum risk for leakages.
- Flexible capacity extension.
- Quick and low cost installation.

LASER SEMI-WELDED CONSTRUCTION



板片結構 Plate Structures

板片型式 PLATE TYPE		板片深度與厚度 CORRUGATION DEPTH, t_p (mm) PLATE THICKNESS, S (mm)		板紋角度 CORRUGATION ANGLE A	
					
		t_p (mm)	S (mm)		
Power Line	PL	2...2.5	0.5...0.8	30°	-
Standard Line	SL	3.5...4	0.5...0.8	30°	60°

半焊型板片材質 Laser Semi-Welded Plate Material

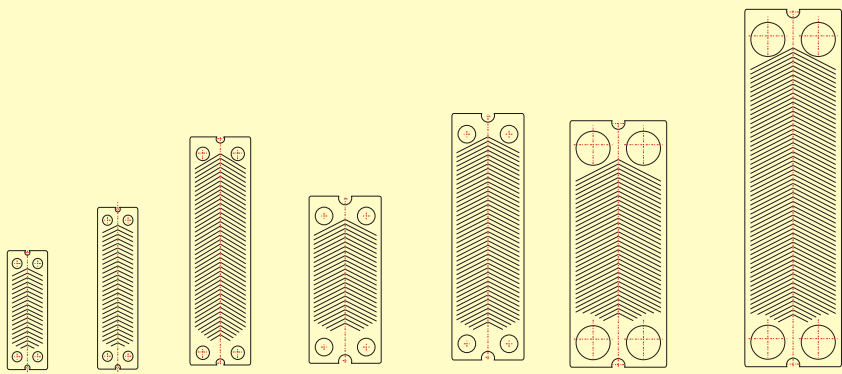
標準材料 STANDARD MATERIALS	厚度 THICKNESS	特殊材料 SPECIAL MATERIALS	厚度 THICKNESS
1.4301 (AISI 304) 1.4404 (AISI 316L) 1.4571 (AISI 316Ti)	0.5 mm~0.8 mm	1.4529 1.4539 (UNS N08904) 1.4541 (AISI 321) 1.4547 (SMO 254) 2.4068 Alloy 201 2.4602 Hastelloy C-22 2.4610 Hastelloy C-4 2.4819 Hastelloy C-276 2.4858 Alloy 825 3.7025 Titanium Gr. 1	0.6 mm~0.8 mm

半焊型 R22 / R134a / NH3冷媒超低溫冷凍應用

Laser Semi-Welded in R22 / R134a / NH3 Refrigeration Application

R22/R134a/Ammonia	溫度範圍 TEMPERATURE RANGE	墊片材質 GASKET MATERIAL
蒸發器 Evaporator	-40°C to -20°C > -20°C	NBR-LT / CR-LT CR-NT / CR-HT
冷凝器 Condenser	< 130°C 130°C to 150°C	CR-HT HNBR
加熱器 Desuperheater	< 130°C 130°C to 150°C	CR-HT HNBR
油冷卻器 Oil Cooler	< 110°C 110°C to 150°C	NBR HNBR

半焊型板片型式 Laser Semi-Welded Plate Types

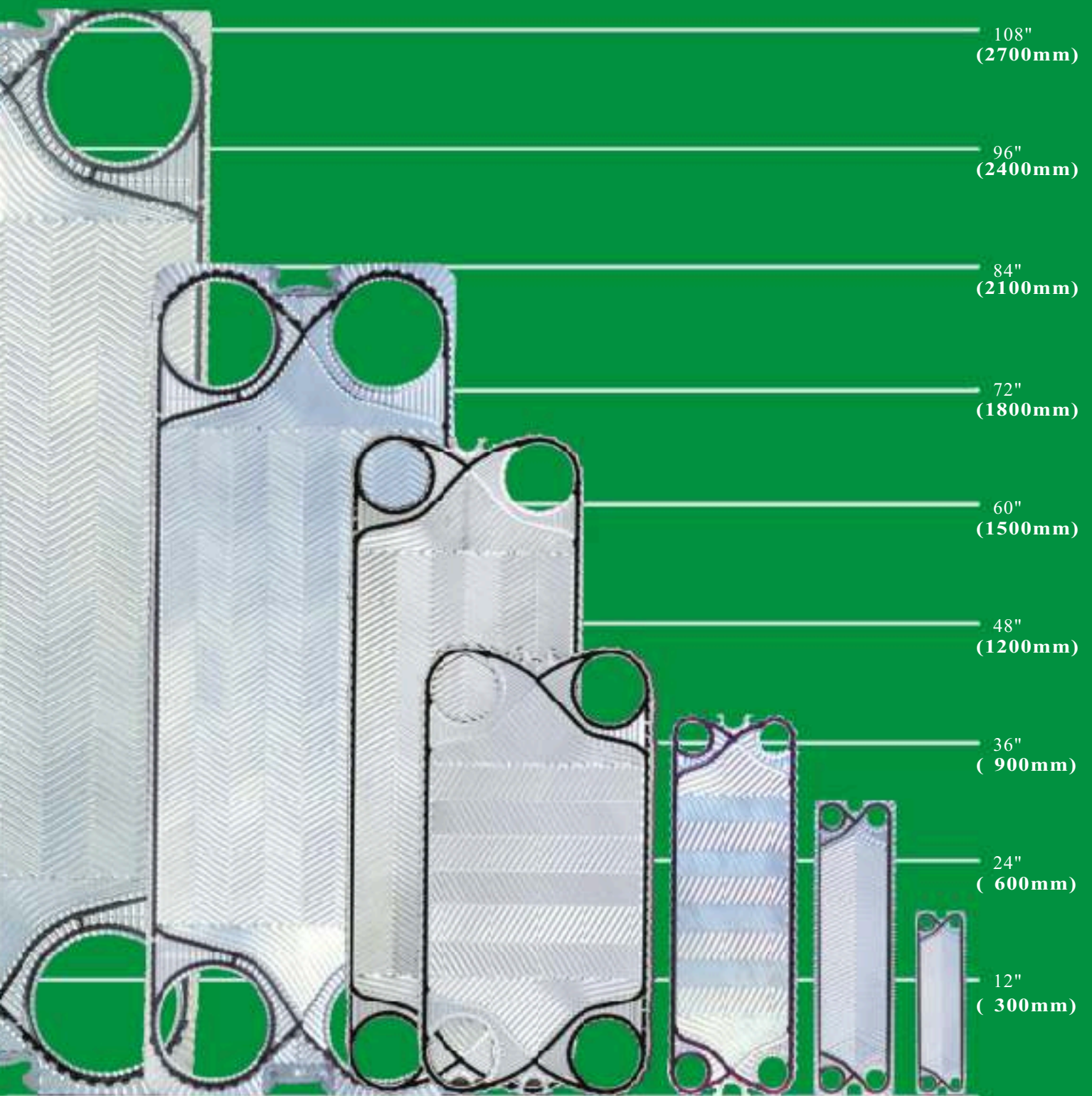
							
Plate type TL	90	150	400	250	500	650	850
Port hole (DN)	40	40	80	100	100	200	200
Length (mm)	721	981	1383	1014	1495	1495	2034
Width (mm)	244	244	369	437	437	586	586
Length / Width	2.95	4.02	3.75	2.32	3.42	2.55	3.47



多樣的板片選擇

Large Selection of Plates Available



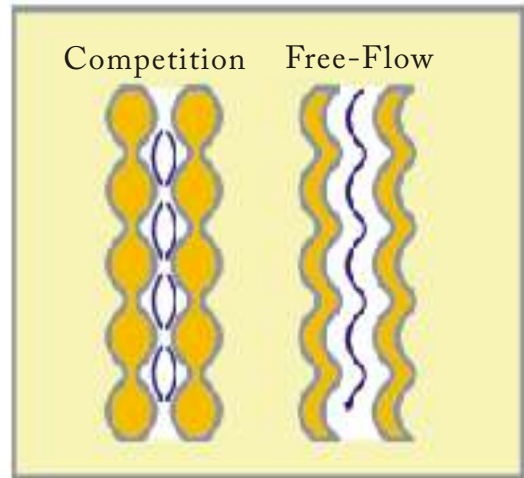




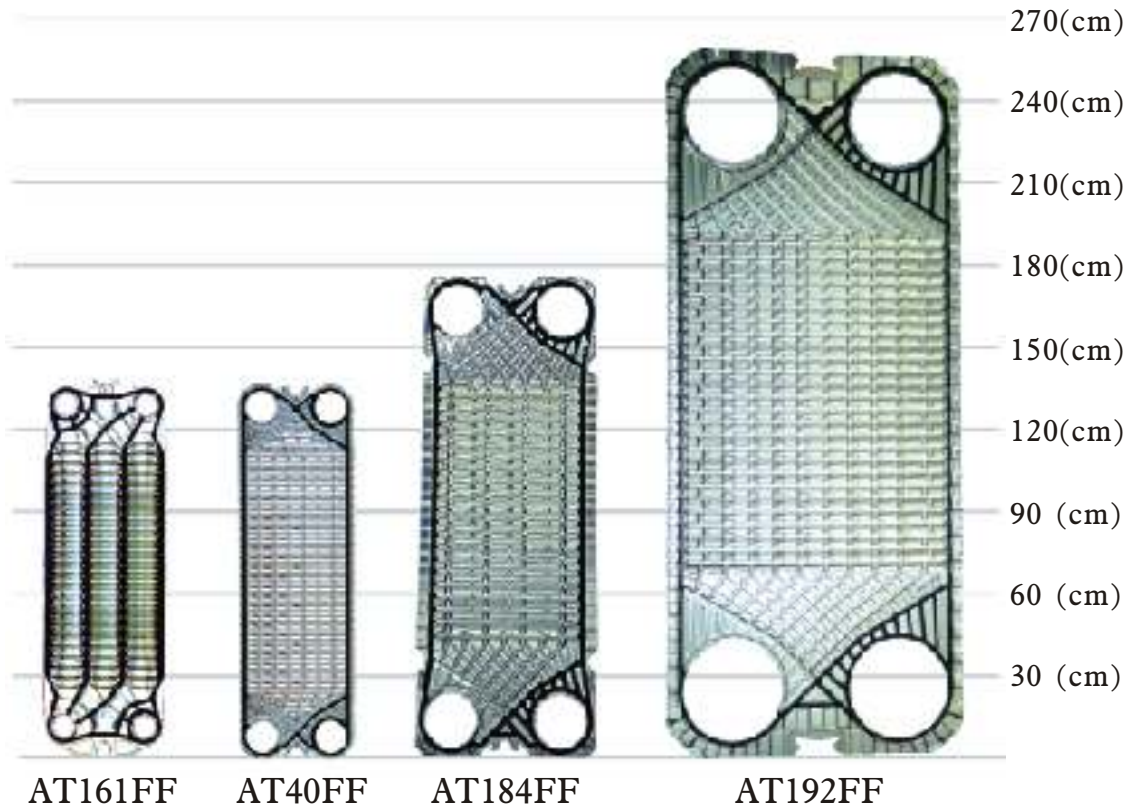
專有的自由流設計 Exclusive Free-Flow Design

其他的競爭對手雖然也有較大流道的板面設計，但其內部紊流的形式易造成阻塞。而我們特殊的自由流設計，則可處理含有較大顆粒的流體而無須經常清理維修。

Competitive plate heat exchanger designs claim wide-gap advantages, but pinch points in their design can block flow and create slurry buildup. The Free-Flow's channels handle bigger particles and require less maintenance because they are a constant width.



FREE-FLOW PLATES



FREE-FLOW CONNECTIONS AND PRESSURES		
MODEL	STUDED PORT SIZE* (in.)	OPERATING PRESSURES*
AT40FF	4	up to 150 psig (11.3 bar)(10.5kg/cm ²)
AT184FF	8	up to 86 psig (6.9 bar)(6kg/cm ²)

* Standard studed port-type connections provide maximum cost effectiveness and are available from stock.

Lap joint and weld-neck flanged connections are available at additional cost with longer delivery.

+ Temperatures up to 300°F (148.90°C) are available on all models.



規格尺寸與材質

Specifications and Material

MODEL	HEIGHT (mm)	WIDTH (mm)	TYPICAL LENGTH (mm)	STANDARD CONNECTION SIZE (inch)
AT4	660	186	305~501	1
AT10	914	279	368~1283	2
AT20	1346	441	508~4048	3
AT405	1346	533	521~4061	4
AT40	1724	533	860~4061	4
AT805	1603	749	879~4080	6
AT80	2162	749	879~4080	6
AT40FF	1784	686	860~4061	4
AT184FF	2162	749	879~4080	8
ATX150	2662	876	861~4712	10

MODEL	HEIGHT (mm)	WIDTH (mm)	TYPICAL LENGTH (mm)	STANDARD CONNECTION SIZE (inch)
KR02、BR 0.02	320	180	125~500	1
FP04、FP08	460、800	160	150~600	1
FP14、FP20	837、1066	310	250~1000	2
KR05、FP05、FP09	532 / 562、827 / 857	200	250~1000	1
KR10、FP10、FP16、FP22	732、932、1132	310	250~1000	2
FP19	1080	440	500~2500	3 / 4
KR206、FP205、FP206	1157	470 / 480	500~2500	4
FP31、FP40、FP50、FP71	1332、1579、1826、2320	460 / 480	500~3000	4
FP41、FP60、FP80	1470、1835、2200	610 / 620	500~4000	6
FP42、FP62、FP82、FP112	1470、1835、2200、2687	610 / 620	500~4000	6
FP405	1370	760 / 770	500~4000	8
FP70、FP100、FP130	1730、2090、2460	760 / 770	500~4000	8
FP81、FP120、FP160、FP190	1928、2317、2705、3097	980	1780~5280	12
FP150、FP200、FP250、FP300	2543、2898、3253、3608	1370	1980~5980	20
FP16M	902	320	250~1000	2
FP205M	1107	470	500~2500	4
FP62M、FP60M	1835	610	500~4000	6
FP100M	2090	760	500~4000	8
FP405M	1370	760	500~4000	8

Based on selection : Design pressure up to 350 psi (24.6kg/cm²) (full differential pressure rating).

Design temperature up to 410°F (210°C).

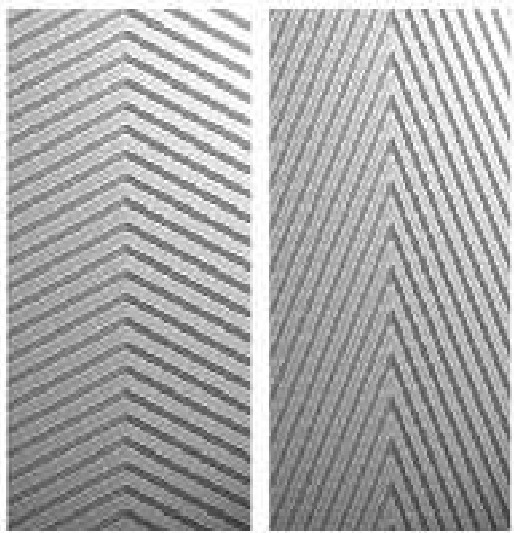
ASME code standard available.

MATERIALS OF CONSTRUCTION

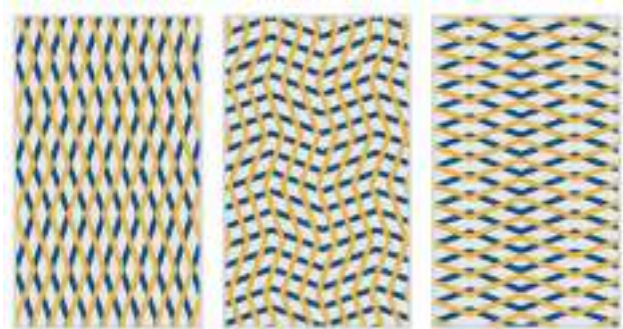
PLATES	GASKETS
Stainless Steel 304	Nitrile (NBR)
Stainless Steel 316、316L	Ethylene Propylene Rubber (EPDM)
Titanium (Gr.1)	Viton (FKM)
Avesta 254 SMO	Butyl (Resin Cured)
Hastelloy C-276	Hypalon
Stainless Steel 904L	Silicone



板片紋路與安全設計 Pattern and Safety Design

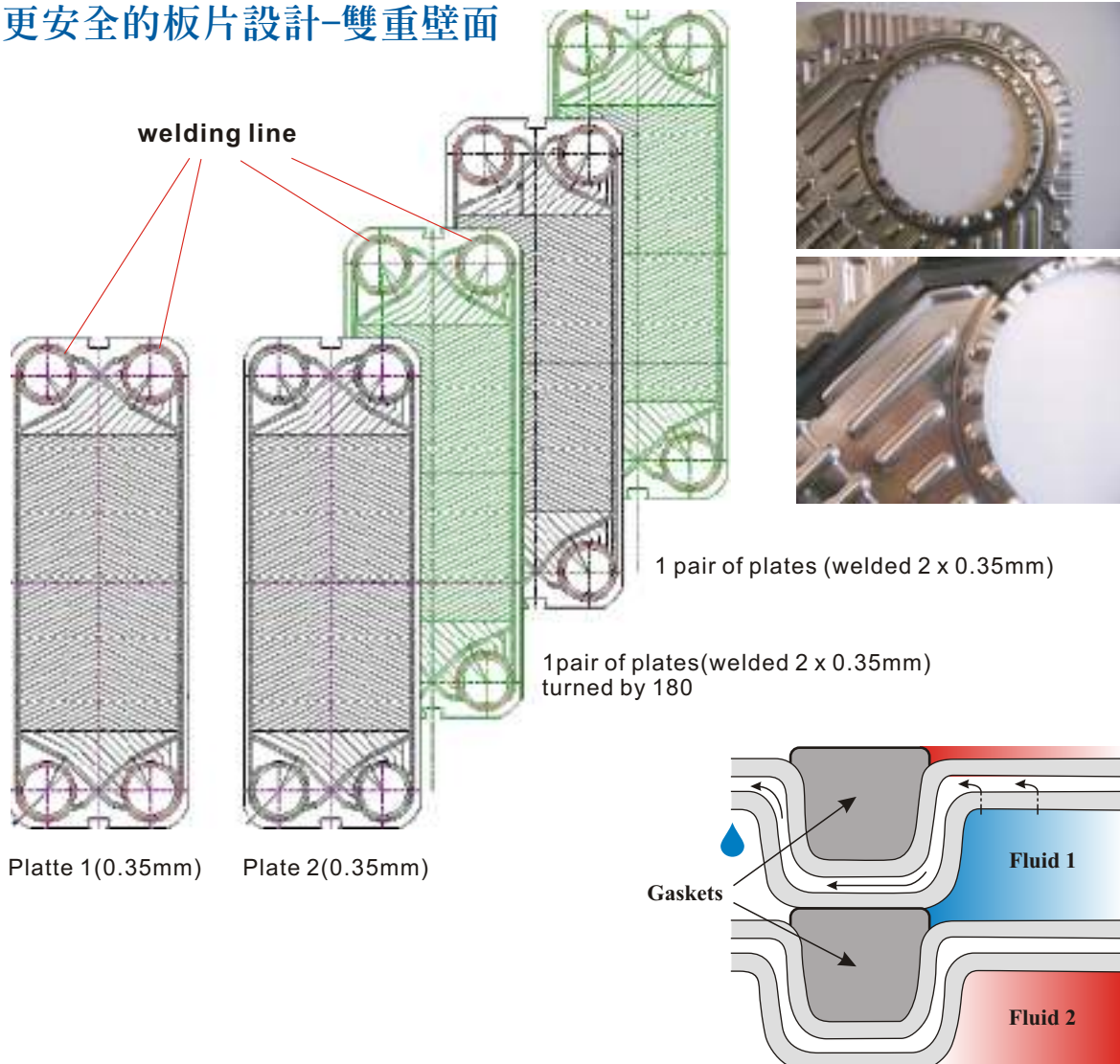


- 大角度波紋：提高傳熱係數，壓力降偏大；
- 小角度波紋：降低阻力降，傳熱係數較小；
- 設計選型時，根據工況參數的不同，合理選用相應的板型，達到最佳的使用效果。



Horizontal Combination Vertical

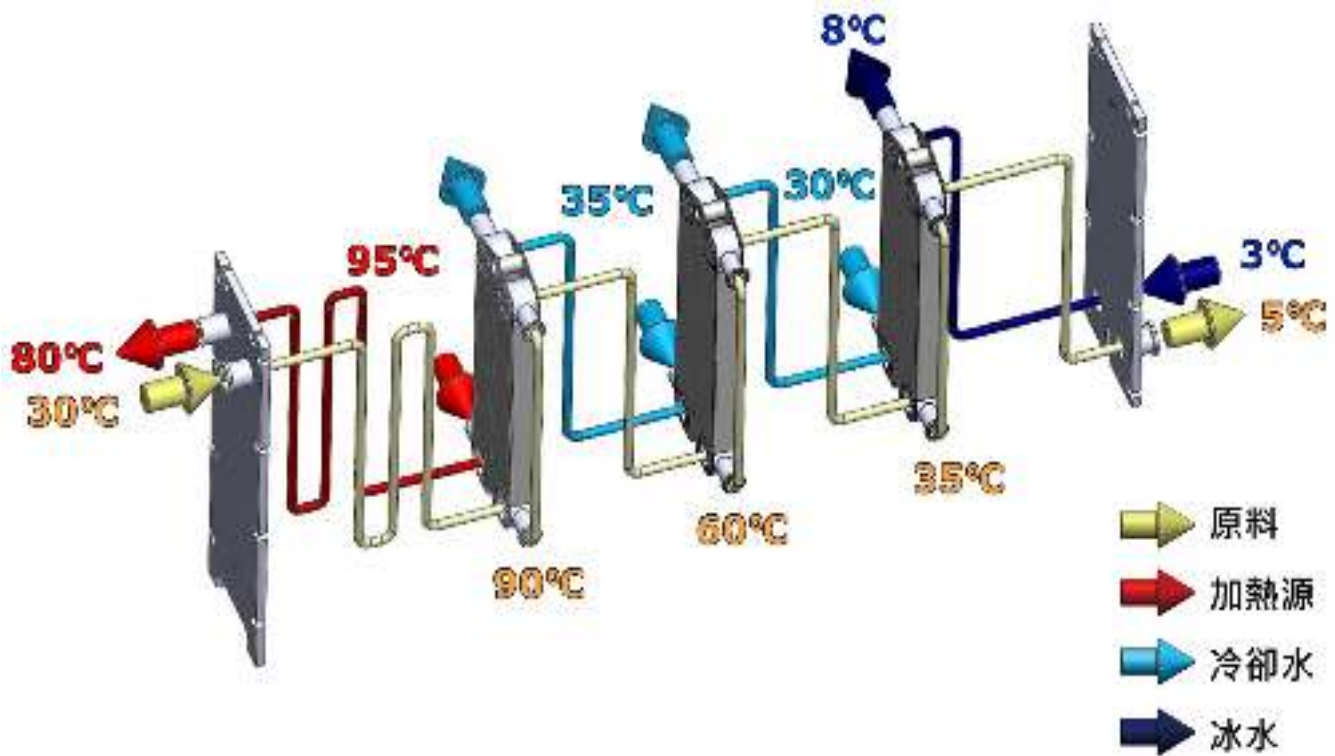
更安全的板片設計-雙重壁面





衛生級專用熱交換器 Hygienic Design Heat Exchanger

多段式衛生級高溫殺菌機



- 最高安全標準
- 使用最高等級表面光潔度的材質
- 100% 完全洩漏
- 墊圈符合使用衛生設計需求
- 耐高溫 (例如用於蒸汽滅菌)
- 非常適合 CIP (現地清洗) 與 SIP (現地殺菌)
- 堅固耐用且易於維護

- Highest safety standards
- First class surface finish of material used
- 100%-drainability possible
- Gaskets according to hygienic design
- High temperature resistance (e.g. for steam sterilization)
- Very suitable for CIP and SIP
- Durable and easy to maintain

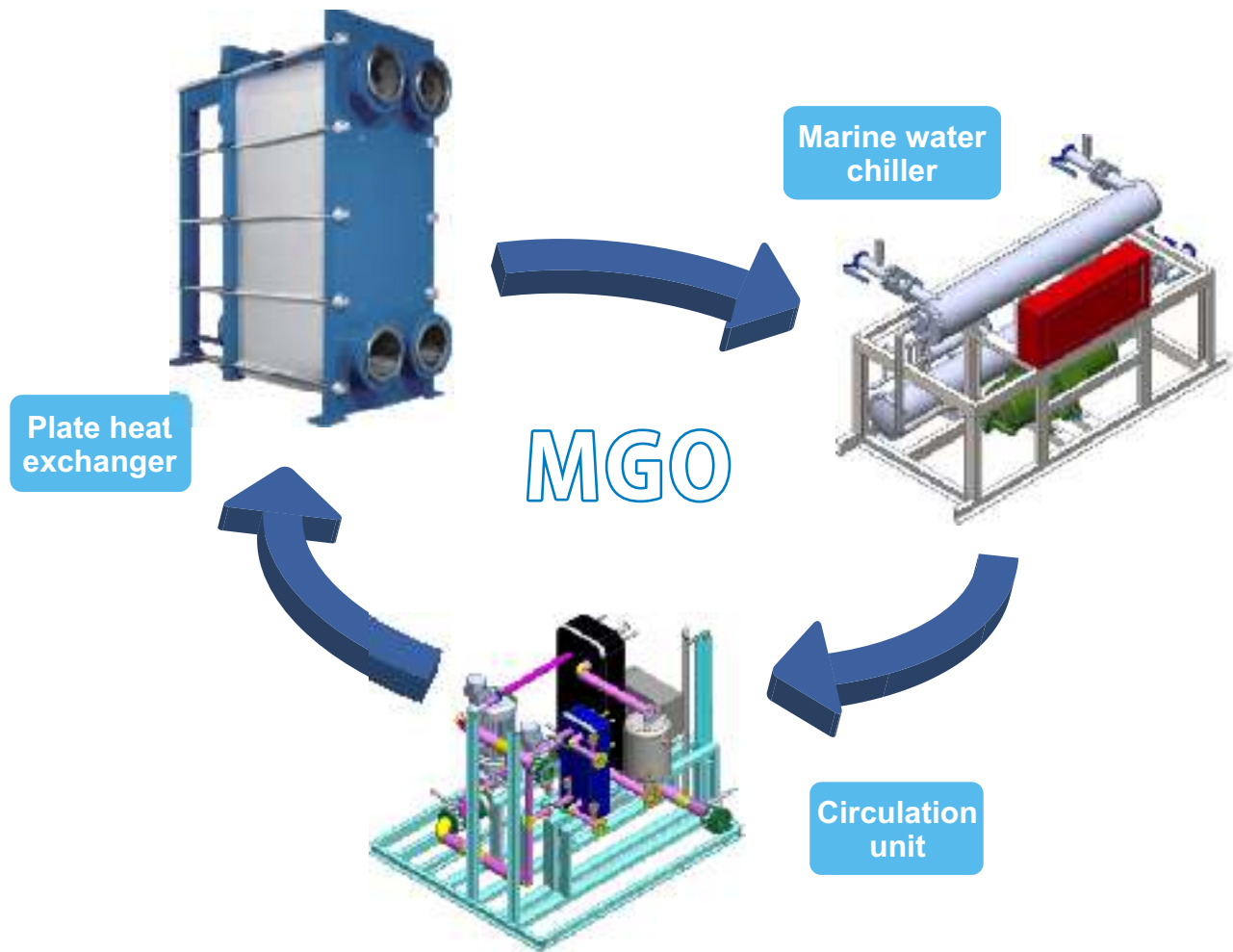


船舶營運熱交換器應用 Ship-building Applications

低硫油冷卻系統

Marine Gas Oil Cooling System (MGO)

適合各種燃油系統，使用 PLC 控制，以確保穩定的工作條件，安裝簡單方便，適合現場施工。



系統組成：

- 船用冰水機組：1 台(可選用於多種製冷劑)
- 冷卻水循環模組：1 組
- 水/油板式熱交換器：2 台
(一台用在引擎，一台用在發電機)



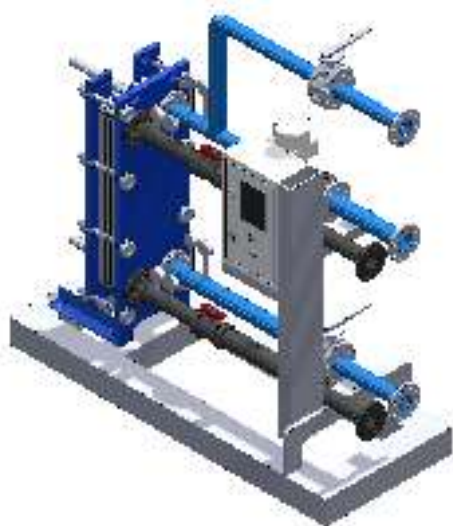
系統特色：

- 冷凍能力可達 200RT 以上。
- 採用 PLC 可程式控制。
- 具備精密的 PT 模組可進行溫度控制。
- 自動紀錄操作控制 - 運轉時間。
- 可設定冰水溫度以符合系統負載。
- 可顯示壓縮機加卸載狀況 (25~100%)。
- 訊號顯示及按點視窗化說明。
- 配置標準 RS-232、RS-485 網路連結中央監控系統。
- 配置相容 MODBUS (ASCII/RTU) 之通訊協定，可合併於資訊服務系統，大幅減少配線及查線工作。
- 具備自動檢查及自我診斷功能。



整合式熱交換器模組

Integrated Plate Heat Exchanger Module



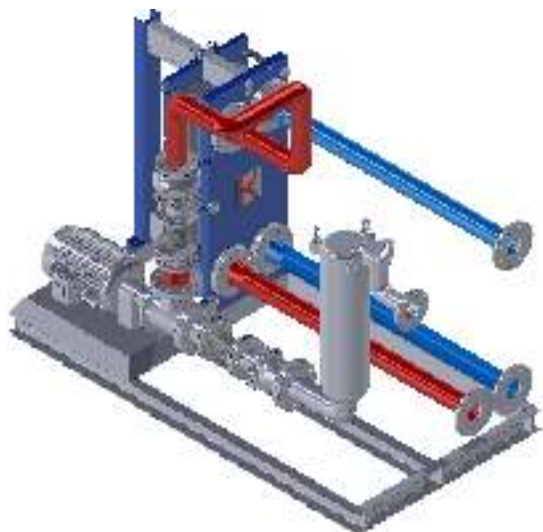
恆溫系統模組

- 工作流量：5~576 m³/hr
- 溫度設定範圍：3~75°C
- 溫度控制：LCD顯示，PID控制
- 控制精度：±0.5°C
- 適用產業：中央空調、製程控溫...
- 方便安裝維修，可精確控制溫度。



蒸氣加熱系統模組

- 工作流量：1~100 m³/hr
- 溫度設定範圍：30~150°C
- 溫度控制：LCD顯示，PID控制
- 控制精度：±1°C
- 適用產業：溫泉、供熱系統、飯店、泳池...
- 方便安裝維修，可精確控制溫度。



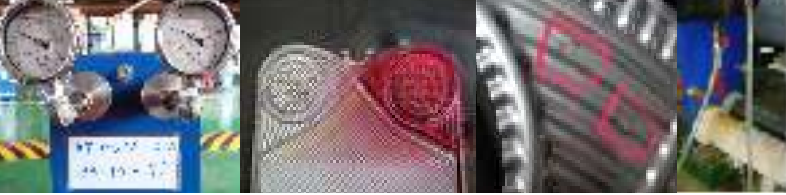
冷卻系統模組(含過濾器)

- 工作流量：1~100 m³/HR
- 溫度設定範圍：10~160°C
- 溫度控制：LCD顯示，PID控制
- 作動溫度：±1°C
- 適用產業：溫泉、供熱系統、飯店、泳池...
- 方便安裝維修，可精確控制溫度。



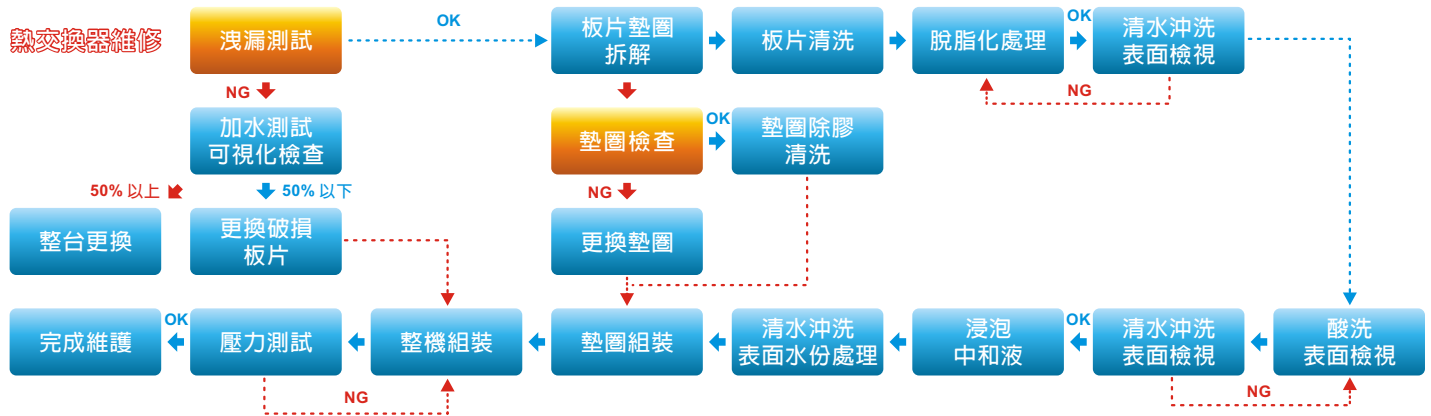
電鍍液冷卻模組(1級鈦板)

- 工作流量：1~576 m³/HR
- 溫度設定範圍：3~65°C
- 溫度控制：LCD顯示，PID控制
- 作動溫度：±0.5°C
- 適用產業：中央空調、製程控溫...
- 方便安裝維修，可精確控制溫度。



完善維修保養服務與備品採購

Complete Maintenance Service and Spare Parts



高力完善的維修服務

高力組合型板式熱交換器為具有合理設計和高品質的產品，可大幅度降低維修保養成本。

根據使用狀況的不同，密封墊圈會經歷一個疲勞老化的過程，這是正常的現象。在正常使用下，可以通過多次夾緊板片組合方式，使得組合型板式熱交換器達到應有的熱交換效果及密封性，但不可低於最小的A值，在一定的使用時間後，可以更換密封墊圈，以達到最佳的密封性，確保熱交換效果。

一般的維護保養工作由專業技術人員進行，如有需求，請與高力的業務部門聯絡，我們將給予您適當的建議與解決方案。

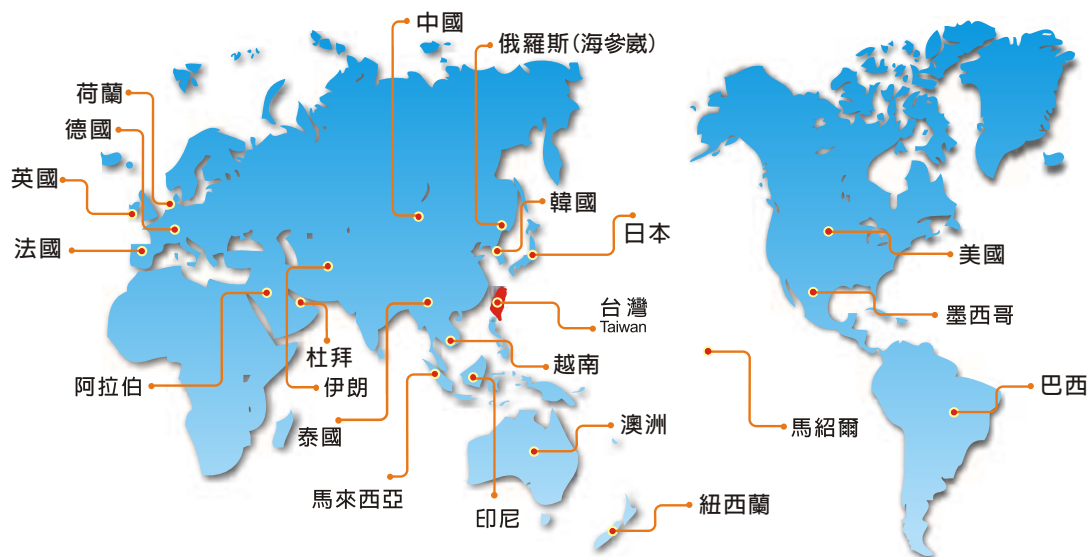
服務內容：

清洗：沖洗／現場機械清洗／化學方法清洗（浸泡池）、高力公司可按客戶要求提供清洗工具（包括清洗用化學物質）、供應帶密封墊片的新板片（板片經過微裂紋檢驗）。

供應備件：整台設備完整檢驗、持續性能改進、根據要求增加或減少板片/調整板片結構。



銷售客戶分佈圖



板式熱交換器設計所需參數

為了能為您提供更加合適的熱交換器，請提供冷熱側流體進出口溫度、流量以及熱交換量等七項數據的五項（各側流體至少二項），並請提供允許的壓力損失。涉及到特殊流體時，請給予流體的物理特性。如果您提供的數據不夠充份或詳細，我們就無法為您選擇最佳性價比的產品。

KAORI 高力 板式熱交換器設計問卷				
公司：	電話：		日期：	
承辦人：	傳真：		案名：	
數量：	E-mail：			
	熱側		冷側	
流體				
熱量 kcal/hr				
流量 m ³ /hr				
溫度 °C	In	Out	In	Out
密度 kg/m ³				
比熱 kcal/kg°C				
熱傳導係數 kcal/m°C hr				
黏度 cp				
最大容許壓降 Bar				
設計壓力 Barg				
系統最高運轉壓力 Barg				
設計溫度 °C				
是否有鹵素離子(氯、氟離子等)？	濃度：是 <input type="checkbox"/> _____ ppm 否 <input type="checkbox"/>		濃度：是 <input type="checkbox"/> _____ ppm 否 <input type="checkbox"/>	
流體中是否含有其他特殊化性？	是 <input type="checkbox"/> 否 <input type="checkbox"/>		是 <input type="checkbox"/> 否 <input type="checkbox"/>	
指定特殊材質				

填妥後請回傳至03-453-5931，將立即有專人為您服務



www.kaori.com.tw

KAORI
高力熱處理工業股份有限公司
KAORI HEAT TREATMENT CO., LTD.

《業務部》
32062 桃園市中壢區吉林北路5-2號
No.5-2, Jilin N. Rd., Chung-Li District, Taoyuan City 320, Taiwan
TEL : (03)453-5021 FAX : (03)453-5931
[http : //www.kaori.com.tw](http://www.kaori.com.tw) e-mail : jim-tsai@kaori.com.tw

《生產維修部》
82059 高雄市本洲工業區本工二路3號
No. 3 Ben-Kung 2nd Rd. Ben-Chou Industrial District. Kao Hsiung Taiwan,
TEL : (07)622-6290 FAX : (07)622-4222

創新、品質、責任、榮譽
Innovation · Quality · Responsibility · Honor