

CARBON DIOXIDE REMOVAL SYSTEMS

SPACE QUALIFIED CO₂ REMOVAL

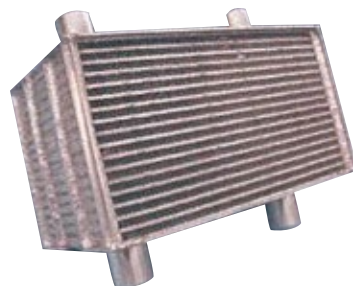
Collins Aerospace has developed a family of carbon dioxide removal systems for use in a variety of open loop and closed loop manned spaceflight applications..

Our compact plate-fin heat exchangers provide high density heat transfer for weight critical applications such as spacecraft Active Thermal Control Systems (ATCS) and Environmental Control and Life Support (ECLS) Systems. Our validated heat exchanger sizing tool allows rapid core optimization to support both spacecraft thermal trade studies and detailed design efforts. Engineers at Collins regularly interface with suppliers to push the limits of manufacturability and provide better performing, more reliable, lighter weight, reduced volume and lower cost solutions.

Collins Aerospace has over 50 years of experience designing and manufacturing compact plate-fin heat exchangers for use in spacecraft sub-systems. With hardware on every manned NASA platform since

Apollo, we understand the many complex trades involved in spacecraft thermal design and our hardware can be adapted to provide the optimum balance between performance, power, weight, and cost.

Collins Aerospace can provide quick turn, development units that are form, fit and function to flight using low cost components. Standard fin stock is available to accelerate the manufacturing process and guarantee validated performance characteristics. Standardized design and manufacturing processes are in place to ensure full traceability and delivery of a quality final product.



Heat exchanger core



KEY FEATURES & BENEFITS

- High Thermal Flux Density
- Low Pressure Drop
- Weight Optimization
- Low Leakage (Zero Liquid)
- Hazardous Fluid Compatible
- Structurally Qualified for Spacecraft Launch Environments
- NASA Compliant Materials for Human Spaceflight
- Long Life



KEY CHARACTERISTICS

- Compact Plate-Fin Construction
 - Counterflow, Crossflow, Parallel
- Multiple Fluid Regimes
 - Single-Phase, Boiling, Condensing
- Flexible Geometry
 - Length, Width, Layers, Fin Type
- Weight Optimized
- Extensive Fluid Compatibility
- Optional Redundant Coolant Loops
- General Performance Characteristics
 - Heat Load: 4 to 27,000 Btu/min
 - Pressure Drop: 0.2 inH₂O to 50 psid
 - Leakage: $\leq 1.0E-4$ scc/sec GHe
 - Max. Design Pressure: 0 to 500 psig
- Materials
 - Aluminum Alloys
 - Nickel and Stainless Steel Alloys
 - Proven Braze Process
 - Corrosion Protection
- Structural
 - Customizable Fluid Interface
 - (Fitting, Flange, etc.)
 - Integral Mounting Features
 - Weldless Design Capability
 - Robust Design: Qualified to Spacecraft Launch Environments

Specifications subject to change without notice.



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