

Vesper™ Overview

Vesper™ Series of PVDF/PFA heat exchangers offer a variety of solutions for heating, cooling, and temperature trimming of fluids used in ultrapure manufacturing processes. They are ideal for heating and cooling deionized water, solvents, and Piranha/SC1, among other high-purity fluids. Vesper™ products are available as standalone heat exchangers, or as integrated heaters and heat exchangers. Vesper™ housings are PP, PVDF, or PFA, and the heat exchanger tube bundles are PFA to ensure chemical compatibility. All models are available in various sizes.

VC Series All-in-One Heaters & Heat Exchangers

Vesper™ VC Series are compact all-in-one heater and heat exchangers. They are ideal for heating and cooling. They offer large surface areas for heat exchange and fast temperature response with low watt densities. VC Series are ideal for exothermic reactions and applications that require precise temperature stability. They also feature the efficient Heateflex® heating coil.

VC Features & Benefits

- Ultrapure PFA or PVDF/PFA wetted surfaces
- Heater and exchanger in a compact housing that needs less space and smaller footprint
- Patented heating element technology maximizes power in an all-in-one design
- Great temperature stability with low watt density and fast temperature response
- 2 - 5 kW (*depends on voltage and model)
- 200 - 480VAC, 1-ph (* depends on wattage)
- 180°C (365°F) processes, 95°C (203°F) shell
- 490 - 1,000 in² surface area

VC Safety Interlocks

- Thermocouples
- Ground Wire
- Liquid Level Sensor

| Model | Shell Material | Process Material | Heater Material | Surface Area |
|-------|----------------|------------------|-----------------|-----------------------|
| VCB6 | PVDF Pipe | PFA Tube | PVDF Pipe | 1,000 in ² |
| VCH1 | PVDF Pipe | PFA Tube | PFA Pipe | 1,000 in ² |



VE Series Heat Exchangers

Vesper™ VE Series heat exchangers provide solutions for indirect heating or cooling of fluids in ultrapure manufacturing processes. They provide easy installation and integration into your system. Their compact designs allow for maximum surface area in small footprints to enhance heat transfer. Models are available with PVDF/PFA or PFA materials. PFA flow paths are compatible with strict process requirements for temperature and purity.

VE Features & Benefits

- Ultrapure PFA flow path in PVDF/PFA or PFA shell
- 650 - 1,850 in² surface area in compact footprints, 10-30" in heights and 2-6" diameter
- Heats or cools fluids indirectly to meet temperature and purity requirements
- 180°C (365°F) processes, 95°C (203°F) shell
- Easy installation and fast start-up
- Retrofits into current system
- PFA tubing exchangers

| Model | Shell Material | Process Material | Surface Area |
|-------|----------------|------------------|-----------------------|
| VEH2 | PVDF, FEP, PFA | PFA Tube | 930 in ² |
| VEH6 | PVDF Pipe | PFA Tube | 930 in ² |
| VEB4 | PVDF Pipe | PFA Tube | 1,000 in ² |
| VEF3* | PTFE/PFA | PFA Tube | 1,850 in ² |

*VEF3 is a fully automated system