

Paraflow Plate Heat Exchangers

CHEMICAL PROCESS AND INDUSTRIAL APPLICATIONS



SPX offers an extensive portfolio of plate heat exchangers covering many industrial applications. Regularly SPX heat exchangers replace older technology products due to the simplicity of installation and their high performance thermal characteristics. Whether recovering waste heat or isolating the cooling system from the cooling source, SPX has the application knowledge and product to improve efficiency and performance. Our vision for the future is rooted in a long standing tradition of excellence and commitment to progress. We strive to offer the customer the highest quality products and services today, tomorrow and beyond.

SPX provides advanced APV heat transfer solutions for cooling, heating, condensing and evaporation of process fluids - designed to solve heat transfer process challenges in a vast array of industries. They are designed to meet demanding process conditions and to optimize the utilisation of energy. APV heat transfer solutions have proven reliable and highly efficient helping customers worldwide to run their processes safely and economically. Dedicated and specialized SPX staff around the world is committed to design and provide efficient and durable heat transfer solutions to help customers optimize energy utilization and minimize downtime for improved profitability.

APV Paraflow Plate Heat Exchangers for Chemical Process and Industrial Applications

COMBAT CORROSION AND ENSURE EFFICIENCY FOR EVEN THE MOST CHALLENGING APPLICATIONS

From ultra-pure water to acid cooling to amine, SPX combines the widest range of materials (both plate and gasket) and styles with an unmatched level of application experience to deliver optimal performance and maximum protection against process downtime.

Experienced APV engineers will work with you every step of the way from system design to start-up and beyond to ensure you get a solution customized for your specific process.

ADVANTAGES FOR CHEMICAL AND INDUSTRIAL APPLICATIONS

- Wide selection of gasket and plate materials to stand up to aggressive process fluids
- Ease of cleaning and inspection
- Semi-welded pairs and gasketed plates available
- Semi-welded pairs reduce the chance of leakage
- Flexible configurations can be adapted to meet your changing process needs
- Efficient operation
- High thermal efficiency saves money through reduction in required heat transfer area
- Low liquid hold-up improves start-up time and reduces operating fluid costs
- Achieves up to 97% heat recovery
- Eliminates complicated maintenance such as x-ray, ultrasonic and other non-destructive test procedures
- Corrosion resistant materials reduce inspection and maintenance while ensuring reliable operation
- No moving parts eliminates vibration and reduces maintenance
- Lower capital costs when compared to traditional shell and tube
- Compact design saves space
- Life cycle cost reduction
- Reduced fouling leads to higher thermal efficiency, reducing maintenance and operating costs

Typical Chemical Industry Applications

MATERIALS

A wide variety of plate and gasket materials are available depending on your application. Below is a partial list of the more common gasket and plate materials:

Gasket Materials:

- Paradur (fluoropolymer)
- Paracel (FDA compliant fluoropolymer)
- EPDM low halide
- Paraflor (high fluorine fluoropolymer)
- CSP (Hypalon)
- Silicone
- Paratemp (resin cured EPDM)
- Peroxide cured EPDM
- Paramine
- Paranile (peroxy cured nitrile)
- Paracil (sulfur cured nitrile)
- Paraprene (Neoprene)
- Parator (hydrogenated nitrile)

Plate Materials:

- Austenetic Stainless
- Stainless steel (Gr. 304, 316, 317, 304L, 316L, 317 TI)
- Alloy AL6XN
- Alloy 904L
- Alloy 27-7MO
- Alloy 254 SMO

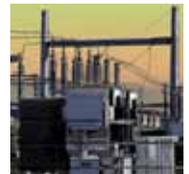
Nickel Alloys:

- Nickel 200
- Alloy G-30
- Alloy B-2
- Alloy C-22
- Alloy C-276
- Alloy C-2000
- Alloy 33

Other:

- Titanium (Gr. 1)
- Titanium palladium (Gr. 7 and 11)

Bauxite to alumina
Chlorine alkaline
Coke oven plant applications
Soda ash
Steel plant applications
Mining applications
Sulphuric acid
Titanium dioxide/pigments
Chloride process
Zinc Phosphate
Acrylic fibers
Caprolactam (monomer for production of nylon 6)
Desulphurization
Ethylene glycol
Ethylene oxide
Formaldehyde resins
Crude oil treatment
Dehydration/desalting
Gas compression
Gas treatment
Gas/oil/water separation
Oil and gas production
Polyester
Polyols
Polystyrene
PVC
Alkylation
MTBE
Refinery
Waste water treatment
Viscose (viscose rayon is regenerated cellulose)
Distillery pretreatment
Fermentation
Alcohol/ethanol
Pulp and paper
Beet and cane sugar
Textiles
Metal finishing
Automotive



BASIC OPERATION & CONFIGURATIONS

APV plate heat exchangers are one of the most versatile and cost-effective methods for the heating and/or cooling of fluids.

The basic concept uses a corrugated heat transfer plate to separate the hot fluid from the cold and transfer the heat between the fluids.

The seal between the plates is established by a peripheral gasket which also separates the through ports and flow areas with a double barrier. The gasket either allows the fluid to flow down the plate channel or by-pass it to the adjacent plate channel as depicted in Figure 1.

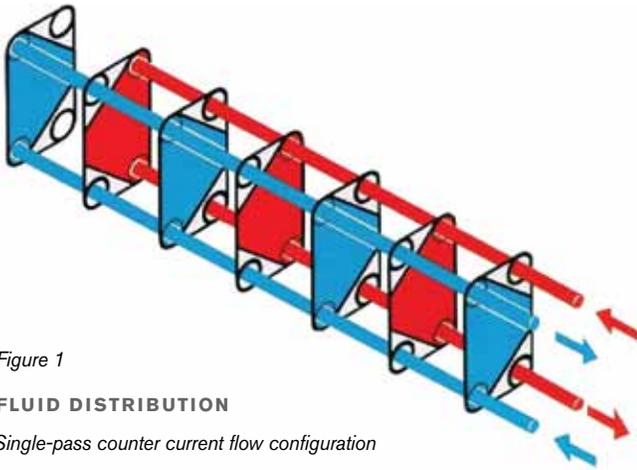


Figure 1

FLUID DISTRIBUTION

Single-pass counter current flow configuration

APV plate heat exchangers can be used in a variety of different configurations.

One configuration is closed circuit cooling, where the dirty cooling medium such as sea, river, lake or tower water is isolated at the plate heat exchanger and clean treated water is continually recirculated through the process plant. This configuration, as shown in Figure 2, protects process equipment from the dirty cooling fluid.

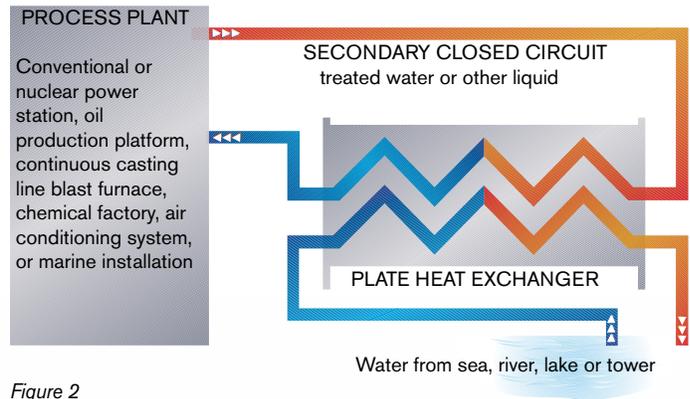


Figure 2

CLOSED CIRCUIT COOLING SYSTEM



One of the more common methods is direct cooling, where the product is cooled directly in the plate heat exchanger, as shown in Figure 3.

Another method is indirect cooling, where an intermediate fluid is used between the hot fluid and the cold fluid as shown in Figure 4. The purpose of indirect cooling is to guarantee that no cross-contamination between the hot and cold fluids will occur, even in an upset condition. APV plate heat exchangers can be used in a variety of different configurations.

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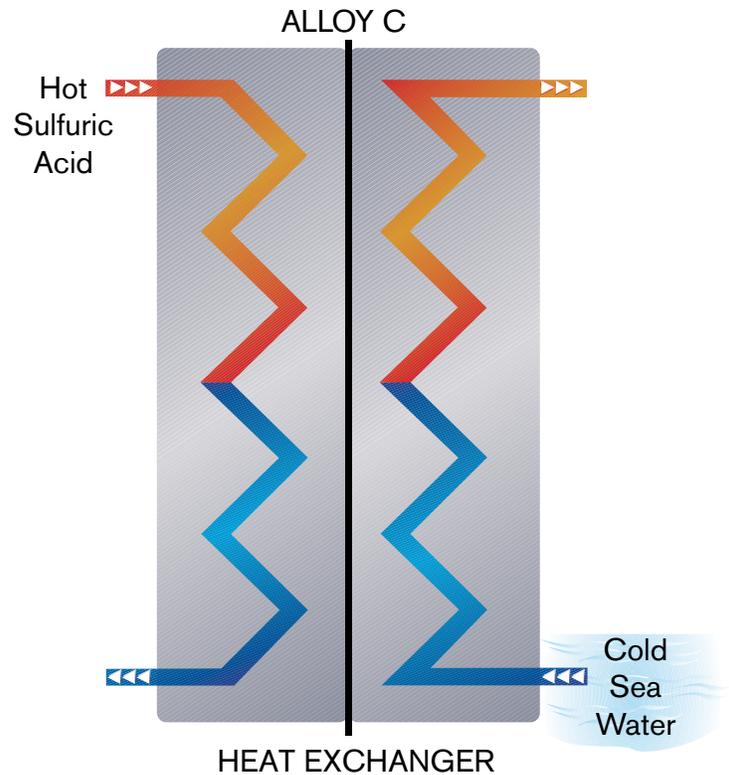


Figure 3
DIRECT COOLING

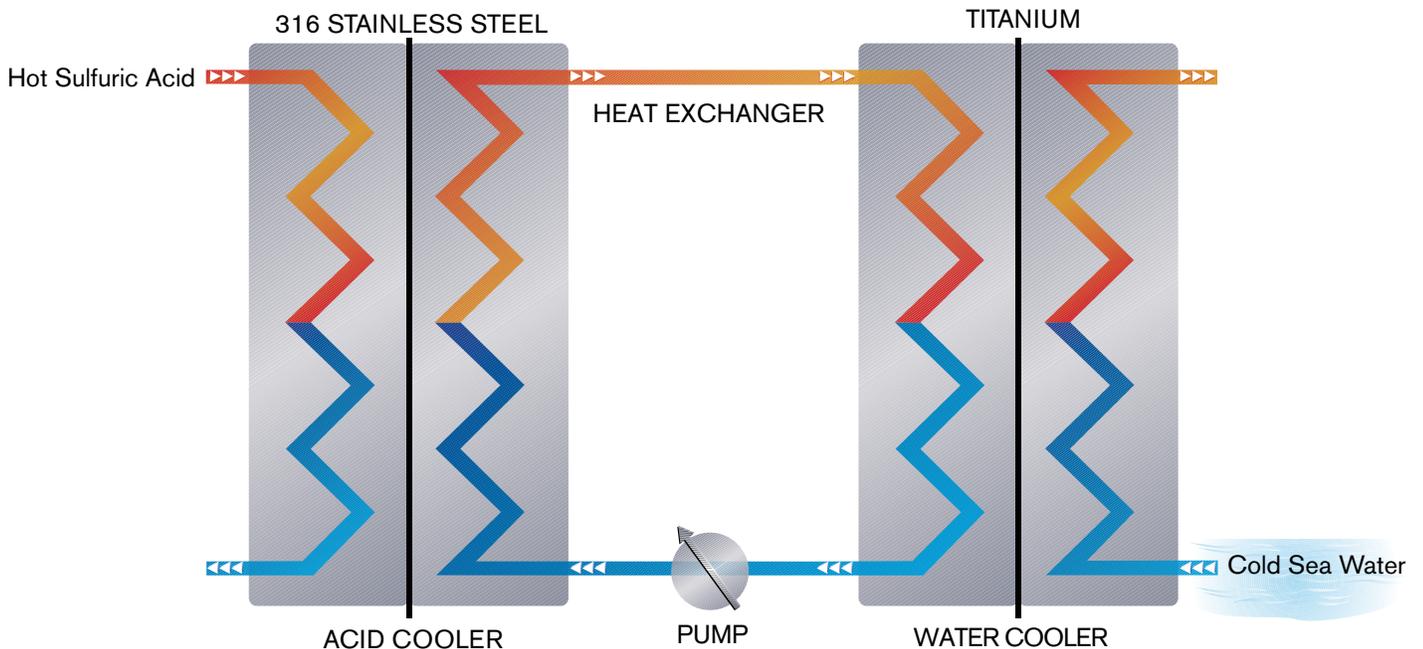
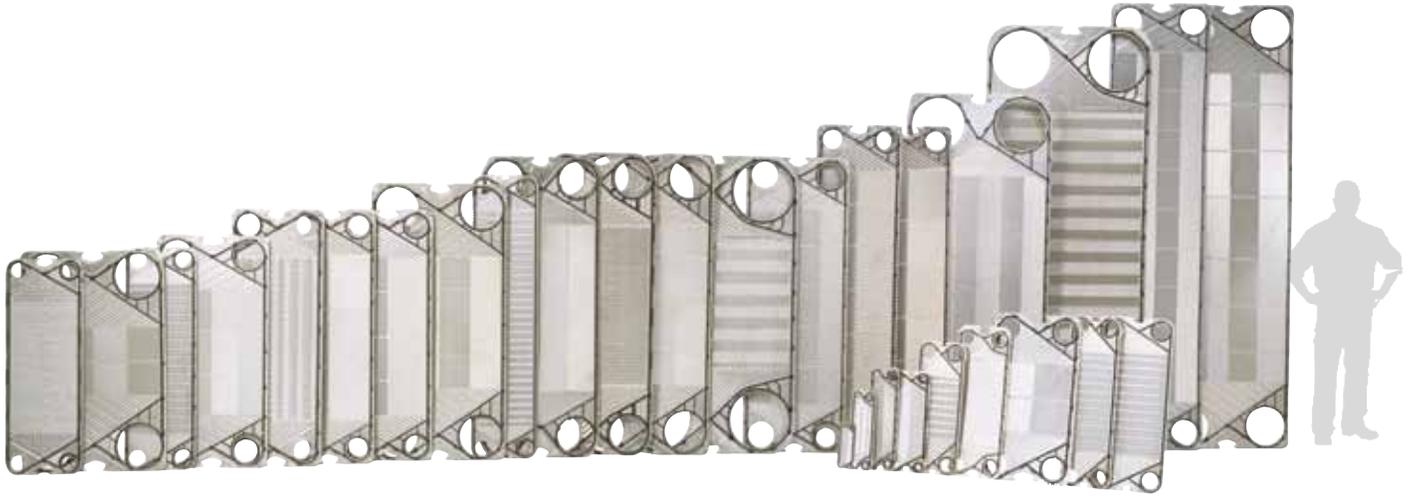


Figure 4
INDIRECT COOLING

START BENEFITING TODAY

APV plate heat exchangers reduce maintenance and operating expenses while minimizing down time, delivering the benefits you need to improve the profitability of your process. APV's knowledgeable engineers will work with you every step of the way from system design to implementation and beyond, to ensure you get the optimal performance from your system. To learn more about how APV can help improve your profitability, call our information line at **+1-800-207-2708**



A Wide Range of Plate Heat Exchangers Chemical Process and Industrial Applications

MODEL TYPE	CONNECTION DIAMETER		MAXIMUM US GPM	MAXIMUM LPM	G	W	D	STANDARD FRAME LENGTH **				MAXIMUM SURFACE AREA	
	IN	MM						MINIMUM		MAXIMUM		FT ²	M ²
								IN	MM	IN	MM		
APV - SR1	1.5	38.1	125	473.2	X			17	431.8	31	787.4	150	13.9
APV - SR2	2.0	50.8	200	757.1	X	X	X	20	508	59	1,498.6	650	60.4
APV - N35	3.0	76.2	460	1,741.3	X		X	16	406.4	98	2,489.2	1,900	176.5
APV - Q030	4.0	101.6	800	3,028.3	X			40	1016	104	2,641.6	1,550	144
APV - Q055	4.0	101.6	800	3,028.3	X			40	1016	104	2,641.6	2,850	264.8
APV - Q080	4.0	101.6	800	3,028.3	X			40	1016	104	2,641.6	4,200	390.2
APV - SR6GH	4.0	101.6	800	3,028.3	X		X	40	1016	104	2,641.6	1,450	134.7
APV - SR6GL	4.0	101.6	800	3,028.3	X		X	40	1016	104	2,641.6	2,400	223
APV - SR6AG	4.0	101.6	800	3,028.3	X			40	1016	104	2,641.6	4,000	371.6
APV - SR6AA	4.0	101.6	800	3,028.3	X			40	1016	104	2,641.6	4,450	413.4
APV - LR4	4.0	101.6	800	3,028.3		X		24	609.6	66	1,676.4	1,250	116.1
APV - R5*	4.0	101.6	800	3,028.3	X			37	939.8	220	5,588	3,950	367
APV - ER5*	4.0	101.6	800	3,028.3	X			37	939.8	220	5,588	4,000	371.6
APV - A055	6.0	152.4	1800	6,813.7	X			30	762	98	2,489.2	2,700	250.8
APV - A085	6.0	152.4	1800	6,813.7	X			30	762	98	2,489.2	4,150	385.5
APV - A145	6.0	152.4	1800	6,813.7	X			30	762	98	2,489.2	6,900	641
APV - L039	6.0	152.4	1800	6,813.7	X			46	1,168.4	131	3,327.4	3,000	278.7
APV - L080	6.0	152.4	1800	6,813.7	X			46	1,168.4	131	3,327.4	6,100	566.7
APV - SR9*	8.0	203.2	3100	11,734.8	X			46	1,168.4	136	3,454.4	3,200	297.3
APV - J060	8.0	203.2	3100	11,734.8	X			39	990.6	136	3,454.4	3,950	367
APV - J092	8.0	203.2	3100	11,734.8	X			39	990.6	136	3,454.4	6,250	580.6
APV - J185	8.0	203.2	3100	11,734.8	X			39	990.6	136	3,454.4	13,800	1,282.1
APV - TR9GN	8.0	203.2	3100	11,734.8	X	X		46	1,168.4	110	2,794	5,050	469.2
APV - TR9AV	8.0	203.2	3100	11,734.8	X	X		46	1,168.4	110	2,794	6,700	622.5
APV - TR9AL	8.0	203.2	3100	11,734.8	X	X		46	1,168.4	110	2,794	8,700	808.3
APV - B063	12.0	304.8	7000	26,497.9	X	X		46	1,168.4	197	5,003.8	6,100	566.7
APV - B110	12.0	304.8	7000	26,497.9	X	X		46	1,168.4	197	5,003.8	10,650	989.4
APV - B134	12.0	304.8	7000	26,497.9	X	X		46	1,168.4	197	5,003.8	12,850	1,193.8
APV - B158	12.0	304.8	7000	26,497.9	X	X		46	1,168.4	197	5,003.8	15,050	1,398.2
APV - B205	12.0	304.8	7000	26,497.9	X	X		46	1,168.4	197	5,003.8	15,850	1,472.5
APV - Z155	16.0	406.4	11,000	41,639.5	X			147	3,733.8	265	6,731	12,050	1,119.5
APV - Z195	16.0	406.4	11,000	41,639.5	X			147	3,733.8	265	6,731	15,150	1,407.5
APV - Z230	16.0	406.4	11,000	41,639.5	X			147	3,733.8	265	6,731	18,250	1,695.5
APV - Z270	16.0	406.4	11,000	41,639.5	X			147	3,733.8	265	6,731	21,250	1,974.2
APV - Z310	16.0	406.4	11,000	41,639.5	X			147	3,733.8	265	6,731	24,200	2,248.3
APV - Z350	16.0	406.4	11,000	41,639.5	X			147	3,733.8	246	6,248.4	24,550	2,280.8
APV - Z390	16.0	406.4	11,000	41,639.5	X			147	3,733.8	246	6,248.4	27,300	2,536.3
APV - Z430	16.0	406.4	11,000	41,639.5	X			137	3,479.8	236	5,994.4	29,750	2,763.9
APV - S190	20.0	508	20,000	75,708.2	X			156	3,962.4	250	6,350	17,000	1,579.4
APV - S280	20.0	508	20,000	75,708.2	X			156	3,962.4	250	6,350	25,050	2,327.2
APV - S330	20.0	508	20,000	75,708.2	X			156	3,962.4	250	6,350	29,400	2,731.3
APV - S380	20.0	508	20,000	75,708.2	X			156	3,962.4	250	6,350	33,900	3,149.4

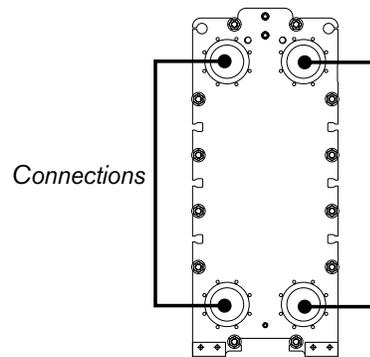
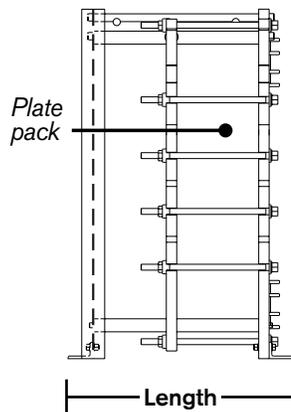
* Wide Gap

** 150# ASME Frame
Design as Basis

G - Gasketed

W - Welded Plate Pair

D - Duo-Safety



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INDUSTRIAL APPLICATIONS



Global locations

SPX FLOW TECHNOLOGY

1200 West Ash Street
P.O. Box 1718
Goldsboro, NC 27533-1718
USA
T: +1 (919) 735-4570
F: +1 (919) 731-5498
E-mail: answers.us@spx.com

SPX FLOW TECHNOLOGY

Platinvej 8
6000 Kolding
Denmark
T: +45 70 278 444
F: +45 70 278 445
E-mail: apv.emea.heat@spx.com

SPX FLOW TECHNOLOGY

666 Fengjin Road
Xidu Industrial Park
Fengxian
P.R. China.
Tel: +86 21 67158181
Fax: +86 21 67158282

ABOUT SPX

Based in Charlotte, North Carolina, SPX Corporation (NYSE: SPW) is a global Fortune 500 multi- industry manufacturing leader. For more information, please visit www.spx.com

SPX FLOW TECHNOLOGY

105 CrossPoint Parkway
Getzville, NY 14068 USA
P: +1 (800) 462-6893
F: +1 (716) 692-1715
E: answers.us@spx.com

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