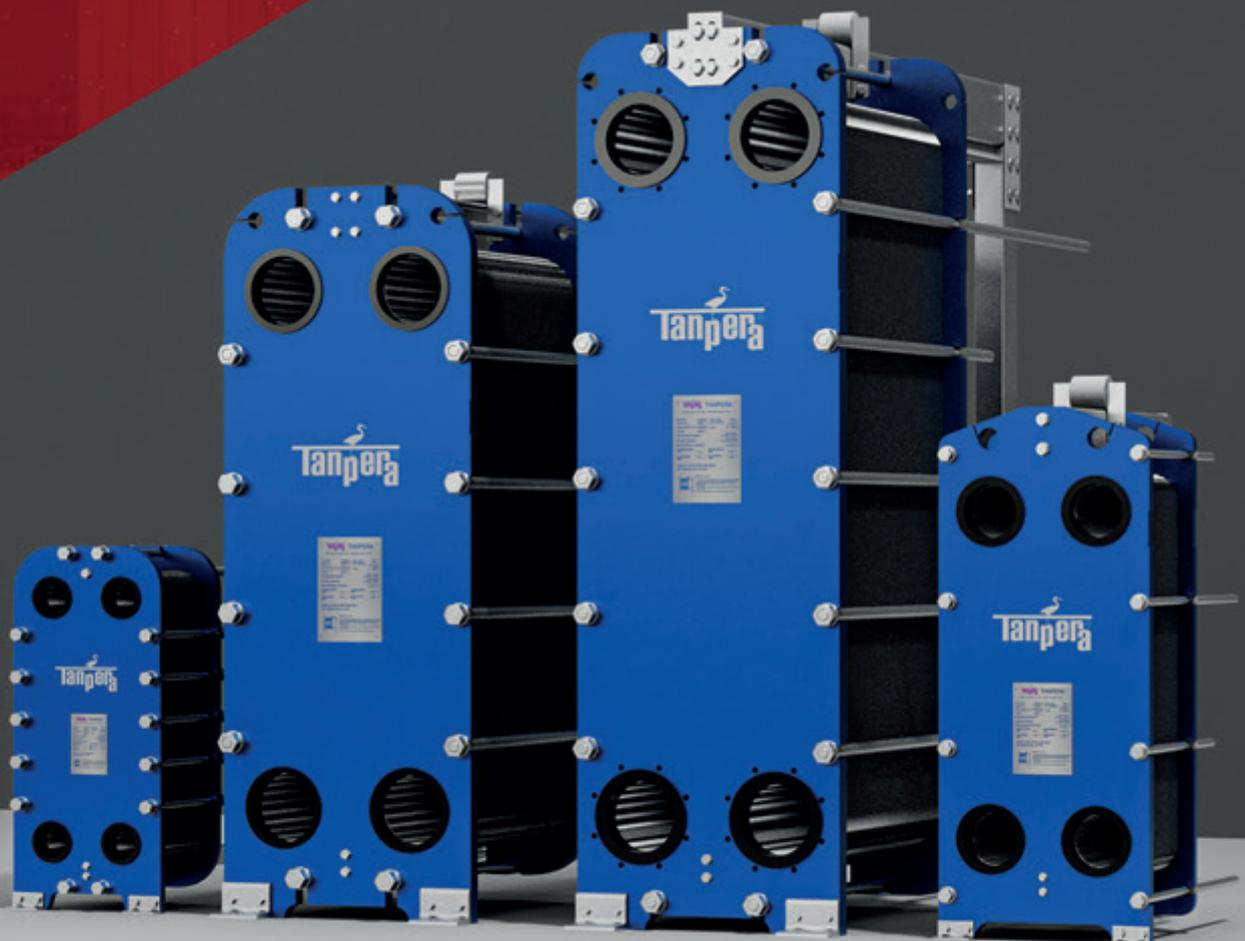




GASKETED PLATE HEAT EXCHANGER

SUSTAINABLE HEAT TRANSFER
WITH HIGH EFFICIENCY



What is a Gasketed Plate Heat Exchanger?

Gasketed Plate Heat Exchangers are efficient, compact, and energy-saving heat exchange systems that operate with high efficiency. They enable heat transfer between two different fluids without mixing, thanks to their plate structures. These systems have a wide range of applications, particularly in heating, cooling, and hot water preparation processes. Offered by Tanpera, Gasketed Plate Heat Exchangers are used in industrial plants, HVAC systems, food processing facilities, and power plants due to their advanced design and flexible usage options.

Operating Principle

The operation of Gasketed Plate Heat Exchangers is based on the circulation of two fluids at different temperatures between the surfaces of the plates. Both fluids move in opposite directions, ensuring maximum heat transfer. Seals between the plates prevent fluid mixing, ensuring leak-tightness. Channels on the plates enhance fluid turbulence, facilitating effective heat conduction.

This system achieves higher efficiency compared to the inlet temperatures through the mutual flow of the fluids. Particularly with highly turbulent flow, the fluid film near the plate surface thins, increasing the heat transfer coefficient and allowing for faster heat transfer. These features make Gasketed Plate Heat Exchangers a choice that combines high performance with low energy costs.

Advantages

- **High Heat Transfer Efficiency**
Ensures maximum heat transfer with advanced plate structure and high-turbulence fluid movement, enhancing energy efficiency and reducing operational costs.
- **High Pressure Resistance**
Robust construction withstands high-pressure fluids, ensuring safe operation, especially in industrial applications requiring high pressure.
- **Leak-tightness and Safety**
Seals prevent fluid mixing and leaks, ensuring safe and efficient operation, ideal for applications requiring strict leak prevention.
- **Corrosion Resistance**
Plates made from corrosion-resistant materials provide durability in aggressive chemical environments and seawater, ensuring long-term use.
- **Compact Design**
With their compact and space-saving design, Gasketed Plate Heat Exchangers provide high performance in limited spaces. This also reduces installation and operating costs.
- **Easy Cleaning and Maintenance**
Separable plate structure facilitates maintenance and cleaning, advantageous for systems requiring frequent cleaning.
- **Flexibility and Customization**
Can be customized with various capacities and material options to meet diverse industrial requirements, offering extensive application versatility.
- **Energy Efficiency**
Reduces energy consumption through high heat transfer efficiency, lowering operational costs and providing a sustainable solution.
- **Performance Stability**
Ensures high performance and efficiency even under prolonged operating conditions, guaranteeing continuous and reliable heat transfer.

SUPERIOR HEAT TRANSFER AT ANY TEMPERATURE GASKETED PLATE HEAT EXCHANGER



Areas of Application

Gasketed Plate Heat Exchangers find extensive use across various industrial and commercial applications:



Building Applications

Provides efficient heat transfer in central heating and cooling systems for residential buildings, offices, hospitals, schools, and hotels.



Power Plants

Used for heat recovery and efficiency improvement in thermal, geothermal, and other energy production systems.

HVAC Systems

Offers effective solutions in heating, ventilation, and air conditioning systems.



Petrochemical and Refineries

Provides reliable performance under high temperature and pressure conditions in refinery operations and petrochemical plants.



Food and Beverage Industry

Ensures temperature control in food processing, milk pasteurization, and beverage production processes.



Marine and Ship Applications

Used for engine cooling and climate control in ship applications.

Chemical and Pharmaceutical Industry

Ideal for heat control in chemical reactions and pharmaceutical production processes.



Metal and Plastic Production Facilities

Used in production lines requiring cooling and heat recovery.



Technical Specifications

Gasketed Plate Heat Exchangers are designed with specific technical features to ensure high-efficiency heat transfer

■ Plate Materials

Made from corrosion-resistant materials such as stainless steel (AISI 304, AISI 316), titanium, and nickel alloys, enhancing durability in various chemical environments.

■ Gasket Materials

Seals made from elastomer materials like NBR, EPDM, and Viton are selected based on fluid types and temperature conditions, ensuring leak-tightness and reliable system operation.

■ Pressure Resistance

Resistant to pressures up to 25 bar, suitable for high-pressure systems.

■ Temperature Range

Operates between -20°C to +180°C, providing versatility for various applications.

■ Compact Design

Compact structure allows easy installation in confined spaces, saving on installation and space costs.

■ Easy Installation and Maintenance

Modular design allows for easy plate and gasket replacement and capacity expansion when needed.

■ High Heat Transfer Efficiency

Special channelled plate design promotes turbulent fluid movement, maximizing heat transfer efficiency, and reducing energy consumption.

■ Flexible Capacity Options

Available in various plate sizes and numbers to meet diverse industrial application needs.



Components of Plate Heat Exchangers

Tanpera's plate heat exchangers consist of key components to ensure efficient operation:

Pressure Plates (Frame)

Made from durable carbon steel, these plates hold plates and gaskets together. They are powder-coated for corrosion resistance and feature inlet-outlet connections and technical information on the front plate, while the rear plate can be easily slid back for maintenance and cleaning.

Carry and Guide Bar

Support plates from above and below to keep them aligned and stable, aiding in the stability of the plate pack.

Heat Transfer Plates

These plates facilitate heat transfer with their channelled structure that generates high turbulence. Made from durable materials like stainless steel, titanium, or Hastelloy, they ensure homogeneous distribution of fluids.

Gaskets

Made from elastomeric materials like NBR, EPDM and viton these seals direct fluid between plates and ensure leak-tightness. Over time, maintenance of gaskets losing their flexibility should be performed and replaced when necessary.

First and End Plates

The head plate prevents the contact of the liquid with the front frame while the end plate is completely closed and prevents the fluids from leaking out of the system.

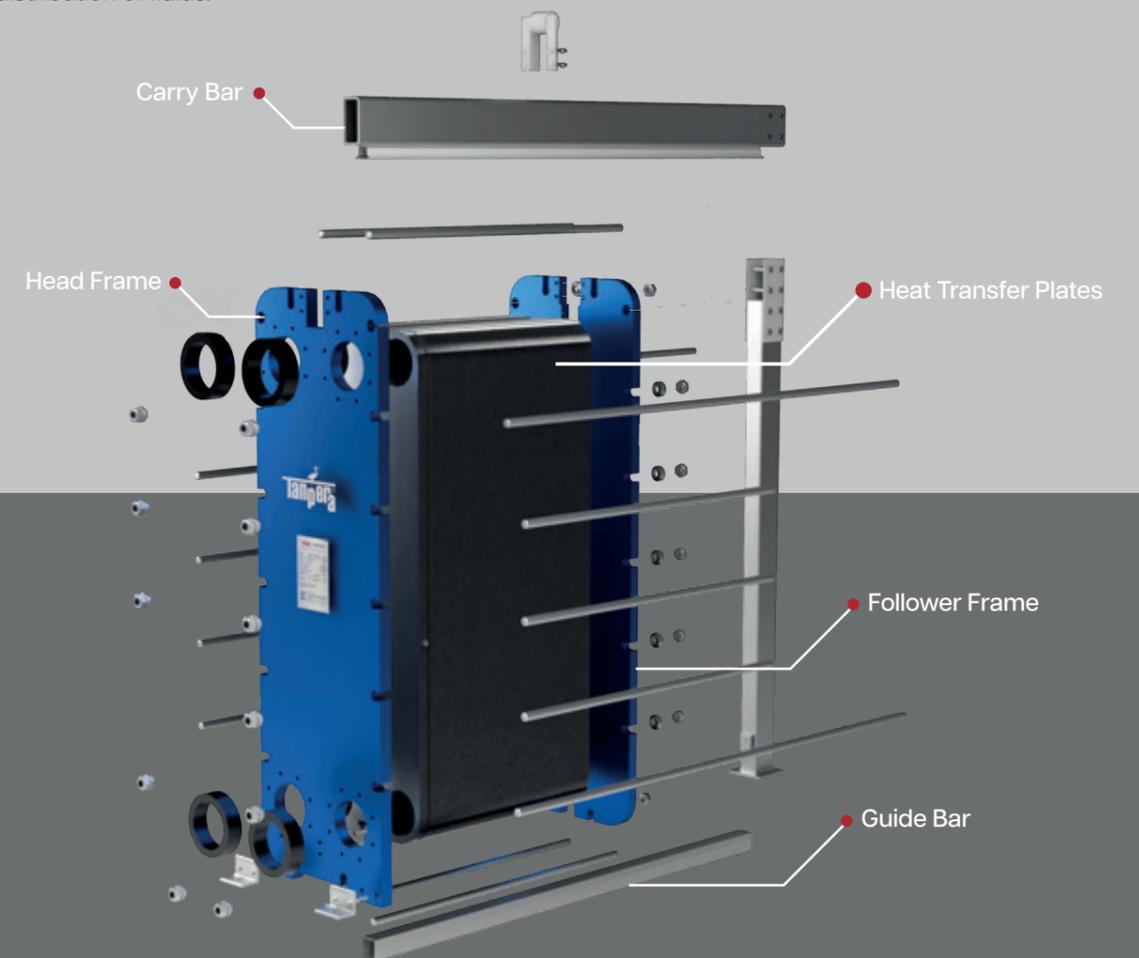
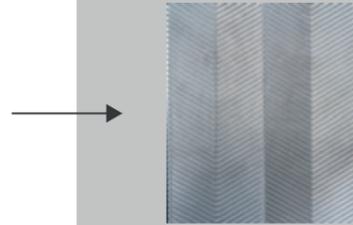


Plate Types

Tanpera Plate Heat Exchangers offer various plate types designed to meet specific application requirements, optimized to provide specific pressure drop and heat transfer performance:

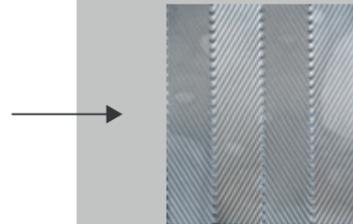
Wide Angle Plate (TL – H Teta)

Provides maximum heat transfer by creating high turbulence with its wide channels. Suitable for fluids with high temperature differences and has a relatively high pressure drop.



Narrow Angle Plate (TK – L Teta)

With narrower channels, it is preferred for applications requiring low pressure loss. Although heat transfer is slightly lower than the wide-angle plate, it is ideal for systems where pressure drop is critical.



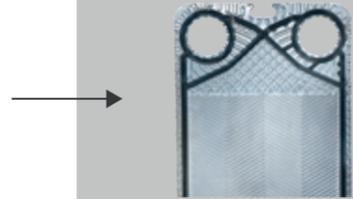
Combined Plate (M Teta)

Combines the characteristics of wide and narrow angle plates. This plate optimizes the balance between heat transfer and pressure drop and is used in systems requiring high performance.



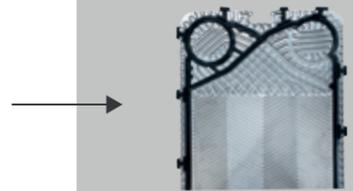
First Plate

It combines the properties of wide and narrow angle plates. This plate optimizes the balance between heat transfer and pressure loss and is used in systems requiring high performance.



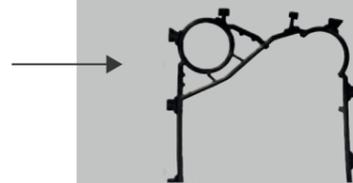
End Plate

It is the point where the fluid exits the heat exchanger. It exits between the plates having been treated and its temperature has changed.



Gasket

It is the component between the plates that prevents the mixing of fluids and provides sealing.



System Integration and Design

Integrating Gasketed Plate Heat Exchangers into a system requires proper design and component selection to ensure efficient operation of existing processes. Tanpera provides comprehensive technical support and consultancy services to maximize efficiency in each project.

Design Process

Heat Load Calculation

Determining the amount of heat to be transferred (kCal/h) based on the process's requirements is essential in selecting the heat exchanger. Parameters such as fluid flow rate, inlet, and outlet temperatures play a critical role in calculating the correct capacity.

Pressure Drop Calculation

Predicted pressure drops for primary and secondary circuits determine the selection of pumps used in the system. Choosing the right device size according to pressure drop requirements is crucial.

Material Selection

Plate Material

Plates should be made of stainless steel (AISI 304, AISI 316), titanium, or nickel alloy plates according to the chemical properties of the fluid. This ensures corrosion resistance and long-term use.

Gasket Material

Gaskets made of NBR, EPDM, Viton, etc., should be selected based on operating temperatures and chemical properties of the fluid. This ensures leak-tightness and reliable system operation.

System Integration

Pump Selection and Connection Arrangement

During the integration of plate heat exchangers into the system, proper pump selection and arrangement of connection points enhance overall system efficiency. Flow patterns in the system where the exchanger is located should be optimized for energy efficiency.

Modular Structure and Capacity Expansion

The modular structure of plate heat exchangers allows for easy integration into the system. Plate additions can be made for capacity expansion when required.

GASKETED



PLATE HEAT EXCHANGER



By effective heat transfer between the blood coming from its heart at 40°C and the blood returning from its feet at 1°C, it can stay in cold water for a long time without freezing. Using these natural principles, we design our engineering marvel heat exchangers.

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