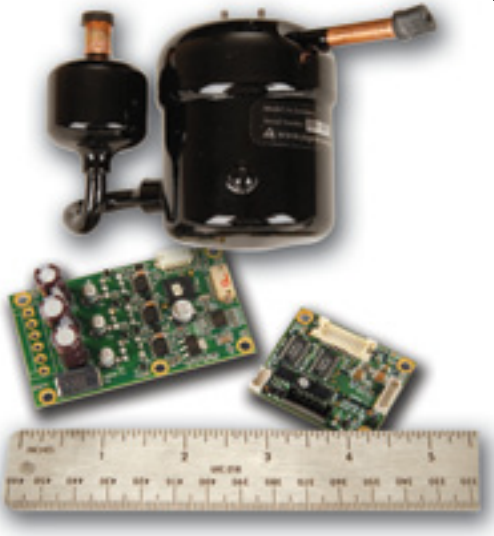


Compact–Light–Rugged Cooling Systems for Extreme Applications



Prototyping Abilities

Compact Refrigeration Systems to Your Specifications

At a Glance

Aspen Systems has the technology and experience to develop field-ready environmental control units to your specifications. Our advanced refrigeration component technologies including the Aspen miniature compressor enables the design of lightweight and compact, ruggedized cooling systems for the most challenging environments. Contact Aspen to investigate custom solutions to meet your specific needs.

- Air, Liquid, or Direct Refrigerant Cooled Systems
- Ground, Airborne, Shipboard
- Systems to cool Standard Rack Mount Electronics, Hardened Electronics, Lasers, Radar, Avionics, Rack Mounted, VITA Based System
- Designed to meet your requirements
- On Schedule
- MIL-STD-810; MIL-STD-461; MIL-STD-464; MIL-STD 1275 compliant systems
- Below Ambient Temperature Cooling
- Remote Heat Dissipation

With over 22 years of experience in developing advanced refrigeration systems, condensers, and evaporators, Aspen is the ideal go-to company for resolving your thermal management needs.

Cooling Systems for COTS Electronics

Many military programs are specifying COTS electronics to take advantage of their performance, low cost, and rapid fielding time restrictions. Aspen has developed a series of vapor compression based miniature environmental control systems that are mobile, and can be integrated into existing transit cases and vehicles to meet COTS thermal requirements.

These light weight, portable vapor cycle systems are based on Aspen's miniature compressor and control system, shown at the top of the page.

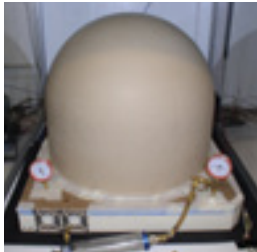
Our products and components provide a design basis from which custom solutions can be developed. Customers seeking custom solutions can rely on Aspen's experience and fully developed component technologies to solve challenging design problems. The resulting prototypes are field-ready and in a strong position to begin low rate initial production with minimal schedule impact

The refrigeration based ECU's and the components shown on the back page represent a significant breakthrough in cooling technology for mobile electronics systems. ECU-CHILL® is in production and shipping and the prototype SATCOM-OTM ECU will be field tested soon. In addition there are specialized ECU's being sent directly to theatre at forward operating bases. These systems are representative of breakthrough ECU technology that can be applied to other electronics cooling applications.

Custom Solutions for Challenging Environments



ECU-CHILL Refrigeration Based Environmental Control Unit, (ECU)



Prototype Vapor Cycle SATCOM-OTM Antenna Cooler



Aspen's Miniature Compressor



Personal Cooling Systems



Liquid-Liquid Evaporator

Prototyping

Aspen Systems has been developing miniaturized cooling systems for well over 15 years. Applications ranging from refrigerant cooled cold plates kept at 25°C in a 71°C ambient environment to the MIL Qualified 550 watt ECU-CHILL system that maintains a 125°F internal environment in a 125°F outside ambient temperature have been developed. Systems weighing as little as 3 pounds have been developed for personnel cooling applications. The Aspen team has developed ECU's for air cooled, refrigerant cooled, and liquid cooling applications for a wide variety of applications, including all types of electronics systems including batteries, COTS electronics, and specialized laser systems.

System Integration

Aspen Systems' team is ready to rapidly produce prototype and field ready cooling and environmental control units that meet military environmental specifications for operation on moving ground vehicles and airborne systems.

The development team at Aspen Systems has expertise in heat transfer, refrigeration system development and design, and can rapidly determine the optimal approach to thermal management design and system integration for your toughest applications.

For more information on how we can help you meet your thermal management requirements, please contact:
Charles Flanagan
Marketing Manager
(508) 481-5058 x124
cflanagan@aspensystems.com



Prototype Laser Cooling System



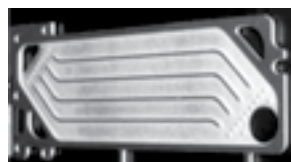
Evaporator and Condenser



LCU Liquid Chiller



Pump, Evaporator, Valve Assembly



Liquid-Liquid Evaporator