

If you have wasted, unutilized heat available, would like to reduce facility/heat exchanger size, want to achieve energy savings by increasing heat recovery, reduce maintenance, or reduce workload:

We will diagnose your issue and determine if a XP Plate will fit your needs.

Please use the following form and contact us.

Contact Info:					
		Hot Side		Cold Side	
Fluid Name					
Total Heat Exchanged	kW				
Fluid Flow Rate	t/h				
Operating Pressure	M PaG	Inlet	Outlet	Inlet	Outlet
Operating Temperature	°C	Inlet	Outlet	Inlet	Outlet
Gas-to-Liquid Ratio	%	Inlet	Outlet	Inlet	Outlet
Allowed Pressure Drop	k Pa				
Max / Test Pressure	M PaG				
Design Temperature	°C				
Nozzle Size		In	Out	In	Out

High Temperature Thermal Energy Case Study (Example Calculation)

(e.g. Water)			(e.g. Air)		
Flow Rate	36	m ³ /h	48,000	Nm ³ /h	
	600	L/min	800	Nm ³ /min	
	10	L/sec	619	kg/min	
	10	kg/s	10	kg/s	
Temperature Difference	20	deg-C	60	deg-C	
	30	deg-C	70	deg-C	
	10	deg-C	10	deg-C	
Specific Heat	4.2	kJ/kgK	1.0	kJ/kgK	
Amount of Heat	420	kW	103	kW	
Cost of Fuel	7	JPY/kWh	7	JPY/kWh	
(e.g. Heavy oil)			(e.g. 13A)		
Operating Hours	7	hr/day	24	hr/day	
	250	day/yr	350	day/yr	
	1,750	hr/yr	8,400	hr/yr	
Fuel Savings	5,145,000	JPY/yr	6,063,418	JPY/yr	



Xenesys Inc., the worldwide leader in the OTEC power generation field, presents a totally new heat exchanger structure combining the robustness of tube-type with high-performance and compactness of plate-type

All-welded Plate Heat Exchanger XP Plate



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All welded Plate Type Heat Exchanger "XP Plate"



"XP Plate" are all welded plate type heat exchangers that do not need gaskets and were uniquely developed in aiming for the realization of the ultimate renewable energy, Ocean Thermal Energy Conversion.

Since they have an all welded structure, it is possible to use them under difficult operating conditions such as high temperature and pressure and with fluids that are not compatible with gaskets. The new concept of these heat exchangers is to combine the features of both tube-type, which is tough and used for wide range of applications, and plate-type, which is small and compact yet high performance.

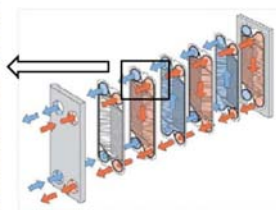
By adopting our uniquely developed box structure®, the inlet and outlet of the fluid can be set to the optimum size according to the volume of the fluid at a desired position, realizing a simple and ideal streamline completely different from conventional products. This makes it possible to use fluids that have been difficult to use, such as fluids which clog due to contained solids, highly viscous fluids, and gas bodies that have large volumes and high flow rates.

Flow structure completely different from conventional products

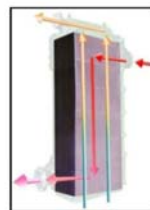
We resolved a problem in the conventional plate-type heat exchangers where narrow parts caused clogging and pressure loss. By lining rectangle-shaped long heat transfer plates vertically, we can achieve a simple counter flow and the best heat-transfer efficiency. Also, the occurrence and progression of scale contamination will be inhibited due to no flow reversal. Since the position and size of the nozzle can be set freely, unnecessary pressure loss at the fluid inlet / outlet can be minimized.



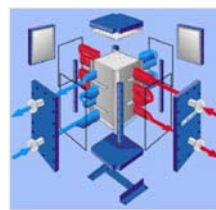
Inflow Narrowing



Gasket-type Flow



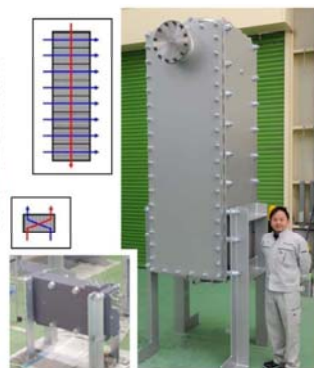
1 Pass Flow (XP Plate)



Multi-pass Flow (Continuous Crossflow)

High-performance design by excellent manufacturing technology

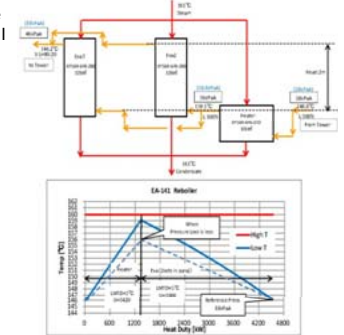
We have put into practical use the manufacturing technology for large heat transfer plates with the world's only Continuous Press Machine® using small molds. We manufacture a very wide range of heat exchangers with a size of 5 to 450 m² from 2000 ton small press and mold. Combining the length and the number of the heat transfer plates enables us to design flow velocity of fluid for determining heat transfer performance, and by combining with the degree of freedom of the nozzle layout, various kinds of heat exchangers having various flow patterns can be provided.



Merit

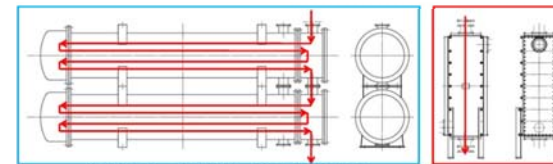
Energy-Saving

Newly developed for evaporation and condensation for small temperature difference power generation, high performance and compact XP units can be installed in a small space around distillation towers. It works with the thermosiphon method for its simple one-path flow and low pressure loss. We can provide high level design from extensive experiment data accumulated over many years.

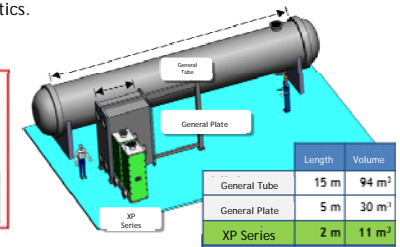


Space Saving and Cost Savings

Significant space saving can be achieved by utilizing XPs compact characteristics. Downsizing reduces not only equipment initial cost but installation cost.



8 Pass 42m tube v. 1 pass 2.4m plate



Usable Conditions / Material / Law and Regulations

Operating Temperature	: up to 400°C	Plate Materials	: Titanium, SUS316L, SUS304L	Laws and Regulations	: Industrial Safety and Health Act, High Pressure Gas Safety Act, Electricity Business Act, etc.
Maximum Operating Pressure	: 4MPaG				
Maximum Attainment Pressure	: 30~40MPaG				

Please contact us for other uses within conditions stated below.

Maintenance Cost Savings

Compared with tube-type, the "wall shear force" of the plate-type is larger, which reduces contamination. "Wall shear force" is comparable to a "self-cleaning action." The force the heat-transfer surface receives from the passing fluid prevents the plate from becoming contaminated.

XP plate can be designed for a higher flow rate than other products under allowable pressure loss conditions. XP plate's structure is optimum for this innovation in technology; increasing the speed of the fluid to increase the "wall shear force" allows the "self-cleaning action" and will extend maintenance intervals to the maximum.

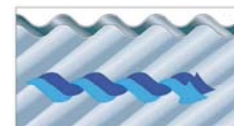


Image of turbulent flow in the heat transfer plate molded into a corrugated shape that produces self-cleaning action

