PLATE HEAT
EXCHANGERS

API Schmidt-Bretten

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API Schmidt-Bretten

over a century of excellence in plate heat exchangers

We offer an unparalleled depth of experience.
Leadership since 1879 - more than 60,000 units installed worldwide today.

We are part of API Heat Transfer - the leader in industrial heat transfer.
The largest manufacturer of industrial heat transfer equipment in the United States with the broadest range of products and engineering expertise.

We can meet any need for plate heat exchangers.
The largest selection of designs, surface areas, sizes, corrugations and materials for every application.

We offer unique designs to produce the highest heat transfer coefficients.
Lower surface areas and lower capital cost.

We design and build the most rugged and reliable plate heat exchangers.
Innovative designs and heavy duty construction for long-lasting performance.

We will deliver the product that best suits your application.
API Schmidt-Bretten has unparalleled resources to meet your most demanding challenge.

Leadership in plate heat exchangers since 1879.

API Schmidt-Bretten traces its roots to 1879 in Germany when company founder Wilhelm Schmidt patented a new, highly efficient counter flow surface cooler. Following a brisk demand by the brewing and dairy industries both in Germany and abroad, a large number of the new surface coolers were produced.

Schmidt's patented surface cooler was followed by the development of the first closed or pressurized type plate heat exchanger. The unit was constructed of brass plates milled with spiral channels and then chrome plated. Subsequent models utilized stainless steel plates pressed to form corrugated flow channels.

The spiral heat exchanger provided the first opportunity for separate sections for pasteurizing and heat recovery within a single unit.

A huge development by Schmidt in 1938 was the horizontal crossflow plate heat exchanger, available in two sizes. By 1948, the first design of a new generation of plate heat exchangers (SIGMA) was introduced. Continuing and systematic development by API Schmidt-Bretten led to the latest development of this design, the X series of high performance plates with maximized heat transfer coefficients.

1879
Counter flow external surface cooler

1990
X 19 plate heat exchanger

1932
Spiral plate unit

Leadership today... and tomorrow.

Today, API Schmidt-Bretten offers the largest selection of designs of plate heat exchangers, available with different surface areas, corrugations, plate materials, plate thickness, and gaskets.

Our plate heat exchangers meet the needs of virtually every industry requiring heat transfer - both process and OEM - including:

- *Chemical*
- *Pharmaceutical*
- *HVAC*
- *Food and Beverage*
- *Shipbuilding*
- *Steel Production*

With a knowledgeable staff for the design, application and manufacture of plate heat exchangers and thermal systems, the experience of more than a century and over 60,000 installed units, and the resources of API Heat Transfer, API Schmidt-Bretten is the best choice for your heat transfer needs.

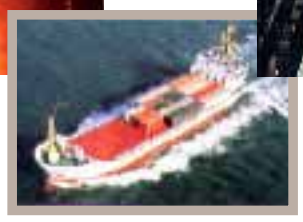
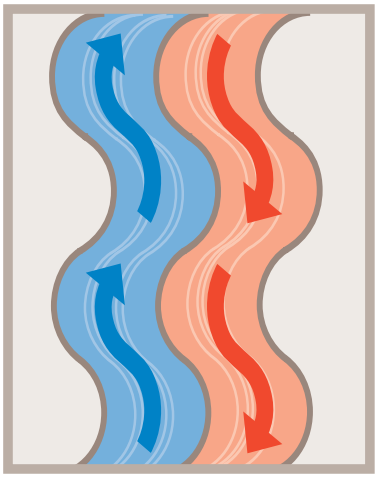


Plate heat exchangers from API Schmidt-Bretten give you distinct advantages.

Heat Transfer Performance

The critical parameter for any heat exchanger is the amount of surface area it requires to deliver a given amount of heat transfer. The capital cost of heat transfer equipment is commensurate with the amount of surface area, which in turn is directly proportional to the heat transfer coefficient.

The unique design of API Schmidt-Bretten plate heat exchanger surfaces produces the highest heat transfer coefficients for a given application, resulting in lower surface area and lower capital cost.



Peak Efficiency

With high heat transfer coefficients and a true counter-current flow path, API Schmidt-Bretten plate heat exchangers can cool hot fluids to within one degree of the cold fluid making heat recovery in excess of 96% technically and economically possible. With a wide variety of plate styles available, API Schmidt-Bretten has a unit that is best suited to your application.

Reliability

The unique design of API Schmidt-Bretten plates allows for optimum alignment during assembly for greatest sealing capabilities. The circular shape in the plates matches the shape of the upper carrying bar. This assures the plates do not move in any direction while providing an integral means for them to be supported by the carrying bar. The lower support bar simply guides the plates.

Lower Liquid Volume

Since the gap between plates is small, a plate heat exchanger contains only low quantities of process fluids. The benefit to you is reduced cost due to lower volume requirements for often costly coolants or process fluids.

Since the product remains in the heat exchanger for a short period of time, the process can be easily stopped or the temperature can be changed quickly with minimum impact on the product.

Compact Design

The concept of the plate heat exchanger is to contain large heat exchanging surfaces in a very compact, space saving frame. This results in a much smaller space requirement and lower weight.

Minimal Fouling

Fouling of the heat transfer surfaces of an API Schmidt-Bretten plate heat exchanger is extraordinarily low. This is a result of good product distribution, constant velocity profile and smooth plate surfaces. The high induced turbulence yields a self-cleaning effect which prevents fouling.

Superior Sealing

The sealing system used with the API Schmidt-Bretten heat exchanger plates is designed for double sealing of the flow channels.

This prevents the two process fluids from mixing - and gives you added peace of mind. If there are any leaks at the gasket around the plate or port areas, the leakage is to atmosphere and easily detectable.

Durability

Under the gasket groove the heat exchanger plates are integrally reinforced on both sides. This profile on both sides grants an exact placement of the gaskets and stability of the plates when assembled, especially for larger unit sizes.

Gasket Options

Mechanically fixed gaskets offer quick and easy replacement while glued-on gaskets offer dependability where constant opening of the heat exchanger is required. Our plate exchangers are available with the following gasket materials:

Material	Max. Temp.
Nitrile	285°F
EPDM	320°F
Viton®	270°F
Sil C -4400	305°F
AFM 34	430°F

Expandable

With API Schmidt-Bretten heat exchangers, changes to the process conditions can be readily accommodated. Plate arrangement can be changed and plates can be added or removed.

It is possible for the initial calculations to provide for future operating conditions. It is also possible to install several sections in one frame and permit several process steps in a single frame. Different products can be processed in different sections within the same unit.

Easy Maintenance

API Schmidt-Bretten plate heat exchangers are easily maintained and cleaned. The units can be cleaned without dismantling by cleaning in place (CIP) systems, by reverse flow cleaning or by addition of suitable cleaning fluids.

It is easy to inspect the plate surfaces, to regasket plates or to clean them mechanically. Plate removal is easily accomplished by releasing the closing bolts that compress all of the heat transfer plates.

Versatility

API Schmidt-Bretten heat transfer plates are formed in a wide variety of patterns and materials to meet your heat transfer needs.

Available plate materials include stainless steels in types 304, 304L, 316 and 316L, titanium, titanium-palladium stabilized, SMO 254, Incoloy 825, nickel, Hastelloy B & C, Monel, Inconel and tantalum.

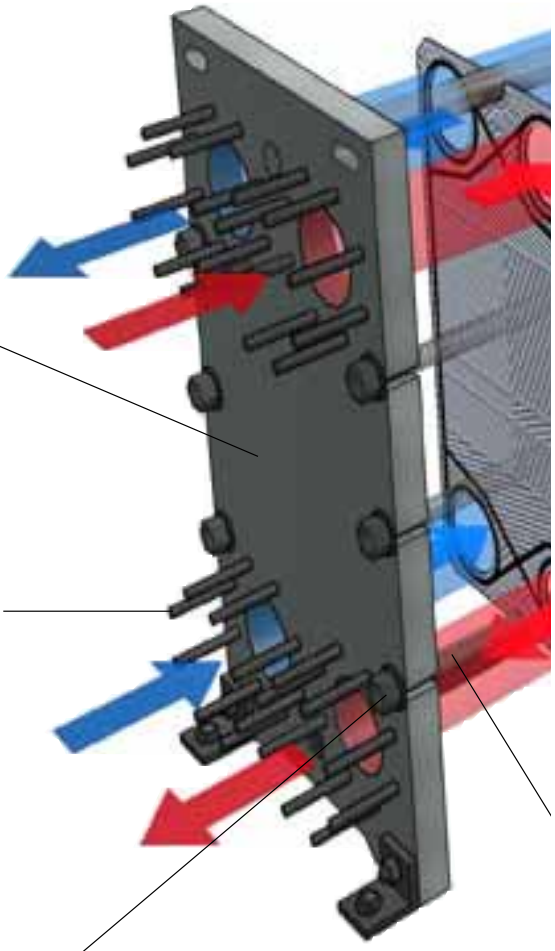
API Schmidt-Bretten Plate Heat Exchangers

Features at a glance

Built with the finest code approved materials, *configured in such a way to provide lasting service for even the most strenuous heat transfer applications.*

Heat exchangers are sealed with elastomer gaskets *that can be either mechanically fixed (glue free) or glued to the heat transfer plate. (Optional compressed fiber material)*

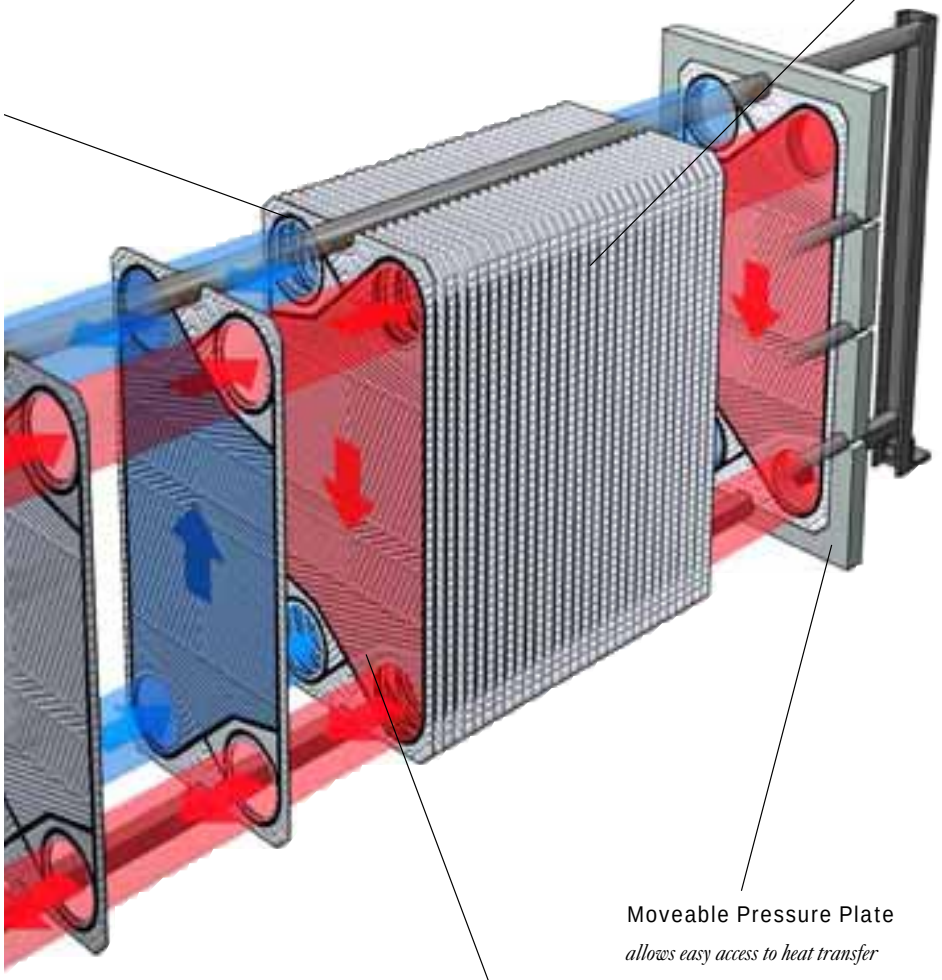
Pressure retaining covers *are designed with the latest stress calculations in accordance with ASME code. These plates are designed extra heavy so no external reinforcing is required. Typical pressure plates are provided with an* epoxy plate finish *for durability and extended life.*



Units are typically provided with threaded or studded type connections *integral with the pressure plates. This eliminates the risk of piping loads that could damage nozzle weldments that are required of other flanged type designs.*

Tightening bolt assemblies *that contain the heat transfer plates and the pressure plates are designed so that all tightening is done from the fixed pressure plate. This eliminates interference from the studs that extend beyond the movable pressure plate.*

All-bolted construction *and easy addition/removal of heat transfer plates yields total flexibility.*



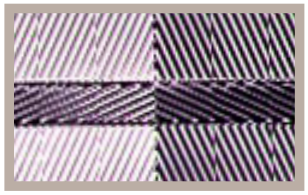
Moveable Pressure Plate *allows easy access to heat transfer surfaces for easy maintenance.*

Tightening bolt assemblies are made of either zinc coated alloy steel or stainless steel *for corrosion resistance and ease of opening.*

Thermal plates *have integral reinforcement in the neck area of the plate. This yields greater sealing reliability and allows for greater operating pressures (as high as 400 psi with a 600 psi test pressure).*

API Schmidt-Bretten has the plate style that will work for you.

Whether your heat transfer requirements are for water or viscous fluids, we have a series of plate styles to meet your needs.



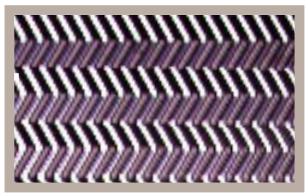
X Series

7 Series

V Series

2 Series

F Series

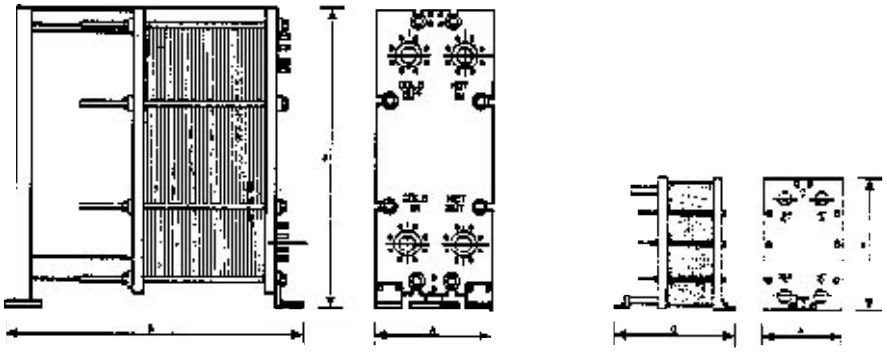


Z Series

API Schmidt-Bretten Specifications

Model	SX19	SX29	SX49	S7	S9	S17	S27	S37	S64/65	S85	S108/109	S
Performance												
Maximum flow rate (gpm)	250	1,000	1,000	60	60	160	380	580	2,200	2,200	4,000	4
Maximum Number of plates	240	550	550	100	140	170	380	450	350	340	300	
Heat Transfer Area (ft2) max.	490	1,700	2,400	65	140	240	1,000	1,600	2,500	3,200	3,500	4
Design Pressure (max. to ASME)	300	300	300	300	300	150	300	300	300	300	300	
Connections												
NPT-Size (inches)	2			1	1	1.5	2.5	3				
Flanged-size (inches)	Optional	4	4	Optional	Optional	Optional	Optional	Optional	6	6	8	
Materials	Carbon Steel, Stainless Steel			Carbon Steel, Stainless Steel, Alloy Lined					Carbon Steel,			S
Heat Transfer Plates												
Available Materials	316SS			304SS, 304LSS, 316SS, 316LSS, Titanium,								T
Gasket Construction												
Glueless	Yes			No	No	No	Yes	Yes	Yes	No		
Available Materials	Nitrile, EPDM			Nitrile, EPDM, Viton, Silicone, Compressed Fiber								
Applications	Heating & Cooling of Water, Glycols and Light Oils & Process Fluids			Heating, Cooling, Evaporating and Condensing of all Types of Fluids.								
Overall Dimensions												
H(In):	40	46	50	26	35	44	55	58	78	92	90	
W(In):	15	23	23	9	9	12	16	20	26	26	35	
L(In):	54	105	105	26	36	57	107	136	129	120	120	

Design Options



9	S138	S166	S38	S48	S60	S114	S12	S16	S22	S32	S52	F45	S45V	S90V
	4,000	10,000	1,000	4,000	2,200	4,000	160	160	250	580	2,200	1,000	Variable	Variable
	300	300	210	475	240	465	300	300	300	300	300	300	300	300
	4,500	5,000	800	2,700	1,400	5,500	400	500	800	1,200	1,900	3,000	3,000	3,000
	300	150	150	300	150	300	150	150	150	150	150	75	150	150
							1.5	1.5	2	3				
	8	14	4	8	6	8	Optional	Optional	Optional	Optional	6	4	Variable	Variable
	Stainless Steel, Alloy Lined, Rubber Lined						Carbon Steel, Stainless Steel, Alloy Lined						Carbon Steel, Stainless Steel	
	Titanium-P2, Hastelloy R C, Incolloy, SMO 254						316SS							
	Not Available											Yes	Not Available	
	Nitrile, EPDM, Viton, Silicone											Nitrile	Nitrile, EPDM	
	This includes Highly Viscous Fluids and Fluids with Small Solids Contents.						Heating and Cooling of All Types of Fluids Including Products with Solids						Evaporating & Condensing of Many Fluids	
	108	110	60	66	67	90	44	50	52	56	64	70	94	94
	34	46	22	28	25	35	12	12	16	20	26	22	48	48
	96	120	80	80	90	120	58	62	80	130	130	80	120	120

Standard

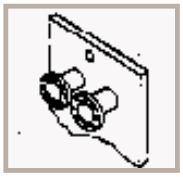
Standard threaded connection

Threaded connection with alloy nozzle

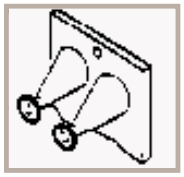
Standard studded connection

Studded connection with alloy lining

Optional



Flanged connection



Sanitary Quick-Disconnect nozzle

Innovative Technologies

Continuous Product Development

API Schmidt-Bretten continually develops new plate heat exchangers to meet the requirements of the many markets we serve. Our research and development programs and work with universities and technical institutes drive this product development.

The R&D efforts of our European and U.S. facilities are coordinated on a world-wide basis to broaden capabilities. The most recent accomplishments of our program have been the development of the “X” Series plate, and the all-welded style plate heat exchanger. Many more are in development.

Advanced Computer Methods

API Schmidt-Bretten utilizes the latest computer systems enabling us to do all types ofcalculations in ways that are better and faster than ever before. Our engineers use finite element analysis to design the pressure plates. In this way a much more accurately designed part is produced compared with conventional means.

Competitive Lead Times

The complete process for producing plate heat exchangers at API Schmidt-Bretten is enhanced by our computer systems. Upon receipt of a sales order, each heat exchanger is immediately configured and entered into our system. The configuration process creates drawings, bills of materials and complete manufacturing processes. In this manner, API Schmidt-Bretten can offer the most competitive lead times of any plate heat exchanger supplier.

Engineering Expertise

API Schmidt-Bretten engineers have the experience to quickly and efficiently provide economic, tailor-made solutions to meet your needs. We have developed extensive and efficient computer software programs that reflect our broad depth of practical experience and capability, and enable us to respond quickly to customer requirements.

Automated Production

API Schmidt-Bretten’s commitment to meeting production demands is reflected by our continual improvement in manufacturing areas.

Our unique plate pressing equipment takes the plate material from its raw state and converts it to finished product in moments.

Pressing tools are changed in minutes to allow easy conversion from one plate style to another to meet ever-changing customer demands for delivery.

API Schmidt-Bretten’s press is a pioneer in plate pressing technology in that special sensing equipment controls the pressure applied in the process to guarantee uniform thickness and the highest plate quality.

High performance gaskets for heat exchanger plates are glued into place by a robotic process which is computer-controlled for varying gasket materials.

Service and Support Worldwide

With production, assembly and test facilities in the U.S. and Germany, and the sales, design and engineering support of API Heat Transfer, API Schmidt-Bretten delivers complete plate heat exchanger solutions around the world.

The Highest Quality Standards

API Schmidt-Bretten's quality assurance program ensures the highest standard of product quality and performance. From delivery of raw materials to installation of the finished product, careful checks are made on quality, compliance with specifications and dimension tolerances. Our product quality control scheme fulfills the requirements of many testing authorities including ISO 9001.

Process Fluid Testing

API Schmidt-Bretten's advanced test facilities in Germany and the U.S. can test the properties of a customer's process fluid to determine viscosity and other important physical characteristics. Using the results, our engineers can determine the proper plate style to use for the process fluid.

Commissioning and Installation Engineers

API Schmidt-Bretten has experienced commissioning and installation engineers available with specialized skills to take care of plant installation, plant start-up and acceptance tests. These engineers are also available for after-sales service requirements.

Extensive Inventory of Spare Plates and Parts

The extensive inventories maintained by API Schmidt-Bretten ensure the availability of spare plates or new heat exchanger plates. Replacement gaskets for obsolete plate heat exchangers can still be obtained today.

Worldwide Support

API Schmidt-Bretten's tradition of superior customer service is carried on around the globe through a unique combination of international facilities and an extensive representative network. We have manufacturing and test facilities in Germany and the U.S. and qualified sales representatives all over the world.

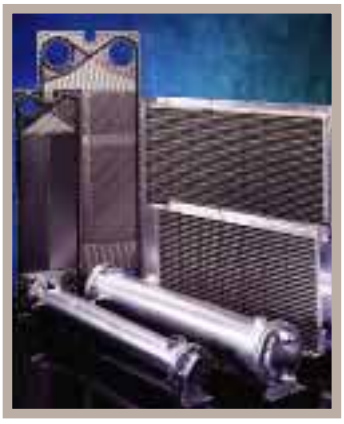
The Strengths of API Heat Transfer

API Schmidt-Bretten is part of API Heat Transfer, a subsidiary of American Precision Industries, a $200 million diversified global manufacturer.

API Heat Transfer is the largest manufacturer of industrial heat exchangers in the U.S. The company offers the broadest line of industrial heat transfer products under the Basco,® Whitlock,® Acme,® Schmidt-Bretten and Airtech names. Some of these name brand products have been in the market for over 100 years. API Heat Transfer has manufacturing facilities in the U.S. and Europe and representation around the world.

API Heat Transfer products include shell and tube, plate, plate fin and brazed aluminum heat exchangers, and refrigeration equipment.

For more information on API Heat Transfer call 716-684-6700.



API Schmidt-Bretten

American Precision

Industries Inc.

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API Basco Inc.
Basco® Shell and Tube Heat Exchangers
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API Ketema Inc.
Acme® Refrigeration Equipment
Whitlock® Shell and Tube Heat Exchangers
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Grand Prairie, Texas 75051
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API Airtech Inc.
Air Cooled Aluminum Heat Exchangers
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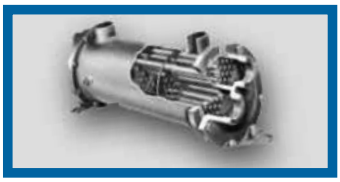
API Heat Transfer

API Heat Transfer Products

Standard 500 & HT Series

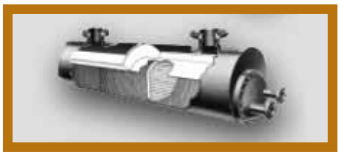


Available for off-the-shelf delivery, these standard units reflect the latest in heat exchanger technology and state-of-the-art manufacturing facilities. Design and material options are available. Shells range from 2" (5.08 cm) to 12" (30.48 cm).

Pipeline Aftercoolers

Efficient, straight tube, counterflow aftercoolers designed to yield cool, dry compressed air. Available with or without accompanying moisture separators and constructed to a wide variety of design codes. Shell diameters from 6" (15.24 cm) to 42" (106.68 cm).

Extended Surface

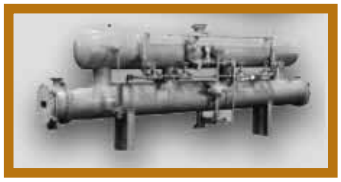


Unique, patented compact plate fin design for centrifugal or axial compressor intercooler and aftercooler applications. Capable of cooling large volumes of air or nitrogen at minimal pressure loss. ASME code design is standard and shell diameters range from 22" (55.88 cm) to 120" (304.8 cm).

Refrigeration Equipment

Packaged chillers, chiller barrels and condensers available. Water and air cooled packaged chillers used as process water chillers, tank chillers, ice rink chillers, anodizing chillers, brine and glycol chillers. Standard and custom chiller barrels, condensers and marine condensers available to 1000 tons. Industrial refrigeration and HVAC applications.

TEMA Shell & Tube



A wide variety of shell and tube exchangers including all TEMA types are available using pre-engineered or custom engineered designs. Shell diameters from 6" (15.24 cm) to 60" (152.4 cm). ASME, TEMA, API, ABS, TUV, ISPESL and other code constructions available.

OptiDesign®

Straight tube, removable bundle exchangers fabricated from standard components for common liquid and air applications. Exclusive floating tubesheet design provides for seal leak detection and easy maintenance. Shell diameters from 6" (15.24 cm) to 42" (106.68 cm). ASME, TEMA, API, ABS and other code constructions available.

Air Cooled Heat Exchangers

High efficiency, brazed aluminum coolers for cooling a wide variety of liquids and gases with ambient air. Capable of cooling multiple fluids or fluid circuits in a single brazed unit. All units can be supplied with or without a separate cooling fan and a variety of power drives.

Plate Heat Exchangers

Compact units provide excellent heat transfer. Plates are pressed in stainless steel, titanium or other alloys. Sealing gaskets of nitrile, EPDM, and Viton are used. Compressed fiber or Teflon for harsher service. Welded design options for gasket-free requirements.