VARALKA

QUALITY • VALUE • COMPETENCE

# Heat Transfer Solutions Redefined

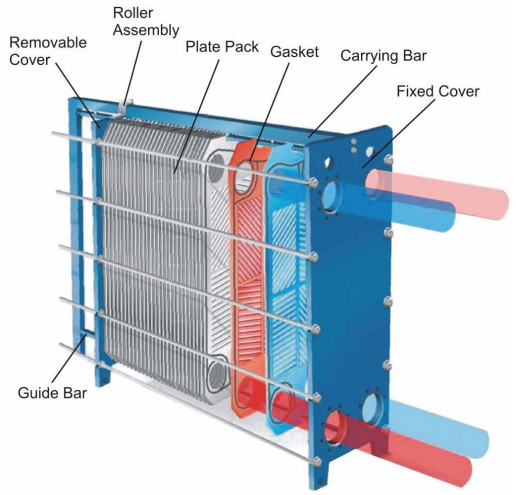

20 YEARS OF EXCELLENCE

ISO 9001-2015 COMPANY

www.varalka.com

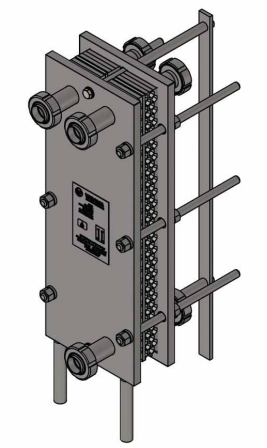
# Plate Heat Exchanger Construction

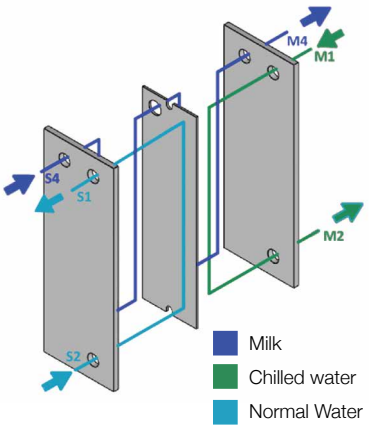
Plate heat exchanger is a versatile heat transfer device and a preferred choice for a wide variety of applications.The plate heat exchangers are constructed on a modular concept. A plate heat exchanger consists of a number of corrugated heat transfer plates held between a fixed plate and a movable pressure plate. Each heat transfer plate has a gasket which makes separate channel for different fluids and also functions as a sealing media.The corrugated plates assembled together create turbulence in the fluids as they flow through the unit. The gaskets makes separate channel for the 2 media so that cold medium has hot medium on both sides and vice versa. The result of this concept is an effective heat transfer coefficient many times higher than shell and tube heat exchangers.



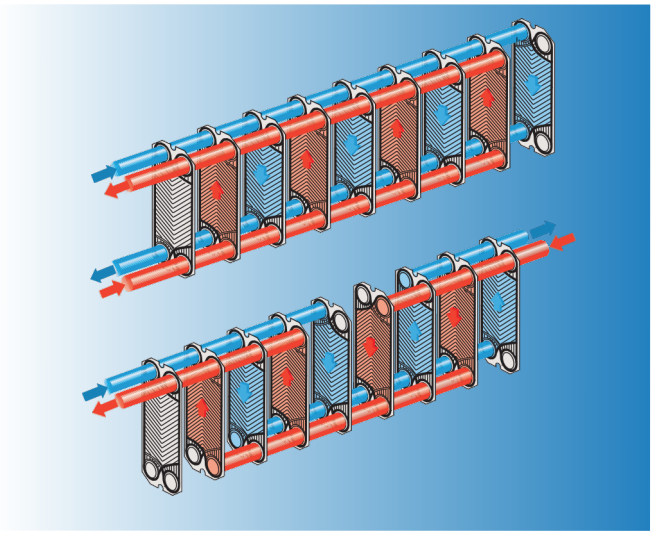

# Multi Pass and MultiStage Plate Heat Exchangers

A particular specialty of plates heat exchangers is multipass units as well as heat exchangers constructed to heat and cool more than 2 fluids. These units offer advantages of plates heat exchangersas minimal cost.






Multistage units handle more than 2 liquids and combine 2 or more PHEs in one assembly, thereby saving cost and space. Multi stage PHEs are commonly used in Dairy and Beverage industry like for ice cream chillers, juice and milk pasteurisers etc. Most of these units are a combination of multipass and multistage PHEs.



Multi pass units are preferred for long temperature drop and/or close approach temperature

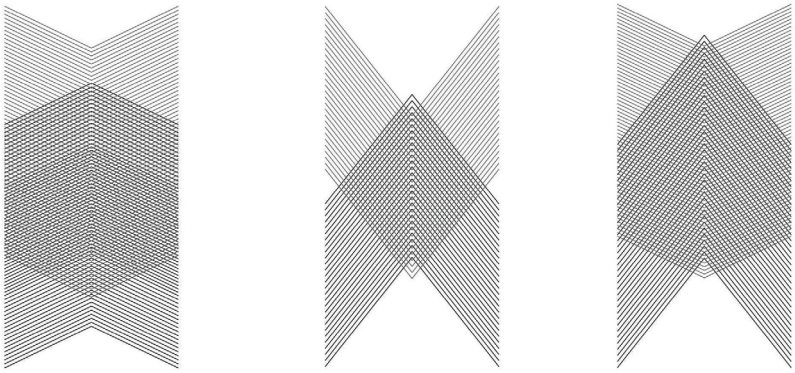
# Why Choose Varalka?

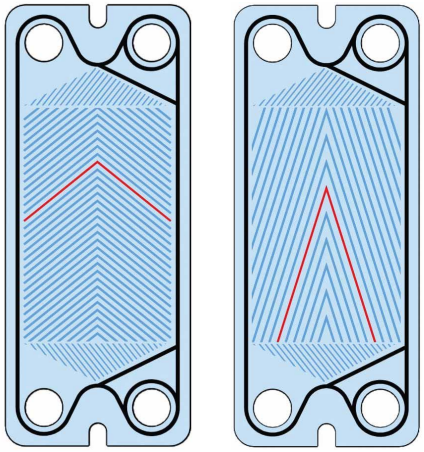
- Competitive Pricing
- Quick deliveries for PHEs upto DN150 / 6” connections.
- Prompt Pre and After Sales Support
- ISO 9001:2015 quality management system
- Traceability of main components - heat transfer plates, frames
- High Tensile Fasteners
- CE, PED, ASME Compliant Plate Heat Exchangers on request
- Third party inspections accepted

# Special Features

## Conventional Heat Transfer Plates

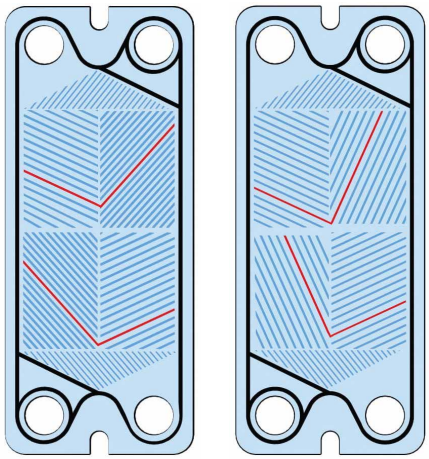
Conventional Herringbone pattern is the most popular corrugation pattern in the industry. These plates are characterised by symmetrical corrugation and are available in high (obtuse angle) and low theta (acute angle) versions. Depending on the flow and temperature profile, a PHE can be with all high theta plates or all low theta plates or a mix of low and high theta plates. So we can arrange these plates in 3 different ways.





## V-Flex Plates

These plates are also in herringbone pattern and available in high and low theta versions. But these plates have a critical difference - the corrugation is not symmetrical but asymmetrical. This type of corrugation allows us to arrange heat transfer plates in six channel combinations. Consequently, we have a better - chance of adjusting the heat transfer duty in a lower heat transfer area and hence offer a more economical solution.

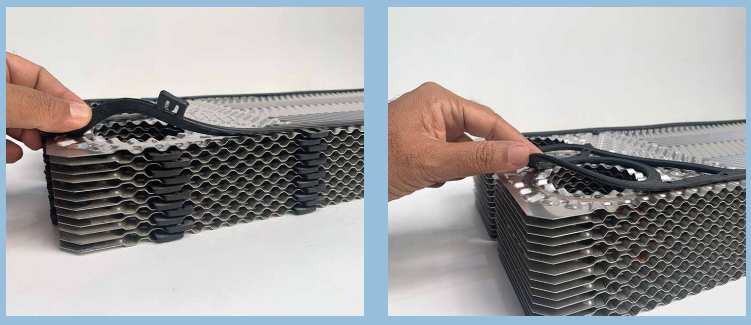


## Variety of Corrugation Depths

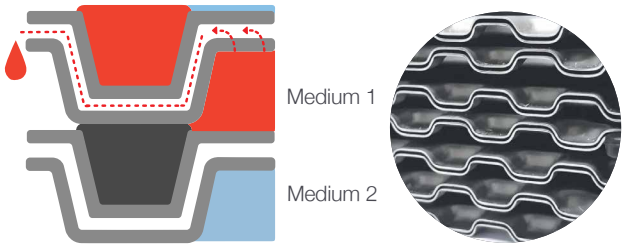
Different types of process media require different type of corrugation depths. Liquids with high viscosity, sensitivity to shearing and having solid partcicles require plates with thermodynamically gentle pattern (called short thermal lenth plates). At the other end are liquids which are homogenous and low viscosity (water, oils) where we can use shallow corrugation and take full advantage of high heat transfer coefficients generated by these plates.

## Glued and Glue Free Gaskets

Correct selection of gasket type is critical to reduce the maintenance cost of your plate heat exchanger. The choice will depend on the process media, whether it is a clean or fouling duty, hygienic or industrial application. As a general rule, hygienic application require glue free gaskets, large industrial units should be with glued gaskets. Most of our PHEs have both types of gaskets..



# VD – Double Wall Plates

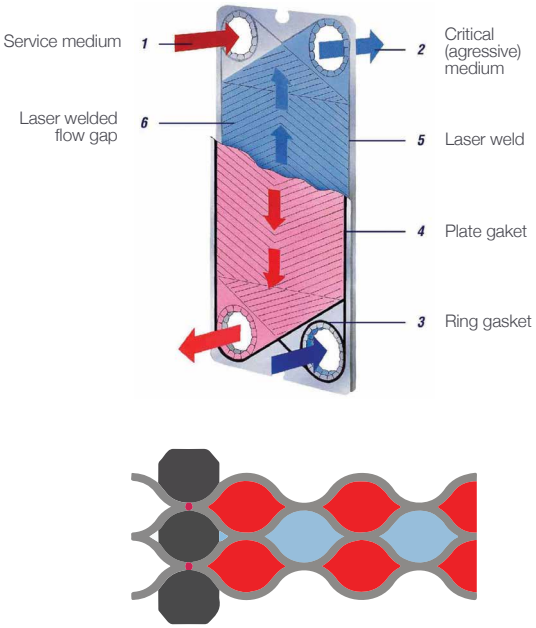



Even if medium 1should leak, it cannot mix with medium 1

The double plates offer maximum safety against intermixing of the two fluids in the plate type heat exchanger. The double plates are constructed by laser welding 2 identical plates around the ports.

The thin air gap between the plates ensures that if any one of the two fluids would leak through the first plate it would leak to atmosphere and would be visible outside.

Double Wall PHEs are a compact solution to conventionally used double wall shell and tubes and double coils.




# VLW Semi Welded Plates

Semi-welded units are useful for special process conditions or media for which suitable elastomers are not available to act as a sealant between the plates. In the case of ammonia refrigeration, the reduced hold-up volume results in significant additional savings.

Modules are made by laser welding two heat exchanger plates to make a gas tight module. Aggressive medium (medium not compatible with available gasket material) flows through this hermetically sealed channel. Only 2 ring gaskets sandwiched and enclosed between the two welded modules are in contact with the aggressive medium.

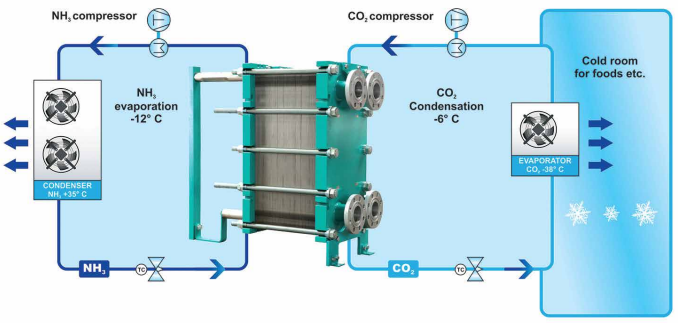
The other flow channel is sealed by gaskets suitable to the application and medium. The gaskets are normally glue-less, though glued gaskets can also be offered.

VARALKA offers widest range of semi welded modules in the industry. Additionally all modules are available in high and short thermal lengths.

# Widest Range of Semi Welded PHEs

| Model | VLW15 | VLW16 | VLW31 | VLW40 | VLW41 | VLW80 | VLW81 | VLW100 | VLW101 |
|---|---|---|---|---|---|---|---|---|---|
| Connection | DN25/40 | DN25/40 | DN80 | DN100 | DN100 | DN200 | DN200 | DN250 | DN250 |
| Width (mm) | 244 | 244 | 369 | 437 | 437 | 586 | 774 | 774 | 774 |
| Length (mm) | 721 | 981 | 1383 | 1014 | 1495 | 1495 | 2034 | 2034 | 2578 |

Varalka semi welded PHEs are also available with PTFE gaskets as well as FKM with PTFE gaskets. In applications where different solvents like Toluene, THF, Hexane, Xylene, Methanol are used in same process, PTFE Ring gaskets are employed on ports and solvents passes thru the welded channel.




**Ammonia / $CO_2$ Cascade System**

# Technical Data

## Plate Material

VARALKA heat transfer plates and laser welded modules are, by default, produced in SS316L (1.4404) as this material is generally more corrosion-resistant and more resistant to chloride damage than SS304 (1.4301).

For some models, we also maintain an inventory of titanium heat transfer plates.

### Other materials available are:

- SS304 (1.4301) is an economical solution for compatible fluids
- SMo 254 (1.4547) for higher chloride and acid resistance than SS316L (1.4404)
- Alloy C-276 (2.4819) is highly resistant against acids and chlorides, e.g. for concentrated sulphuric acid
- Nickel 200/201 (2.4066/204068) is resistant to reducing chemicals and caustic alkali
- Titanium (3.7025, ASTM B265 Gr 1) suitable for sea water and water with chlorides
- Titanium-Palladium (3.7225, ASTM B265 Gr 11) suitable for chlorides at higher temperatures

## Product Range

### Gasketed PHEs

- More than 40 models
- Connections DN15 to DN550
- Liquid Flow Rates upto 6000 m3/hour
- Working Pressure Full vacuum / 25 bar
- Working Temperature upto 180 ˚C
- ASME / CE / PED versions available on demand

### Semi Welded PHEs

- 9 models
- Connections DN25 to DN250
- Condensers and Evaporators upto 1000 TR
- Liquid Flow Rates upto 1000 m3/hour
- Working Pressure Full vacuum / 63 bar
- Working Temperature -40 ˚C upto 180 ˚C
- ASME / CE / PED versions available on demand

## Gasket Material

Gaskets prevent mixing of the media and external leaks, hence are the most critical component of a plate heat exchanger. Correct material composition, curing and fitment enhances the life of the heat transfer plates and avoids frequent opening of heat exchanger for maintenance. Gaskets are either glued type or non-glued (clipped on) type. We use following gasket materials depending on the factors like fluids, temperature and pressure:

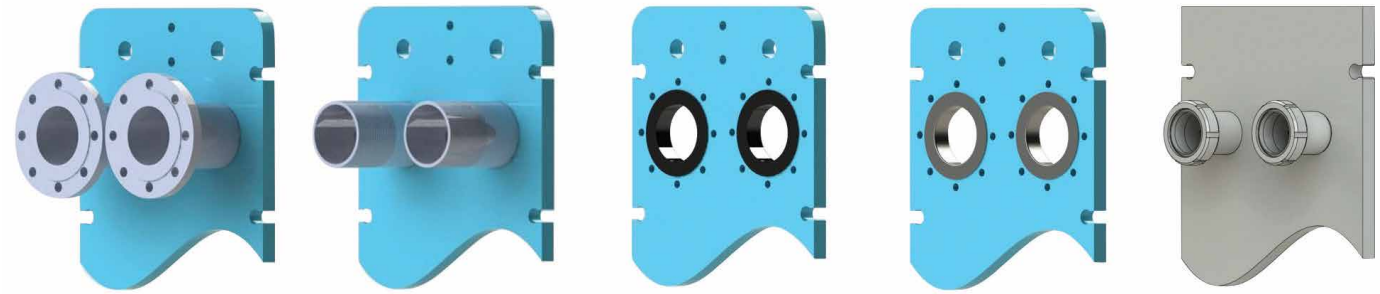
- NBR (Nitrile-Butadiene Rubber): Most common gasket. Suitable for water and oil / hydrocarbons
- HNBR (Hydrogenated Nitrile-Butadiene Rubber): Commonly used for vegetable oils at high temperature.
- EPDM (Ethylene-Propylene Rubber): Used for chemcal and steam applications. Not resistant to oil & grease. Available in FDA version for hygienic applications.
- FKM (Fluoro Elastomer, Viton): Resistant to chemicals and organic solvents as well as sulphuric acid and vegetable oils at high temperatures.
- CR (Chloroprene Rubber, Neoprene): Used for ammonia condensers and evaporators
- PTFE Encapsulated Gasket: Practically inert to all chemicals. Problem solver.

## Special Accessories

We can equip your heat exchanger with following accessories on request:

- Insulations
- Splash Guard / Drip Trays / Sheet Metal Cover
- Inline Strainers
- Dual PHEs with piping and changeover valves

## Connections

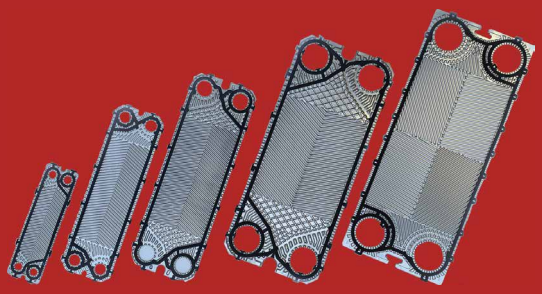


# VS Series For Hygienic Applications

VS plate heat exchangers are single/ multi-pass and/ or multi-stage units specially made for dairy, food and beverage applications. Several features are incorporated in these heat exchangers:

## Frames

Stainless steel-clad frames designed as per hygienic standards and ease of maintenance. As usual, these frames offer facility of addition or reduction of plates. The frames can be designed with intermediate frames dividing the plate heat exchanger into various sections where preheating, pasteurization andcooling can take place.



## Heat Transfer Plates

Plates are suitable for hygienic applications for example:

- Lesser number of contact points
- Optimum corrugation depth
- Easy and quick cleaning
- Long operating time
- Flow distributed flow over the entire plate

## Gasket

- High quality NBR or EPDM gaskets to match the application
- Fully protected gasket groove and robust mechanical fixing
- Clip on Gaskets for reduced downtime and easy maintenance
- Compatible with CIP processes

## Some applications are:

- CIP heater
- Hot water Generators
- Beverages - Cooling, heating and short-term
- Dairy - Milk Chillers and Pasteurisers, Ice-cream Mix Chillers
- Beer - Wort cooling, heating of wort and yeast

# References

Acid Cooling

Steriliser PHE at API Pharmaceutical Plant

Oil Cooler in a Rolling Mill

Gear Box Oil Cooling System

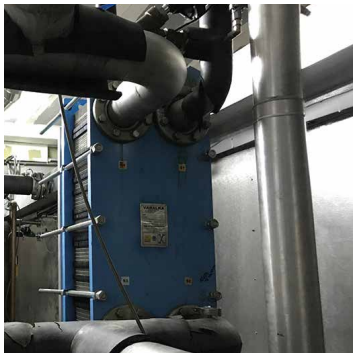
Oil Cooling in an Special Purpose Machine

Polyol Cooling in a Car Seat Facility

Formaldehyde Plant in a Wood Plywood Facility

Condensate Heat Recovery in an Alumina Refinery

Steam Condenser



Hot Water PHEs at Pharmaceutical Plant

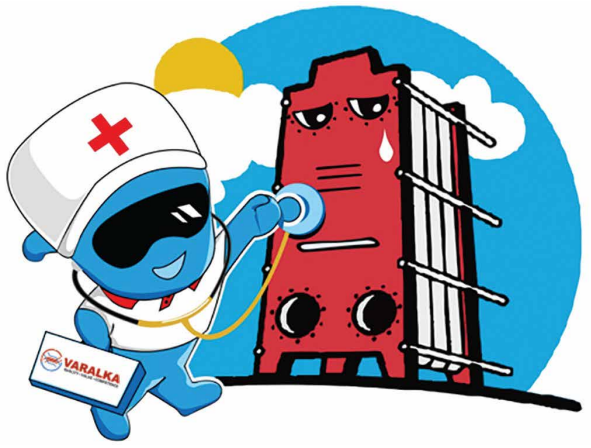
Instant Water Chiller

Brine Chiller (-40˚C) in an Ice Cream Plant

# After Sales Service and Spares

Varalka is dedicated to keeping your plate heat exchangers in good condition to deliver specified heat transfer for its lifetime. Planned maintenance can avoid costly breakdowns and loss of production. Hence, we also undertake annual maintenance contracts to keep your PHE in good condition, always. Our services include:

- Installation
- On-site service - troubleshooting, physical cleaning, leak detection, re-gasketing assembly
- Off Site refurbishment
- Spare Plates and Gaskets for all reputed brands like like Alfa Laval, Tranter, GEA Ecoflex / Kelvion and Danfoss / Sondex.




Our service specialist is available for servicing your plate heat exchanger, on-site or off-site. The central objective of our After Sales Service Division is to keep your equipment up and running. We offer service and spares for all makes of Plate Heat Exchangers.

# Taiwan SRP Heat Exchangers INC.

Varalka is backed by M/s SRP Heat Exchangers. SRP has facilities in Taiwan and United Kingdom, Sales and service support is available world-wide. SRP, started in the year 1992, has 6 plate presses upto 12,000 tonnes and manufactures plates of sizes DN15 to DN500. SRP is equipped with PED92/23/EC Category IV H1, Marine Certifications (Lloyd's, DNV, GL, CCS, Taiwan) and ASME U Stamp, in different facilities.

SRP is continuously developing new products and presently manufactures wide variety of gasketed and welded Plate Heat Exchangers.

# SRP A Global Organisation

SRP is Global organisation with its own offices and representative agents worldwide. Spares and Service support is available for Varalka PHEs globally through SRP network.


# thermowave GmbH

Thermowave, a German manufacturer of plate heat exchangers was set up in 1992 by Güntner Group to manufacture laser welded plate heat exchangers for refrigeration duties involving refrigerants like ammonia, CO2 and synthetic refrigerants. Laser welded modules are "Made in Germany" and are tested at an in-house test facility. This procedure is certified by TÜV.

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