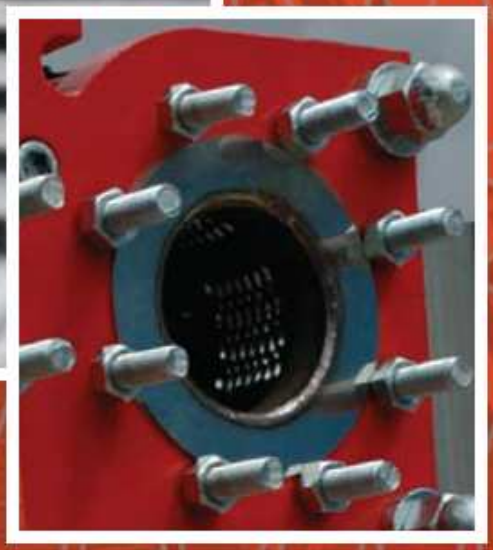
Tanpera®

Creates changes...



ORW.. SERIES
PLATED HEAT EXCHANGERS

ORW..Series

Plated Heat Exchangers

QUALITY

TECHNOLOGY

SERVICE

In the result of R&D studies about cost and efficiency, many heat exchangers have been developed as an alternative to conventional piped type head exchangers.

Plated type head exchangers have gained a wide application area among them and ended the usage of piped types. In early times, plated heat exchangers which were generally used in food industry and milk pasteurization are, widely used in various applications in the present.

TANPERA Plated Heat Exchangers provide the best technology, efficiency and usage efficiency in a wide range of application areas such as special construction Technologies, automotive industry and general industrial usages, food processing phases, special applications in chemical and pharmatecual industry.

The extensive plate program of TANPERA Plated Heat Exchangers which can provide the best solution for all kinds of tasks, distinguishes with its safe design and visible quality in its structure. This quality is proved with long service life, economical and problem free operation, low repair and maintenance costs.

With TANPERA quality and assurance, besides the conventional sealed type heat exchangers, plated heat— exchangers which are developed for special purposes and which have a specialized design.

TANPERA Plated Heat Exchangers are provided to our customers together with technical service and spare part guaranty as well as fast and safe before-sales and after-sales service guarantee.

WHERE

WE ARE...

ORW..Series

Plated Heat Exchangers

Independent and Mass Housing

Premises and Social facilities

Health, Education and Sports facilities

Culture-Art Structures

Tourism and Rest Areas

Offices, business offices and business malls

Administrative buildings and facilities

Metal production and machining facilities

Chemical and pharmatecuals facilities and Petro-chemistry facilities

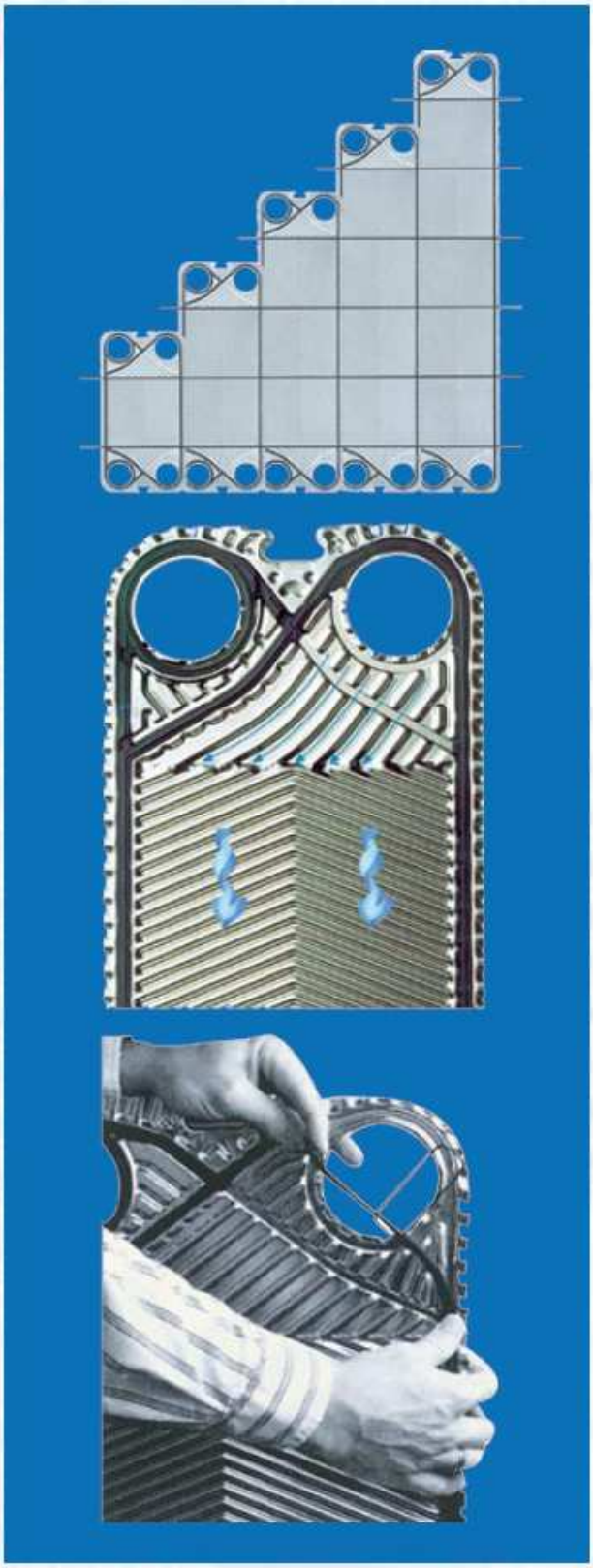
Paper and Plastics Production Facilities

Food and Milk Production Facilities

ORW..Series

Plated Heat Exchangers

8 REASONS TO CHOOSE TANPERA HEAT EXCHANGERS



1- Ready for All Missions...!

There are plates in different length, channel depth and channel angle in our product range. Thus, heat exchanger can be designed to suit for different operating conditions and while transmitting the heat as required, it utilizes the pressure drop as well. This makes optimum pricing possible.

2- High Quality at Reasonable Prices...!

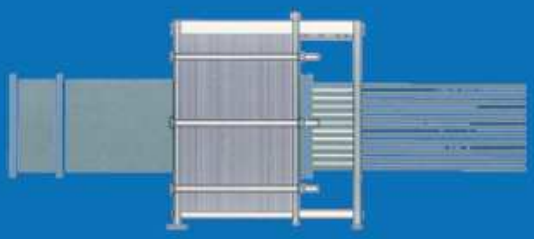
TANPERA plated head exchanger requires less heat transmission surface area when compared to piped heat exchanger. Because, high turbulent flow provided by special channel plate structure and thin heat transmission plates, the heat transmission in unit area is much more than piped heat exchanger. Thanks to this specification, although the plates are produced of expensive material which is corrosion resistive, they cost less than carbon steel piped heat exchangers.

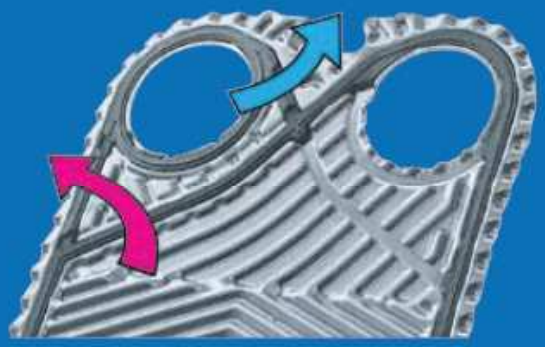
3- Long Life...!

The corrosion resistive materials used in their structure, high turbulent flow and the smoothness of plate surfaces ensure the minimization of contamination, calcification, corrosion and erosion. The deep grooves ensures the seal to be supported better, the top part's taper seal structure ensures compression force to reach the peak value on seal axis. These kinds of seals provide more sealing endurance and more resistance to strokes in respect to old type plan seals. All these, increases the life of seal and ensures problem free operation.

4- 1 C° temperature Difference? Very easy...!

With full reverse flow maintained by it, it becomes an ideal solution even in applications where liquid temperatures are very close.





5- Small- Light but Powerful...!

The compact structure as a result of the small area of heat transmission surface maintains its operation weight, mounting weight to be much less than piped heat exchangers which are designed for t he same purpose. Thus it can be placed in limited areas and also shipping and mounting expenses are less.

6- Perfect Reflexes...!

TANPERA plated heat exchangers provide users the opportunity of a better control on systems through the short response time obtained low liquid volume.

7- Intelligent Seal...!

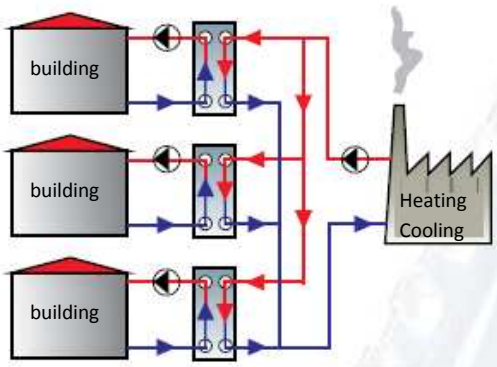
The risk of liquids mixing with each other due to worn seals is terminated through intelligent seal system. So that, the seal which limits a liquid, does not have the other liquid on the other side. The other side of the seal is open to the external environment by virtue of special channels. This facilitates the detection of worn parts of the seal from exterior because, in case of seal damage the leaked liquid does not mix the other liquid but leaks out of the device though channels.

8- Operator Friendly...!

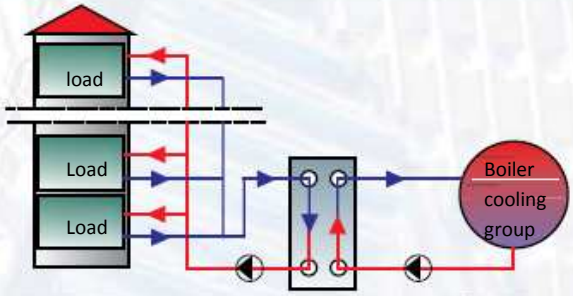
The device is easily dismantled and all transmission surfaces are easy to reach. This enables plate addition in case of cleaning a unit, replacing old or damaged plates and seals and in case of capacity increase. The seals are mounted with special lock systems without affixing to plates. Special plate holding system decreases the risk of wrong plate arrangement even for inexperienced personnel. In this system, the beveled end where the plates are hold. These specifications decrease the time required for maintenance and seal replacement tasks, decrease their cost and increase the service life of the product.

APPLICATION EXAMPLES:

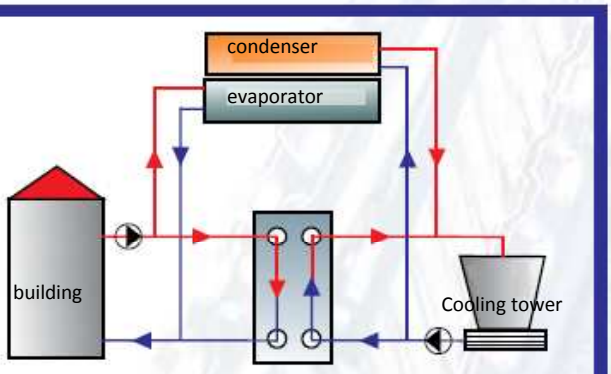
CONSTRUCTION TECHNOLOGY



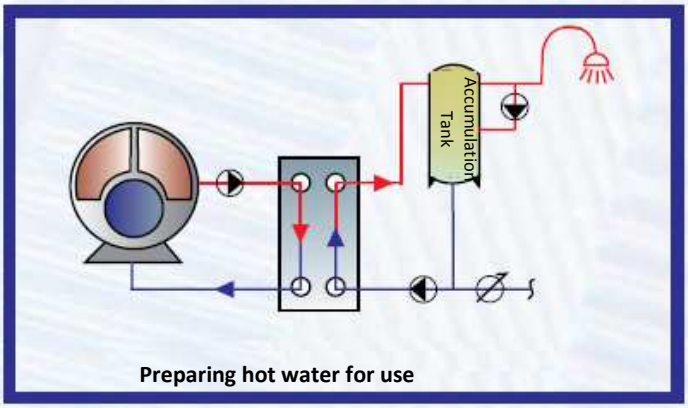
REGIONAL HEATING AND COOLING



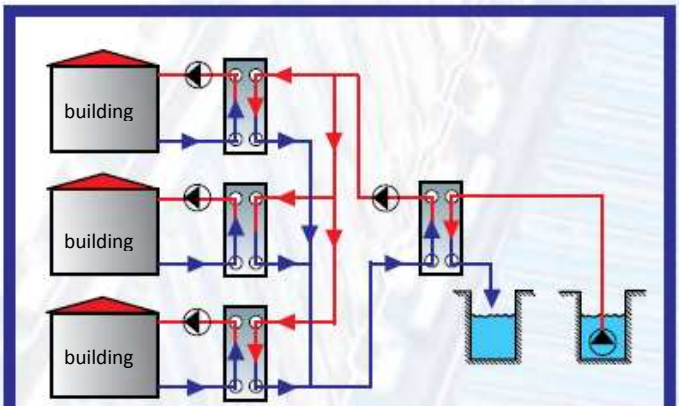
As a pressure breaker in cooling and heating systems of tall buildings



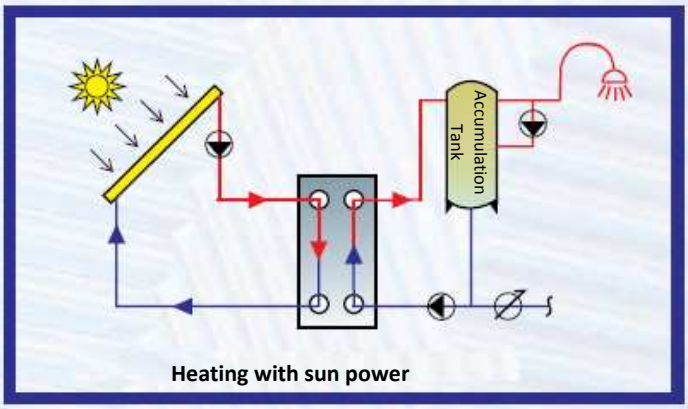
All applications where free cooling and cooling towers should be separated from the system



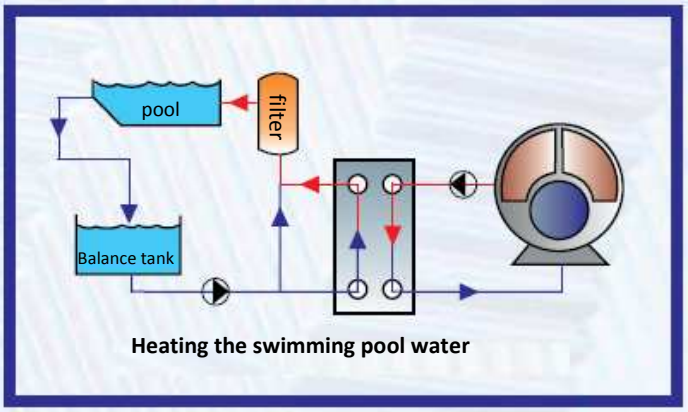
Preparing hot water for use



Geothermal heating



Heating with sun power



Heating the swimming pool water

Also,

Thermal storage,

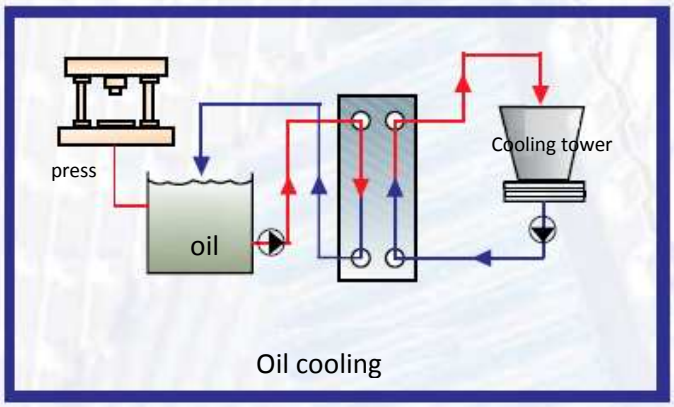
Glasshouse heating and

APPLICATION EXAMPLES

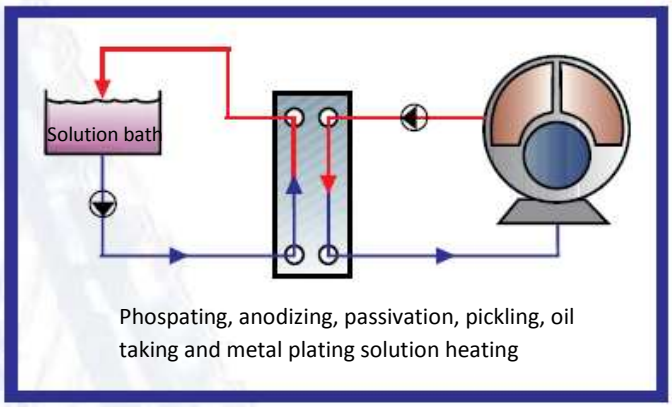
INDUSTRY, HEAT RECYCLE, COGENERATION, MARINERY

ORW..Series

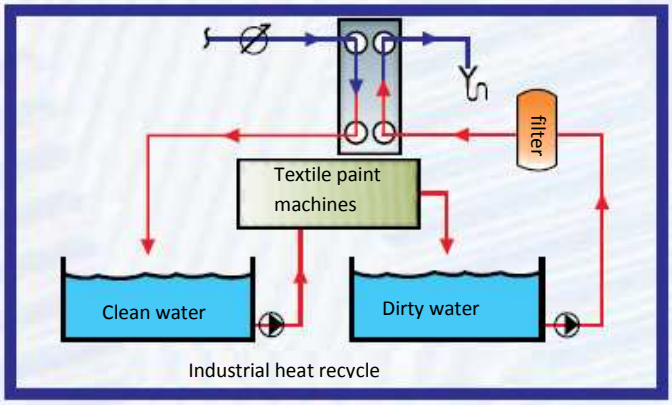
Plated Heat Exchangers



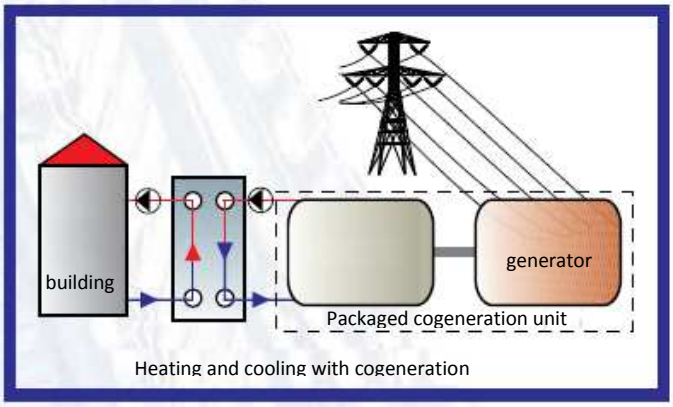
Oil cooling



Phospating, anodizing, passivation, pickling, oil taking and metal plating solution heating



Industrial heat recycle



Heating and cooling with cogeneration

Also,

Chemical production processes

Heating and cooling salted water various acid processes, Caustic soda processes, Steam condensation, salt purifying processes refine cooling, paint heating...

Food processing phases;

Bram cooling,

Food oil Cooling and heating,

Raw milk cooling,

pasteurization,

processing tomato paste...

Marine applications;

Fresh water production,

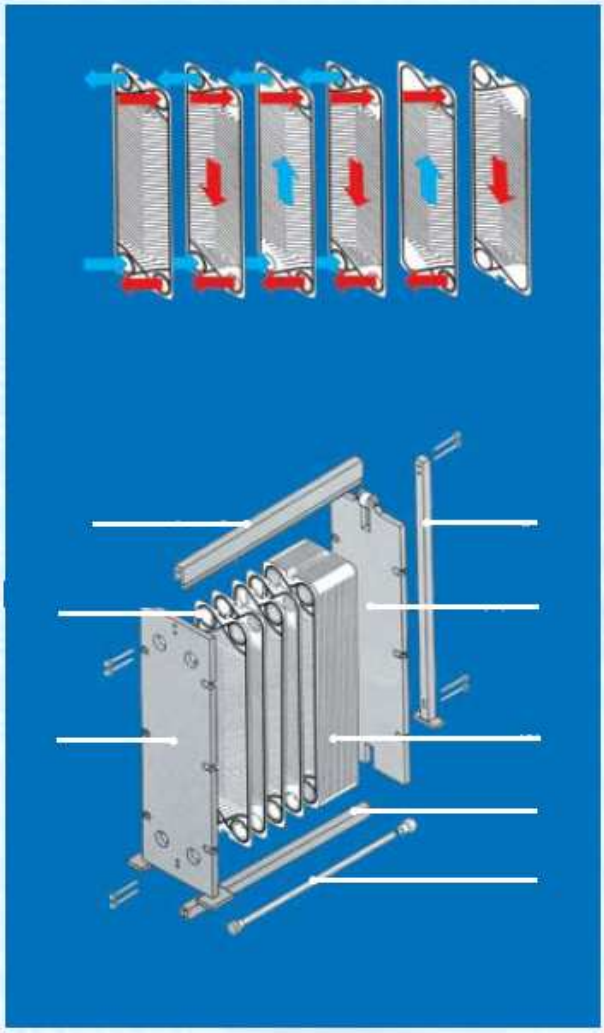
Motor cooling, lubricator grease cooling...

ITS SUTRUCTURE AND WORKING PRINCIPLES

A plated heat exchanger is composed of special pressure channel metal plates which have liquid inlets/outlets on them and which are aligned in a row to establish a heat transmission surface. Rubber seals between these plates compose the flow way in which the primary and secondary circuit liquids which transmits head from one to the other shall circulate and prevents the liquids to mix and leak. Thus, while liquids move in the heat exchanger through skipping one plate, heat transmission is composed through hot liquid to cold liquid over the plate between them. The package composed of heat transmission plates and the seal between them is clamped to a defined total thickness with tie-rods between two hold downs one of which them moving and the other is fixed as a result the sealing of the heat exchanger is maintained.

Heat transmission plates generally have a structure composed of fish boned shaped channels. This special structure forces the fluid to a high turbulent flow and maintains a more effective heat transmission. Because, in the turbulent flow, heat distributes more smoothly through mixation of the fluid in itself and the fluid film next to the plate surface gets thinner and increase the heat transmission coefficient. Also, this channel structure increases the durability of plates and the total heat transmission surface.

Based on the angle between the channels on the plates to each other, turbulent amount and heat transmission ability changes. If this angle is smaller, turbulent and heat transmission availability increases but the decrease in the pressure also increases. The increase in the angle also has the same effect. The design of **TANPERA** heat exchangers can be done with acute or wide angled plates, it can be with combination of these two types of plates. Conformity with mission requirements is maintained through this.



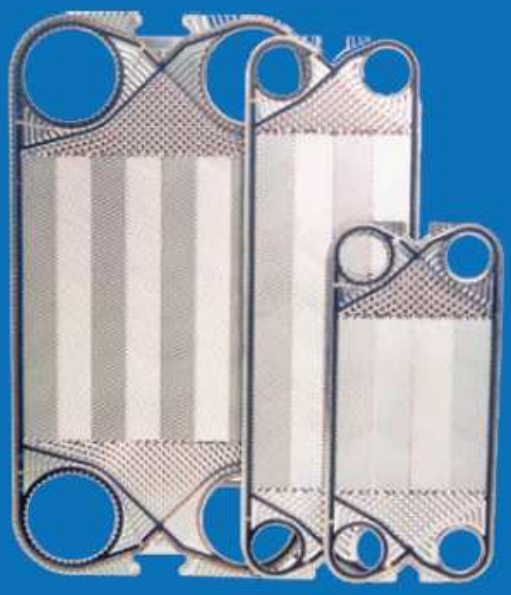
Plated heat exchangers are generally designed as opposite flowing. These kinds of heat exchangers are more effective than the heat exchangers where the liquids flow in the same direction, because more heat is transmitted per unit time and heat transmission surface. In an opposite flowing heat exchanger, it is possible to heat the cold liquid at a higher degree than the hot liquid; it is not possible in the other. Non-opposite flowing heat exchangers are used only in some special process applications. **TANPERA** plated heat exchangers are delivered in an opposite flowing structure as default.

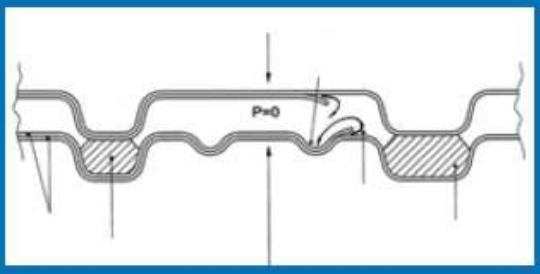
SPECIAL TYPE

PLATED HEAT EXCHANGERS

ORW..Series

Plated Heat Exchangers





We offer special type heat exchangers where classic gasket type exchangers are proved to be inconvenient or in case of aggressive and dirty fluids, high temperature and pressure values or in cases requiring extra hygiene and safety conditions or low cost preferences.

Semi-Welded Plate Heat Exchangers

Heat Transfer Semi-Welded plates feature plates that are welded using advanced laser welding techniques. The resulting plate pack has every other plate fully serviceable, while maintaining integrity of the welded plate pair.

This is especially suitable for critical fluids and gases, such as ammonia or caustic process chemicals where fluid loss is not acceptable.

Double-Walled Plate Heat Exchangers

The double wall plate is designed for use in applications when extra security is required, to ensure that the primary and secondary fluids in the exchanger cannot mix in the event of a plate failure.

A plate failure in a conventional Plate Heat Exchanger results in fluid crossing over from one side to the other. With a double wall plate, the single plate is replaced with two plates pressed together.

In the event of a crack in one of the plates, fluid will leak out between the double plates to atmosphere, resulting in a visible leak rather than contamination of the other fluid.

Fully Welded Plate Heat Exchangers

This type of plate heat exchanger design has no gaskets and provides very efficient heat transfer at low-pressure drop values to ensure that it functions at a very accurate temperature. The plate side flow and the tube side flow are arranged in cross flow configuration in one or multiple passes over the plates.

The fully welded plate heat exchanger ensures that different media are safely kept separate- even when higher pressures and temperatures are applied. This means that there is a wider range of possible applications than where the gasketed plate heat exchangers can be applied.

Determination of Capacity

Since heat exchangers are designed to conduct energy produced by a single source, it is proposed that primary energy source and other devices (boilers, cooling group, pumps etc.) should be designed to provide adequate energy; if not possible, the capacity of heat exchanger should be determined according to primary energy source.

Where large-scale capacities or critical missions are involved, multiple heat exchangers are parallel connected dividing the total capacity or projecting a certain reserve capacity, which ensures a better operation security.

Temperature Regimes

The most important rule to be taken into account here is hot fluid outlet temperature (T4) cannot be lower than cold fluid's inlet temperature (T3) and cold fluid cannot be heated to a temperature higher (T2) than the hot fluid inlet temperature (T1).

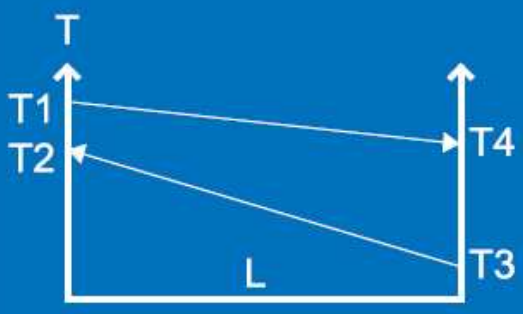
In other words, as seen in the diagram, temperature (T) curves cannot intersect each other at any time.

Pressure Drops

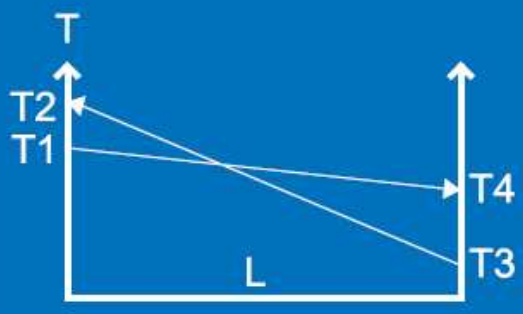
One of the key points in plate heat exchanger specification is the pressure drops projected for primary and secondary fluid circulations. Pressure drop calculations in the system are required for specification of primary and secondary fluid circulation pumps.

If pressure drop calculations provide low values, a bigger size device is required whereas high values require bigger pumps.

However, it should be taken into account that these pressure drop values highly depend on the application methods.



CORRECT



WRONG

General System Features

For a trouble-free application process, using appropriate equipments for heat conduct plates, gaskets, body and connection fittings has a key role. For that reason, while determining plate heat exchanger, technical specifications of the system such as fluid type, heat and pressure limits, viscosity, glycol mixture properties etc. should be identified.

Technical Data Required for Specification

Heat amount to be conducted ..... kcal / h

Primary Circuit / Secondary Circuit

Fluid type .....

Fluid flow ..... m^3 / h

Inlet temperature .....°C

Outlet temperature .....°C

Maximum allowable pressure drop .....mSS

Maximum operating pressure ..... bar

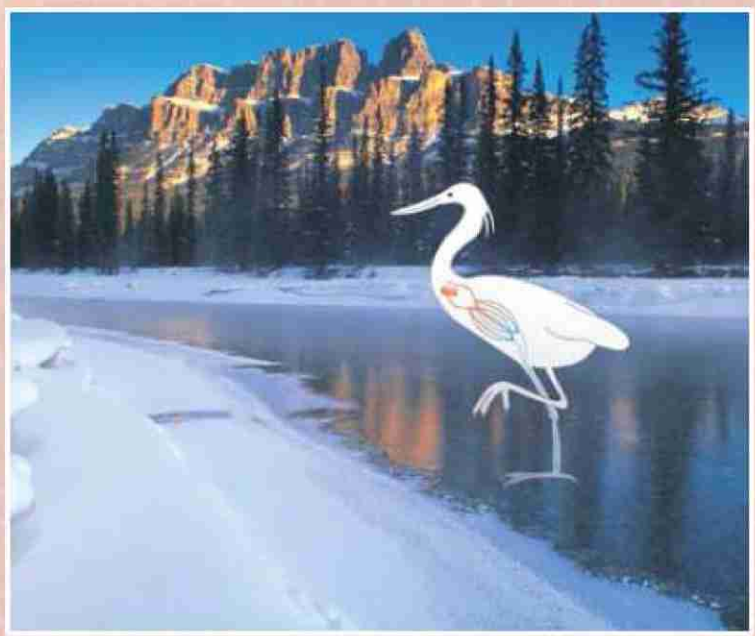
Maximum operating temperature.....°C

Our experienced sales engineers can specify the most appropriate and economic **TANPERA** heat exchanger for the given project through a special software and submit the print out containing all technical specifications to costumers for their evaluation.

You can consult our company any time for all questions and needs regarding project designing and determination of **TANPERA** plate heat exchangers.

OTHER PRODUCTS

- PLATED HEAT EXCHANGERS
- HOT WATER ACCUMULATİON TANKS
- ELECTRICAL WATER HEATER
- PACKET SYSTEM HOT WATER SYSTEM
- BOILERS



Great White Egret can stay in cold waters for a long time thanks to the heat exchange it makes between the blood pumped from its hearth at 40 C° and turns back from its feet at 1C°.

TANPERA ENDÜSTRİ ENERJİ ve İLERİ TEKNOLOJİ ÜRÜNLERİ SAN. ve TİC. LTD. ŞTİ.
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