Thermal Products Ltd

Plate Heat Exchangers

Water Heating & Heat Recovery

For the Building Services Industry

ISO 9001 BUREAU VERITAS Certification

Intro

GMS provide both gasketed and brazed heat exchanger options. Brazed plate heat exchangers work on the same principle as gasketed heat exchangers but are manufactured by brazing the plates together instead of using gaskets and bolts.. We are also able to package heat exchangers with various components such as storage vessels to suit each individual application. Plate heat exchangers are often used because of their high heat transfer rates relative to other forms of heat exchanger.

Gasketed Plate Heat Exchanger Specification

Gasketed plate heat exchangers offer a highly effective method of transferring heat from one fluid to another. They are made by compressing a number of gasketed, corrugated plates together in a frame, so that the gaskets give a good seal. The corrugations touch where they cross, support the plates, resisting high working pressures and enhancing heat transfer.

Plates

The heat transfer plates are pressed from thin material (typically 0.5mm) into a corrugated form with an indented groove for the gasket. Plates are available in a variety of materials including; Stainless steels (AISI 304 or AISI 316) (for most applications), Titanium (for sea-water or other high chloride applications), other materials available to order.

Gaskets

Gaskets are available in a variety of compounds:-

- Nitrile - for general applications (including oils)
- EPDM(S) - For water (including potable water)
- EPDM(P) - For higher temperature water and steam

Connections

Connections will generally be of the same material as the plates. However, in some applications carbon steel will be offered if technically suitable and more economical. For larger units with low fluid velocities connections made from the same material as the gaskets may be offered.

Connection velocities can be relatively high in plate heat exchangers and care should be taken when sizing pipework to the connections - you may need a pipe size greater than the connection size.

Advantages and Applications

The high heat transfer rates within the GMS plate heat exchanger are achieved by;

- Counter-flow operation - passing the fluids in opposite directions through adjacent channels between the plates.
- High heat transfer coefficients - the corrugations cause high turbulence
- Low thermal resistance - Use of corrosion resistant materials (eg stainless steels, titanium etc) combined with the inherent strength of the corrugated plates mean that only relatively thin plates are needed.
- Efficient use of heat transfer surfaces - almost all the plate surface is involved in heat transfer thereby minimising cost.

Other advantages include;

- Design flexibility - two types of plates in each size can be combined in six different ways to give the optimum heat transfer and pressure drop characteristics.
- Designed for the job - test-proven computer programs calculate the optimum configuration for each duty
- Space saving - compared to shell and tube units
- Close temperatures can be achieved - PHE's can achieve good heat transfer rates even when the temperature difference between the two fluids is small
- Easily modified - more plates can be added to increase duty
- Easily maintained - dismantling and reassembly of the unit is simple
- Resistant to scaling and fouling - due to the high level of turbulence within the heat exchanger
- Fluids don't mix if gaskets leak - because of a double seal (with air hole to atmosphere) around the ports between the plates, any gasket leak goes to the atmosphere (where it is easily detected) and doesn't mix with the other fluid.

Applications

The ability to cope with close temperatures makes PHE's an excellent choice for heat recovery applications e.g. in industrial processes, laundries, swimming pools, solar heating systems etc. It also makes them ideal for keeping two systems hydraulically separate. Their thermal efficiency often makes them cost effective against shell and tube heat exchangers in many conventional applications such as in building services.

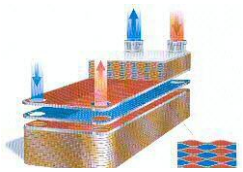
Options

In addition to supplying single plate heat exchangers and replacement plate pack, we are also able to provide a packaged option for our gasketed plate heat exchangers.
The heat exchanger can be packaged as part of one of our Thermaflow 'E' Units (with primary pump, control valve, secondary pump and control panel) or one of our Thermapak Units which includes all the Thermaflow E items plus storage vessel and unvented kit.

Brazed Plate Heat Exchanger Specification

Brazed plate heat exchangers offer a highly effective method of transferring heat from one fluid to another. A typical brazed heat exchanger consists of a plate pack fitted between front and rear coverplates. Standard units have a maximum working pressure of up to 31BarG at a temperature of 225°C.

With a maximum flowrates of up to 200 m³/Hour, most duties will be covered. The majority of our brazed heat exchangers are a stock item. The standard unit is manufactured from stainless steel grade AISI 316 and is brazed with pure copper. Although these units are classed as standard, there is a large range of units with different connection sizes and orientations etc, which ensures we can supply a unit for your requirements.



Benefits of Brazed heat exchangers include:

- Extremely compact
- Maximum material efficiency, as all the exchanger plate material is effective
- System costs are reduced due to better heat transfer coefficients
- Able to withstand higher working pressures than gasketed plate heat exchangers and shell & tube heat exchangers

Choosing to install a brazed plate heat exchanger also means that you have a wide choice of connections (subject to design conditions and parameters), available connections include;

- Externally threaded connections screwed BSP or NPT connections
- Internally threaded connections screwed BSP or NPT connections
- 'Rotalock' connections
- Soldered connections / Welded connections
- Victaulic connections
- Flanged connections (DN50 and DN100)
- SAE flanges / SAE O-ring connections

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