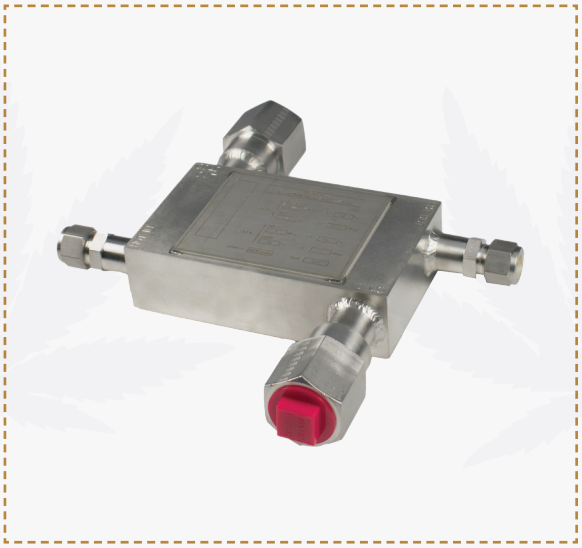
VACUUM PROCESS ENGINEERING

Custom designed heat exchangers of exceptional quality

Exchangers for Advanced CO_2 Extraction Systems

Custom designed heat exchangers of exceptional quality to meet the demanding pressure and temperature requirements of high-purity CO_2 extraction systems using high grade stainless steels, with food service compatible surface finishes.



Pure Extraction

Diffusion Bonded Microchannel Heat Exchangers (MCHEs) can meet higher operating pressure and temperature requirements than competing heat exchangers. Extraction system capability improves the range of process conditions, allowing for targeted CO_2 extraction, higher quality, and increase in product yield.

High-Purity | Compact | Robust

Microchannel design coupled with high purity Diffusion Bonding Technology assures in significant increases in effectiveness while maintaining high reliability and reduced size for extraction processes of essential oils via fractionation of botanical material.

Compare & Realize the Advantages

Compare VPE's Diffusion Bonded Microchannel Heat Exchangers with any other Welded Plate or Brazed Shell & Tube Manufacturers:

- Diffusion bonded as opposed to brazed – provides high leak integrity without the use of additional metal such as brazing alloy
- Exceptional mechanical performance in terms of handling transients, thermal stress, and large differences in fluid temperatures
- Higher geometry factor – pure counter flow
- Significantly more surface area per unit volume
- Higher heat transfer coefficient
- Higher operating pressure capability
- Higher temperature capability – only limited by material
- Smaller footprint and weight
- Convenient means of mounting
- Lower fluid inventory
- Competitive pricing

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MODEL + DATA

Model	-	HXE.1 - Cooler		HXE.2 - Cooler		HXE.3 - Cooler		HXE.4 - Cooler		HXE.5 - Cooler	
Description	-	Solvent Conditioning		Solvent Conditioning		Solvent Conditioning		Solvent Conditioning		Solvent Conditioning	
Circuit	-	A	B	A	B	A	B	A	B	A	B
Material	-	316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS	
Overall Dimensions (Core) (W x L x H)	inch	5.6 x 3.3 x 1.7		6.1 x 3.8 x 1.7		7.3 x 3.9 x 2.5		8.0 x 4.2 x 3.9		10.4 x 5.4 x 4.3	
Mass (dry)	lbs	6.6		8.8		13.2		30.9		66.1	
Fluid Type	-	CO_2	H_2O	CO_2	H_2O	CO_2	H_2O	CO_2	H_2O	CO_2	H_2O
Max Pressure	PSIG	3,844	145	3,844	145	3,844	145	3,844	145	3,844	145
Temperature Max/Min	°F	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14	194 / 14
Surface Area	ft^2	0.57		0.85		1.72		4.85		10.15	
Internal Volume (Side A)	gal	0.032	0.016	0.034	0.020	0.058	0.032	0.115	0.070	0.175	0.128
Mass Flow	$lb\text{-}min^{-1}$	5.80	83.33	9.24	166.67	18.32	291.67	48.77	453.49	93.10	453.49
Overall Heat Transfer Coefficient 'U'	$BTU\text{-}ft^{-2}\text{-}F^{-1}\text{-}hr^{-1}$	951		997		988		850		766	
Thermal Duty	$kBTU\text{-}hr^{-1}$	15.0		24.2		47.8		121.5		242.6	

Model	-	HXE.1 - Heater		HXE.2 - Heater		HXE.3 - Heater		HXE.4 - Heater		HXE.5 - Heater	
Description	-	Expansion Temperature Control		Expansion Temperature Control		Expansion Temperature Control		Expansion Temperature Control		Expansion Temperature Control	
Circuit	-	A	B	A	B	A	B	A	B	A	B
Material	-	316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS		316/316L or 316L SS	
Overall Dimensions (Core) (W x L x H)	inch	13.7 x 4.7 x 2.5		15 x 5.6 x 3.7		19.1 x 5.9 x 4.8		19.0 x 9.3 x 7.7		20.0 x 12.3 x 9.8	
Mass (dry)	lbs	26.5		48.5		79.4		187.4		427.7	
Fluid Type	-	H_2O	CO_2	H_2O	CO_2	H_2O	CO_2	H_2O	CO_2	H_2O	CO_2
Max Pressure	PSIG	145	721	145	722	145	727	145	725	145	731
Temperature Max/Min	°F	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14	176 / 14
Surface Area	ft^2	4.38		11.07		18.98		48.90		93.32	
Internal Volume (Side A)	gal	0.092	0.069	0.177	0.145	0.330	0.264	0.665	0.548	1.185	1.023
Mass Flow	$lb\text{-}min^{-1}$	16.67	5.80	16.67	9.24	33.07	18.32	83.42	46.56	170.17	93.10
Overall Heat Transfer Coefficient 'U'	$BTU\text{-}ft^{-2}\text{-}F^{-1}\text{-}hr^{-1}$	300		295		344		328		348	
Thermal Duty	$kBTU\text{-}hr^{-1}$	39.2		62.4		124.2		315.3		643.2	