INFO

thermowave Competence

Refrigeration

Plate heat exchanger

thermowave

PHE for process and industry

Keeping cool

thermowave has more than 20 years' experience constructing plate heat exchangers for the refrigeration industry. Our aim is to develop the best concept for each application together with planners and equipment manufacturers and to design and deliver the product which best suits the application.

Applications in the area of industrial refrigeration are diverse. Particularly in the foodstuffs industry, refrigeration engineering is highly prevalent today. The production, storage and distribution of frozen goods, drinks and foodstuffs are an ever-expanding market. And it is not just limited to the foodstuffs sector. Other industries also require refrigeration systems, for example the chemical and pharmaceutical industry, office and industrial buildings and sports and leisure facilities such as ice rinks or indoor ski slopes.

Although compression refrigeration technology is now almost 140 years old, the future for this industry has only just begun. This is because we – as refrigeration engineering specialists – are also responsible for preserving the environment, safeguarding the future and making this planet a better place to live.

In an era of constantly increasing energy prices and diminishing resources, it is becoming all the more important to fully utilize energy. Looking at the energy ratios in the thermodynamic cycle, it quickly becomes clear that making use of desuperheating energy and condensation heat offers a huge potential. But also other technologies that have not yet become established, such as the Organic Rankine Cycle (ORC), offer completely new opportunities for the future.

Refrigeration engineering therefore no longer simply supplies cold but also heat and, in the near future, also electrical energy.

At thermowave, you will find suitable products and good advice. Our well-established evaporators, condensers, desuperheaters and oil coolers have been operating reliably for more than 20 years now in numerous refrigeration systems of reputable equipment manufacturers and end customers. In addition to this, our new thermolinePlus product series with operating pressures of up to 63 bar offers a variety of possible applications as high pressure (temperature) condensers and cascade heat exchangers or, in CO_2 applications, as evaporators or condensers. The heat recovery from the refrigeration system likewise opens up completely new possible applications in this context.

On top of this, though, we also want to be able to keep pace with our customer's increasing need for security, which is why we also offer solutions that decouple critical media. This means that intermediate media which, however, are integrated however in the plate heat exchanger are used. The thermolinePlusSecure represents a combination of this technology and our thermolinePlus apparatuses.

thermowave therefore offers a complete product portfolio for industrial refrigeration paired with innovative ideas and individual solution approaches.

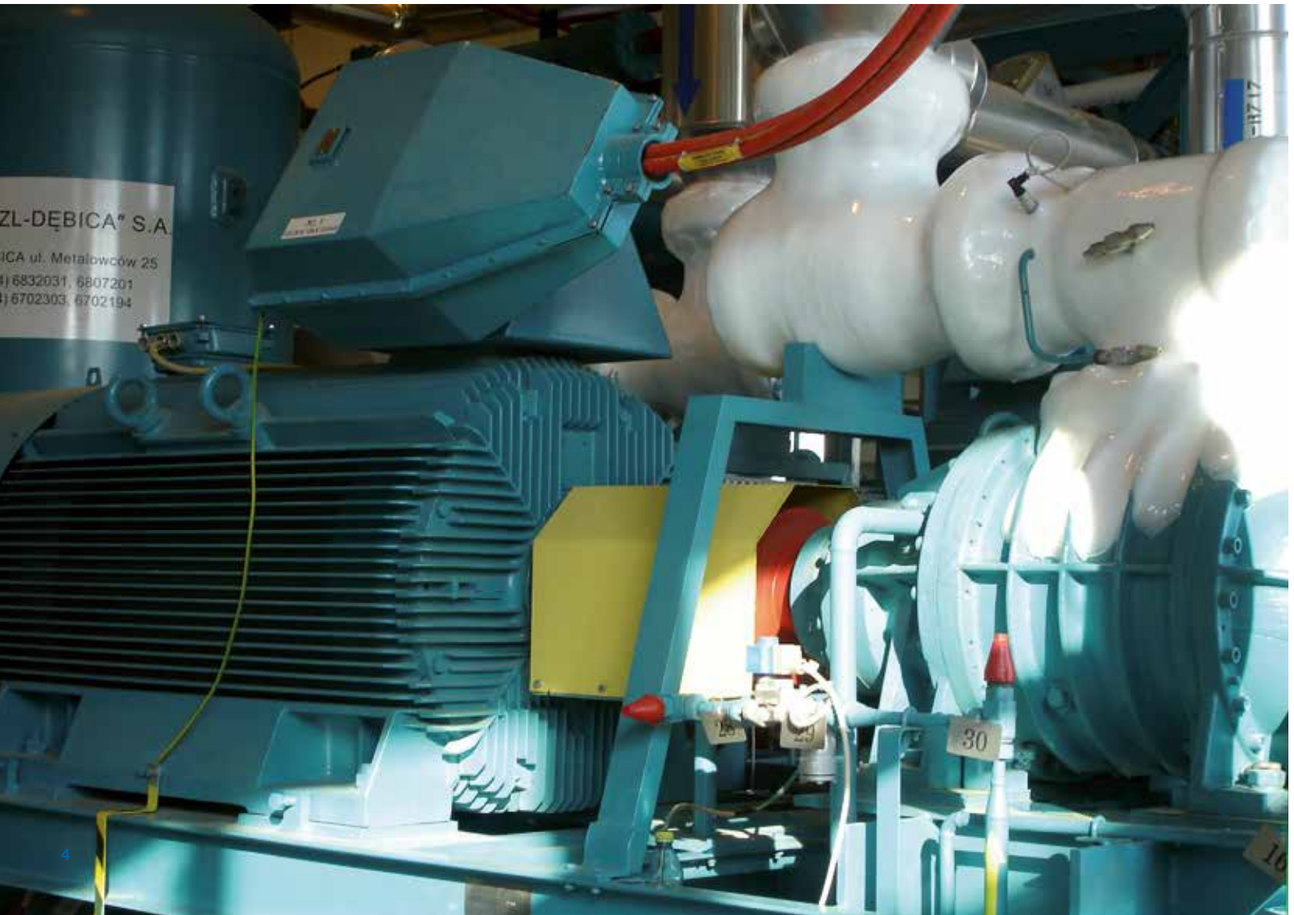
Natural refrigerants

thermowave has its origins in refrigeration engineering. As a specialist in this sector, we have a wealth of experience with natural refrigerants such as NH_3 and CO_2.

thermowave products are ideally suited to these demanding applications thanks to the design of our plates and laser-welded modules.

The design of our plate heat exchangers is not focused exclusively on thermodynamic optimization, but also concentrates on the stability of the plate constructions and resistance to high pressures.

Continuous development has led to the development of our thermolinePlus product family which is the perfect choice for high-pressure applications, such as ammonia/CO_2 cascade systems, but which is also used as pressure switch in HVAC, district cooling or the heating sector.



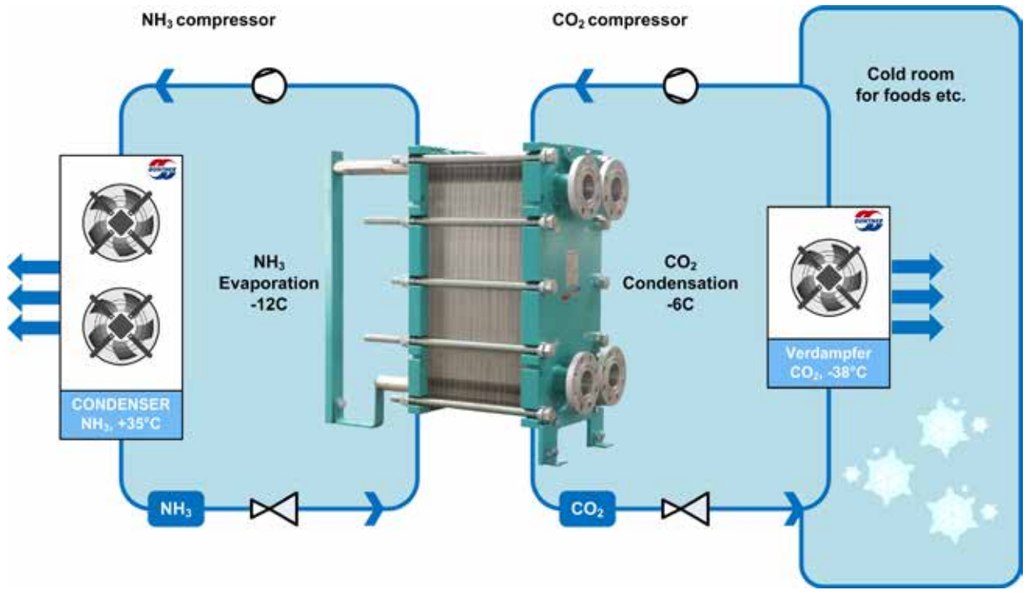
Industrial refrigeration

Products, processes or media need to be chilled, frozen or refrigerated in all kinds of different areas. This requires the use of industrial refrigeration systems which generally work with plate heat exchangers operated with natural or synthetic refrigerants.

Plate heat exchangers in the area of refrigeration engineering must be powerful and reliable as this is the only way to ensure maximum product quality.

There are no compromises at thermowave. Our plate heat exchangers have an enormous cooling capacity, are extremely energy efficient and have low operating costs. In this way, we support our customers‘ competitiveness and contribute to climate protection.

This, of course, applies for all of our products: evaporators, condensers, desuperheaters, oil coolers and cascade heat exchangers.



thermowave evaporators from the thermolinePlus series in the refrigeration circuit

Made in Germany! Worldwide sales!

Made in Germany – our thermowave plate heat exchangers have been made in our production halls in Berga (Saxony-Anhalt) for more than 20 years. We are synonymous around the globe with highly efficient processes in the refrigeration industry. We offer you not only the ideal product solution, but also support you in calculating your customized apparatus.

We are on hand as your partner providing support all around the world. We speak the language of the market and understand the regional laws and mentalities. Thanks to our proven TLC calculation software, we can find the best solution to suit your needs quickly and without complications.

Talk to us!

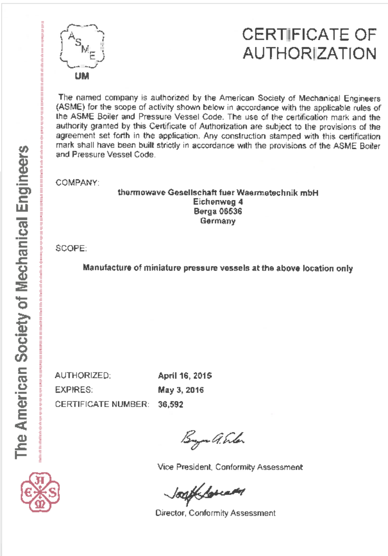
Quality management and certifications

We use only high-quality materials from certified manufacturers in our plate heat exchangers. These materials are processed using the most modern machines to create technically superior and visually appealing products. In addition to cost efficiency, our corporate mission is to ensure both the safety and the protection of people and the environment.

A comprehensive quality management system guarantees the consistently high product safety of our thermoline plate heat exchangers. Development, design, production and sales are certified in accordance with DIN EN ISO 9001:2008, PED/2014/68/EU. It goes without saying that we also produce our products in line with international standards such as AD2000, ASME, CRN and GOST to name but a few.

Regular audits ensure ideal material quality and production processes.


The National Board of Boiler & Pressure Vessel Inspectors
Certificate of Authorization


CERTIFICATE OF AUTHORIZATION
The American Society of Mechanical Engineers


CERTIFICATE OF AUTHORIZATION
The American Society of Mechanical Engineers


CERTIFICATE
on PRODUCT RATING


ZERTIFIKAT
thermowave


CERTIFICATE
thermowave

Variety of materials for every application

The resistance of the plate material in a heat exchanger is put to severe tests both internally and externally. This is because pressure, temperature and medium – depending on the application – place stringent demands on the materials used.

Selecting the right plate material requires expertise and experience! You will find both at thermowave. Together with our certified suppliers, we select the appropriate materials and offer you plate heat exchangers tailored precisely to your individual application needs.

Talk to us, we would be delighted to advise you!

Plate types:

StandardLine plates:

- Thermodynamically soft pattern
- High flow rates
- Low pressure drop
- Wide range of applications
- Also suitable for viscous fluids and shear-sensitive media
- Gentle treatment of products
- Corrugation depths from 3.5 to 4.0 mm

PowerLine plates:

- Thermodynamically hard pattern
- Very high heat transfer coefficients
- High thermal efficiency
- Low filling volume
- Suitable for homogeneous and low viscosity fluids
- Corrugation depths from 2.0 to 2.5 mm

PS modules:

- Semi-welded modules comprising a PowerLine and a StandardLine plate
- Combines the advantages of both corrugation structures
- Extends the range of applications
- Reduced surfaces, lower costs and filling volumes

A combination of different plates is also possible for our semi-welded modules. This means a perfect adaption to our customers' needs in terms of heat transfer and pressure drop. Smoother surfaces, more attractive prices and lower hold-up volumes ensure cost efficiency and process optimization.

Different types and sizes

Our product portfolio includes gasketed and module-welded plate heat exchangers:

	gasketed	module-welded
thermolineVario	✓	✓*
thermolineEco	✓	
thermolinePure	✓	✓*
thermolinePlus		✓

*not TL 400 and TL 1500

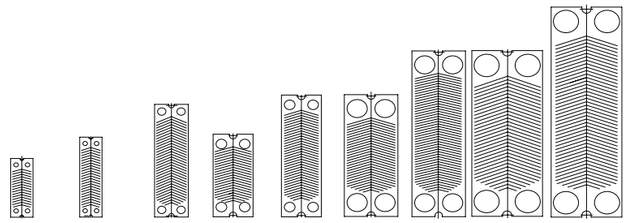


Plate type TL	90	150	400	250	500	650	850	1100	1500
Connection Ø	40	40	80	100	100	200	200	250	250
Length (mm)	721	981	1383	1014	1495	1495	2034	2034	2578
Width (mm)	244	244	369	437	437	586	586	774	774
Length / Width	2.95	4.02	3.75	2.32	3.42	2.55	3.47	2.63	3.33

Applications

Evaporation

Evaporators are key components of refrigeration systems. Depending on your requirements, thermowave plate heat exchangers can be designed as gravity evaporators, pump mode evaporators or dry expansion mode evaporators.

The variability of our plate structures de- livers optimal performance, footprint and price for each of these applications.

thermowave evaporators are used primarily with natural coolants, but are also suited for synthetic refrigerants. Our thermolinePlus series with operating pressures of up to 63 bar is particularly suited for CO_2 applications.

Condensation

Whether condensation, desuperheating or partial condensation – high temperatures and pressures place particular demands on these applications.

thermoline plate heat exchangers are highly suitable to meet these demands since our thermolinePlus series in particular tolerates pressures up to 63 bar.

Hot gas desuperheating

As energy prices continue to rise, the use of desuperheating and condensation heat is an environmentally reasonable option to counteract this.

Desuperheaters are used for generating hot water and for heating. Water or another heat transfer medium is heated to almost hot gas temperature in the process.

Oil cooling

thermowave is synonymous with reliable designs and adherence to required parameters.

This also applies for oil cooling. Our plate heat exchangers therefore ensure reliable operation and a long service life for your refrigeration system.

Cascade heat transfer

The semi-welded plate heat exchanger design has a key advantage over other fully-welded constructions.

Thanks to the modular gasketed structure, large temperature differences and the resulting temperature stresses can be counterbalanced more efficiently.

The thermowave cascade heat exchangers are also available as thermolinePlus variants with an operating pressure of up to 63 bar.

Your advantages at a glance

- Maximum operating pressure on module side up to 63 bar
- Operating temperatures between -45 °C and 160 °C
- Highly durable ring gaskets
- Long service life owing to corrosion-resistant materials
- Ideal energy efficiency thanks to smaller temperature differences
- Proven compact design and low hold-up volumes
- Extremely flexible modular system allows for subsequent performance adjustments by adding or removing plates
- Flexible and maintenance-friendly gasketed plate heat exchanger with added protection against leakage
- High specific heat capacity
- Excellent soiling resistance due to high turbulence and smooth surfaces

Your applications at a glance

Application	Product	Process	Medium	
			Refrigerant	**Refrigerant**
Evaporator	**thermolineVario** **thermolinePlus**	- Evaporation in pump mode, gravity-assisted mode or as a dry expansion evaporator for cooling the coolant agent	NH_3 CO_2 Propan R22 R134A R404A R407C R502 R507 And other synthetic refrigerants	Water Ethylene glycol Propylene glycol NaCl $CaCl_2$ Pekasol Tyfoxit Tyfocor Dowcal Tempering
Condenser	**thermolineVario** **thermolinePlus**	- Condensation - Partial condensation and desuperheating - Condensation at high pressures and temperatures		
Desuperheater	**thermolineVario** **thermolinePlus**	- Hot gas desuperheating		
Oil cooler	**thermolineVario** **thermolinePlus**	- Oil cooling with coolant agent or refrigerant		
Cascade PHE*	**thermolineVario** **thermolinePlus**	- Evaporation and condensation (+desuperheating) as cascade		

* PHE = Plate heat exchanger

Our thermowave plate heat exchangers offer you excellent flexibility and a wide range of types

Types	Connections	Permissible operating pressure	Volumetric flow rate m^3/h
TL 90	DN 25/40	-1 bis 30	23
TL 150	DN 25/40	-1 bis 30	23
TL 250	DN 100	-1 bis 63	140
TL 400	DN 80	-1 bis 30	90
TL 500	DN 100	-1 bis 63	140
TL 650	DN 200	-1 bis 63	570
TL 850	DN 200	-1 bis 30	570
TL 1100	DN 250	-1 bis 30	900
TL 1500	DN 250	-1 bis 30	900

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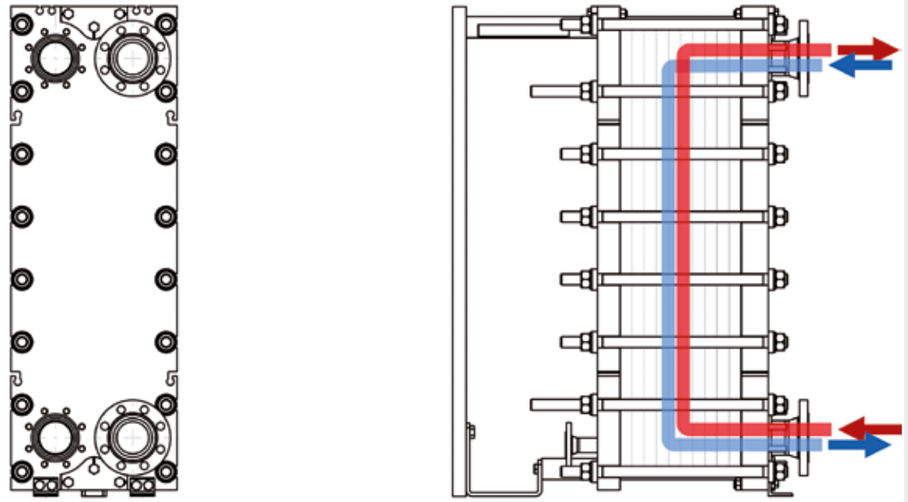
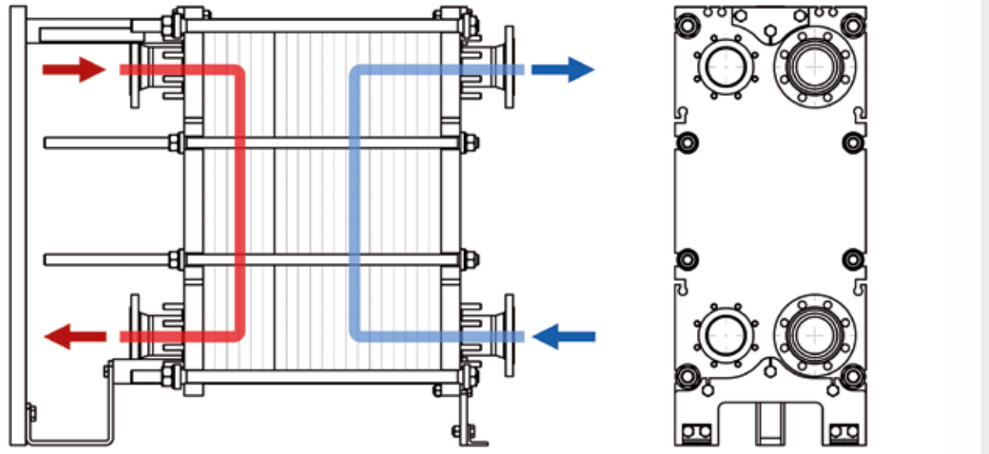
Frame types

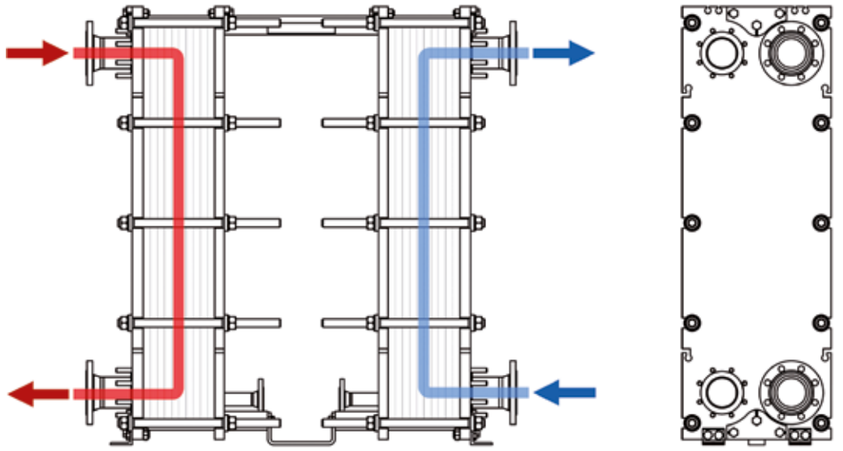
Standard



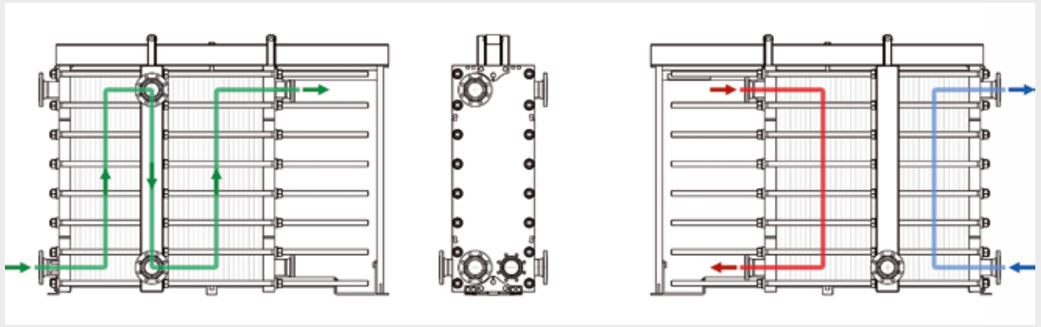
Two in one



Tandem



thermolinePlus secure



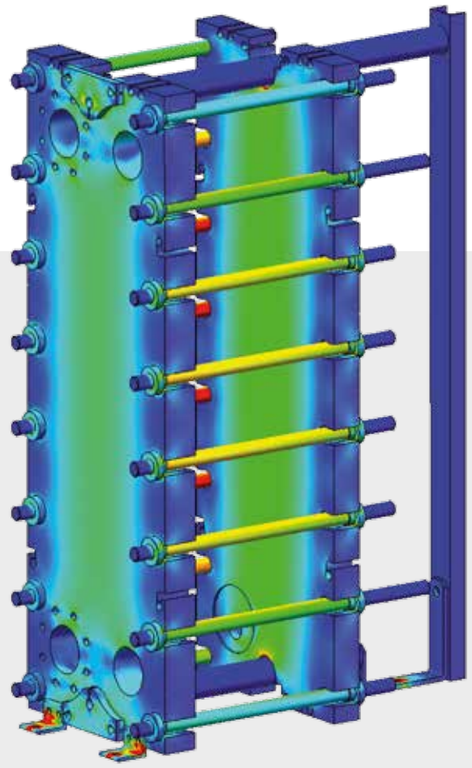
Precision design

thermowave plate heat exchangers are developed in line with demand and in accordance with the specific requirements of our customers. This is our claim! We therefore continuously perform FEM calculations in order to ensure our pressure frames are optimized to suit the load.

We can build on 20 years of experience in the area of heat exchange as well as close cooperation with universities and institutes. Based on the Finite Element Method (FEM), state-of-the-art programs ensures that our thermowave plate heat exchangers are precisely and perfectly designed.

Instead of drawing on theoretical performance curves or empirical equations from literature, thermowave puts its products to the “in-house” test. Characteristic curves are created based on measured values for mass flows, temperatures and pressure differences and the performance of the plate heat exchangers is calculated with respect to heat transfer and pressure drop.

The certification of the system by TÜV Thüringen, which is renewed every two years, confirms the conformity between calculated design data and actual performance data.



thermolineVario

Cooling foodstuffs, process media, rooms and buildings places particularly high demands on thermodynamic and hydraulic design and therefore ultimately on process safety.

thermowave plate heat exchangers from the thermolineVario product range are extremely flexible in design. This allows us to respond to the specific needs of our customers at all times.

Advantages

- High resistance to corrosion
- Fail-safe operation
- Capacity can be adjusted subse- quently by adding or removing plates
- Excellent fouling resistance
- Easy to maintain
- Energy-efficient
- Production based on a variety of structural specifications

Energy-saving operation

- Efficient heat exchanger for
- small Δt_m
- Ideal ratio between heat transfer and pressure drop

Service-friendly

- Low weight
- Compact design
- Low maintenance
- Easy to clean

Rack frames

- Painted carbon steel

Connection variants

- Welding neck flange
- Stud bolts with lining
- Lapped flange with plain collar
- Threaded coupling

Available accessories

- Stainless steel protection sheet
- Counter flange and screw
- Stainless steel drip tray
- Tightening bolts covers
- Hook wrench
- Disk spring packs

Gaskets

- NBR
- EPDM
- Chloroprene
- Butyl
- FKM (Viton)
- FEPM
- HNBR

Technical data

TL	Frame type	H	B	L	h1	h2	b	Nominal width	bar	m²	kg	dm³
TL0090	T	845	335	250-2000	152	565	0-135	DN40	-1 / 30	43	120-600	46
		845	335		145	578		DN25				
	L	845	315	500-1000	152	565	125	DN 40	-1 / 25	21	380	44
TL0150	T	1105	335	250-2000	152	825	0-135	DN40	-1 / 30	70	160-830	70
		1105	335		145	838		DN25				
	L	1105	315-325	500-1000	152	825	125	DN 40	-1 / 25	32	545	64
TL0250	T	1140	550	500-4000	192	774	0-215	DN 100	-1 / 30	236	510-1820	256
	L	1140	520-535	500-2000	193	774	256	DN 100	-1 / 25	116	1660	250
TL0400	T	1600	475	500-4000	206	1207	0-210	DN 80	-1 / 30	334	390-2100	347
	L	1600	450-465	500-2000	206	1207	212	DN 80	-1 / 25	163	1970	340
TL0500	T	1620	550	500-4000	192	1255	0-215	DN 100	-1 / 30	425	690-4160	425
	L	1620	520-550	500-2000	193	1255	256	DN 100	-1 / 25	207	2540	414
TL0650	K	1750	730	500-4000	323	1153	0-230	DN 200	-1 / 30	381	700-4700	496
		1750	730		297	1205		DN 150				
	L	1750	695-700	500-1750	297	1205	305	DN 150	-1 / 25	163	2750	424
				500-1750	323	1153	305	DN 200	-1 / 25			
TL0850	K	2290	730	500-4000	323	1693	0-230	DN 200	-1 / 30	536	1000-7000	645
		2290	730		297	1745		DN 150				
	L	2290	695-700	500-1750	297	1745	305	DN 150	-1 / 25	263	3830	604
				500-1750	323	1693	305	DN 200	-1 / 25			
TL1100	K	2290	940	500-4000	335	1670	0-300	DN 250	-1 / 30	596	1900-9500	1116
TL1500	K	2834	940	500-4000	335	2214	0-300	DN 250	-1 / 30	833	2400-11780	1495

thermolinePlus

thermolinePlus plate heat exchangers are characterized by their outstanding efficency in high-pressure applications with natural coolants such as CO_2 and NH_3.

With its thermolinePlus line, thermowave offers you an unrivalled high pressure plate heat exchanger in semi-welded design with an operating pressure of up to 63 bar on the module side. The variety of our frame designs and connection types are sure to impress also in this area.

thermolinePlus apparatuses are made from laser-welded modules and can be used for industrial cooling processes requiring low evaporating temperatures.

Advantages

- Perfectly chambered plate/ gasket construction for high pressures of up to 63 bar on the module side
- Six possible gap types (combinable)
- Many years' experience in designing refrigerant equipment
- NH_3/CO_2 cascade applications
- Compact design, low space requirements, low weight
- Low refrigerant filling quantity/ high power density
- Cleaning at 50 bar possible
- Basis for calculation developed in cooperation with the Institute of Air Handling and Refrigeration Dresden and the Martin-Luther-University in Halle-Wittenberg

Energy-saving operation

- Efficient heat exchanger for small Δt_m
- Ideal ratio between heat transfer and pressure drop

Service-friendly

- Low weight
- Compact design
- Low maintenance
- Easy to clean

Rack frames

- Painted carbon steel

Connection types

- Welding neck flange
- Stud bolts with lining
- Lapped flange with plain collar
- Threaded coupling

Available accessories

- Stainless steel protective sheet
- Counter flange and screw
- Stainless steel drip tray
- Clamping screw covers
- Hook wrench
- Disc spring packs

Gaskets

- NBR
- EPDM
- Chloroprene
- Butyl
- FKM (Viton)
- FEPM

Technical data

TL	Frame type	H	B	L	h1	h2	h3	Nominal width	bar	m²	kg	dm³
250	T	1140	550	500-4000	192	774	0-215	DN 100	-1 / 63	265	650-2300	287
500	T	1620	550	500-4000	192	1255	0-215	DN 100	-1 / 63	476	800-4900	477
650	K	1750	730	500-4000	323	1153	0-230	DN 200	-1 / 63	450	850-5320	585
		1750	730		297	1205		DN 150				

thermolineEco

Plate heat exchangers from the thermolineEco series are characterized not only by their superior dynamic performance but also by their extremely high stability and efficiency.

thermolineEco products can be adjusted to their operating conditions for ideal results thanks to their combination of tried and tested technology with a particularly compact design.

thermolineEco plate heat exchangers are designed as a highly standardized modular construction system and can be delivered at a fair price/performance ratio within a few days.

Advantages
- High corrosion resistance
- Fail-safe operation
- Compact design, low space requirements
- Capacity can be adjusted subsequently by adding or removing plates
- Excellent fouling resistance
- Energy-efficient

Energy-saving operation
- Efficient heat exchanger for small Δt_m
- Ideal ratio between heat transfer and pressure drop

Service-friendly
- Low weight
- Compact design
- Easy to clean

Rack frames
- Painted carbon steel

Connection types
- Stud bolts with lining
- Threaded coupling

Available accessories
- Stainless stell protective sheet
- Counter flange and screw
- Hook wrench

Gaskets
- NBR
- EPDM

Technical data

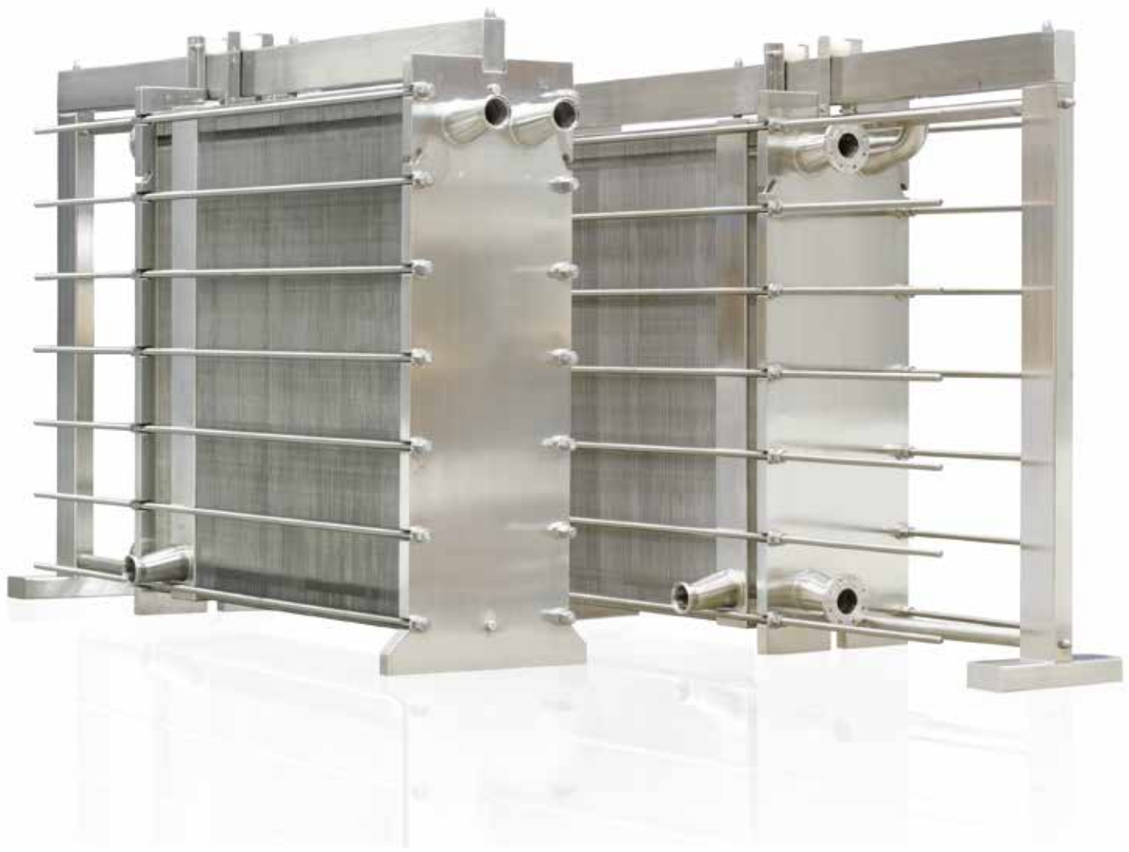
EL	Frame type	H	B	L	h1	h2	b	Nominal width	bar	m²	kg	dm³
90	E	755	310	250-500	108	565	125	DN 40	-1 / 16	11	80-180	0-12
150	E	1015	310	250-500	108	825	125	DN 40	-1 / 16	17	110-240	0-17
250	E	1145	510	500-1500	198	774	256	DN 100	-1 / 16	88	390-970	0-95
400	E	1519	475	500-1500	168	1207	212	DN 80	-1 / 16	124	370-1130	0-129
500	E	1625	510	500-1500	198	1255	256	DN 100	-1 / 16	157	540-1490	0-157
650	E	1750	706	500-1500	297	1205	305	DN 150	-1 / 16	138	900-1970	0-180

thermolinePure

For all processes that involve cooling and heating in the drinks and foodstuffs industry, the thermolinePure product line offers a plate heat exchanger which is perfectly suited to this application.

Our many years of experience in the foodstuffs industry is reflected in the highest quality in thermolinePure plate heat exchangers.

Our pasteurisers for beer, water, soft drinks and other beverages fulfil the most stringent requirements.



Advantages

- High corrosion resistance
- Fail-safe operation
- Capacity can be adjusted subsequently by adding or removing plates
- Excellent fouling resistance due to high turbulence and smooth surfaces
- Food-safe materials
- Product-friendly design
- Reliable calculation

Energy-saving operation

- Efficient heat exchange for small Δt_m
- Heat recovery up to 96 %

Service-friendly

- Low weight
- Compact design
- Low maintenance
- Easy to clean

Rack frames

- Stainless steel
- Carbon steel, stainless steel cladded
- Intermediate frames with connections

Connection types

- Dairy screwed pipe joint - DIN11851
- Aseptic connection DIN11864-1 (pipe connection) DIN11864-2 (flange connection)
- APV-FN1 / FG1 (APV small flange)
- Neumo BioConnect® clamp connection – DIN32676

Available accessories

- Stainless steel protective sheet
- Brass nuts
- Tightening bolts covers
- Hook wrench
- Sanitary feet
- Intermediate frame with double connection

Gaskets

- NBR
- EPDM
- FKM (Viton)

Technical data

TL	Frame type	H	B	L	h1	h2	h3	Nominal width	bar	m²	kg	dm³
90	F	887	450	250-2000	194	565	0-100	DN 40	-1 / 30	43	120-600	46
		887	450	250-2000	187	578	0-100	DN 25	-1 / 30			
150	F	1147	450	250-2000	194	825	0-100	DN 40	-1 / 30	70	160-830	70
		1147	450	250-2000	187	838	0-100	DN 25	-1 / 30			
250	F	1265	650	500-4000	316	774	0-280	DN 100	-1 / 30	236	510-1820	256
400	F	1712	575	500-4000	318	1207	0-280	DN 80	-1 / 30	334	390-2100	347
500	F	1745	650	500-4000	316	1255	0-280	DN 100	-1 / 30	425	690-4160	425
650	F	1750	900	500-4000	371	1153	0-280	DN 200	-1 / 30	381	700-4700	496
		1750	900	500-4000	345	1205	0-280	DN 150	-1 / 30			
850	F	2290	900	500-4000	370	1693	0-280	DN 200	-1 / 30	536	1000-7000	645
		2290	900	500-4000	345	1745	0-280	DN 150	-1 / 30			

TL 1100 and TL 1500 only available on request

Tailored – to suit your requirements

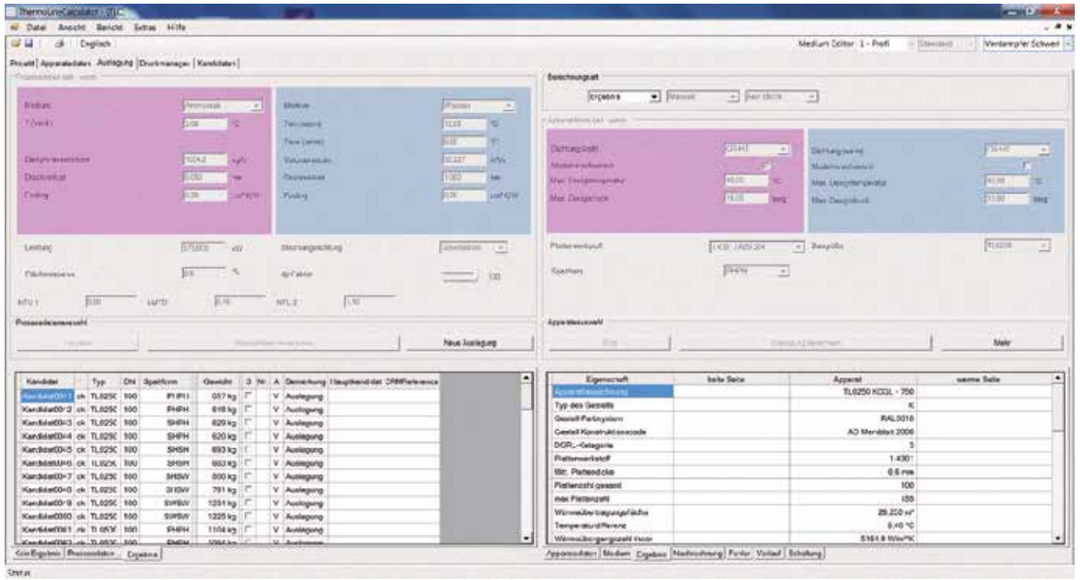
We have developed the special TLC (thermoline Calculator) software so that you can custom-design your thermoline plate heat exchangers.

Our software is developed continuously so that we can meet the ever-changing market demands and integrate new products.

A precise thermodynamic and hydraulic calculation is performed taking into account the selected media. Having selected the ideal unit, the TLC generates a data sheet for you with technical data, dimensions, weights and prices.

Our TLC – Your advantages:

- TÜV-certified design program
- Precise thermodynamic calculation, even with critical media
- Calculation of evaporators, condensers, desuperheaters, oil coolers and cascade plate heat exchangers
- Ideal for calculating multi-section apparatuses
- High level of calculation safety
- 5 languages (German, English, French, Polish, Russian)
- Current gross prices and delivery times available
- Application-specific connection assignments



Our advantages at a glance

Material selection

We use a wide range of standard and special materials for our plates, e.g. titanium (GR1) and SMO254. In addition, thermowave offers you three different material thicknesses (0.5/ 0.6/ 0.8 mm).

Gaskets

In order to ensure the best possible gasketing performance for every application, our gaskets are available in many different materials such as NBR, EPDM and chloroprene.

Testing

thermowave plate heat exchangers are continuously tested using different procedures such as dye penetrant tests, pressure tests and vacuum tests of the modules.

Precision

We can offer you the most modern systems and top-class production technologies. Our 12,000 t pressing machine (3 cylinders) and the 2.5 D-CNC-CO laser-welding machine with 6 kW for laser-welding and laser-cutting guarantee ideal precision and flexibility.

Resource-friendly

Our production processes are resource-friendly.
The sustainable use of resources and energy is a principle firmly established in our company philosophy.

Connection types

We can offer you a variety of connection types and thereby guarantee you the perfect adjustment of your plate heat exchanger to your individual application needs.

Calculation

thermowave uses its self-developed calculation program (thermoline Calculator) so that we can guarantee that your apparatuses will be ideally designed in terms of pressure, hydraulics and thermodynamics.

Trust enhancing service

Our service team is on hand supporting you over the entire lifetime of the plate heat exchanger – offering fast, expert and reliable advice.

Trust-enhancing service

International availability not only applies to our plate heat exchangers, but also to our service. A motivated team, fast response times and proven cooperation with our international partners ensure an expert, comprehensive and reliable service on your doorstep.

An expert team of service technicians and skilled professionals is at your service. Fast availability of spare parts, individual consulting as well as a comprehensive service in the area of returns and warranty assures you of reliable assistance for any eventuality.

Our service – Your advantage:

- All-round support for customers
- Comprehensive and individual customer consultancy
- All common spare parts in stock
- Regular servicing on request (service contracts)
- Option of on-site assembly
- Reconditioning (replacement of gaskets and cleaning of plates)
- Fast delivery of spare parts
- Flexible planning to ensure optimum maintenance of existing systems by adapting to new operating conditions while ensuring cost-effectiveness
- Expert installation with rapid availability of spare parts
- Warranty on repairs

You can reach our service team at +49 34651/418 18 or +49 800 84376698 or send an e-mail stating the manufacturing number to **service@thermowave.de** .

References

Neuhauser

Neuhauser is one of the leading suppliers of frozen bakery goods in Europe. The most recent production facility went into service in Furst in 2009. The biggest challenge here involved cooling a 90,000 m^2 cold storage, while maintaining supply to a deep freeze system at the same time.
Neuhauser opted for a thermowave NH_3/CO_2 cascade system, which also supplies the deep freeze system in parallel by inter- connecting two refrigeration systems. The resulting condensation heat from deep-freezing at the lower level results in lower pressure differences owing to the evaporation of the cascade heat exchanger, thereby increasing the efficiency of the system.

thermowave won the day thanks to the modular construction of its apparatuses; the construction allows uncomplicated replacement of individual plates when needed.

KGHM Group

Various plate heat exchangers have been supplied to WUCH “PZL-Debica” S.A. in Poland in recent years for cooling a calcium chloride solution in a freezer system.

The scope of delivery included four TL 850 machines as ammonia evaporators which cool the calcium chloride solution to minus 32 °C at an evaporation temperature of minus 36 °C. The cooling capacity is used to freeze a new mine shaft.

Four TL 650 condensers with a total output of 7000 kW were installed additionally. The materials used in the thermowave plate heat exchangers were adapted ideally to the media used and are therefore perfectly suited to the operating conditions on site.

Bitzer

In 2010, thermowave supplied five high-pressure TL 500 apparatuses from the thermolinePlus series to Bitzer in Australia.

The machines have a power output of 4 x 1250 kW and 1 x 1510 kW and are used for cooling a mine at a depth of approx. 500 m. The water column bearing down on the machines generates a pressure of 46 bar. It was impossible up to now to withstand such high pressures using conventional plate heat exchangers. However, with the development of our thermolinePlus product line, design pressures of 50 bar on the module side and 25 bar on the gasketed side are feasible without difficulty.

Rotkäppchen-Mumm Sektkellerei

In the heart of the northern-most German wine region, Saale-Unstrut, you will find the sparkling wine producer Rotkäppchen-Mumm Sektkellerei. This is where one of Germany’s most popular sparkling wines is produced in a multi-stage production process.

thermowave plate heat exchangers are used as ammonia evaporators for cooling glycol, which is then later used in various cooling processes. The cooling capacity is 650 kW.

Paulaner

The thermowave TL 650 ammonia evaporator supplied has an output of 1600 kW and is used for cooling propylene glycol. This is required in the brewing process at the famous Paulaner Brewery in Munich.

All of the advantages of the semi-welded plate heat exchanger, such as low filling quantity and high specific heating and cooling capacity, become important here.

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