

Cold Plates Serve Demanding Military Cooling Applications

Thermacore (www.thermacore.com [1]) introduces a new line of cold plates that meet the most recent VME64x/VPX standards and support commercial off-the-shelf (COTS) packaging formats. These high conductance cold plates offer significant improvement in electronics cooling performance as compared to conventional technologies used in demanding military and aerospace applications.

The new line of lightweight, ruggedized cold plates—available in 3U, 6U and 9U formats—feature superior thermal performance with excellent temperature uniformity, resulting in lower electronic component temperatures and increased operational life and reliability. With the thermal performance and flexibility these advanced cold plates offer, military embedded system designers can reduce system size, weight, and power with improved cooling (SWaP-C), permitting better mobility and extended mission life.

“Thermacore continues its tradition of world-leading thermal management products with this innovative line of cold plates,” said Nelson Gernert, Thermacore’s Vice President of Engineering and Technology. “Our customers will appreciate the numerous benefits these new cold plates offer, including superior thermal performance, lower electronic component temperatures, design flexibility, thermal uniformity, lower mass, and drop-in replacement for existing solutions.”

Thermacore offers the VME64x/VPX cold plates in three technology options. Selecting the appropriate cold plate technology is dependent on the application need for thermal performance, weight, and cost.

- **Baseline Aluminum Cold Plate.** Produced from highly thermally conductive aluminum alloys such as 6061 and 6063 with thermal conductivity values of 166 and 201 W/m
- **K to meet the VME64x/VPX standards,** these cold plates meet the needs of the most basic performance requirements.
- **k-Core® Cold Plate.** With up to six times the conductance of solid aluminum designs and up to 20 percent lower mass, Thermacore’s k-Core® material—a patented system that encapsulates Annealed Pyrolytic Graphite (APG) with the same aluminum alloys as basic solid aluminum cold plates—boosts the thermal performance of the basic solid aluminum cold plates to even lower temperatures while reducing system mass
- **Embedded Heat Pipe Cold Plate.** This cold plate option is constructed from solid aluminum that is integrated with heat pipes to remove “hot spots” from the applications where heat loads are concentrated.

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Thermacore's embedded heat pipes offer significant thermal performance improvement when compared with typical solid aluminum or copper-based cold plates in electronics or computers, where the heat source is small.

The complete line of cold plates are ideally suited for "mission critical" cooling applications, including embedded computer systems, military radars, power converters, power electronics cooling, rugged laptops and handheld devices, laser diodes, and other applications such as telecom communications and RF amplifiers, low-profile applications, blade servers, high-temperature applications (greater than 100°C), and high-strength and clamping-force applications.

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<http://www.ecnmag.com/product-releases/2011/03/cold-plates-serve-demanding-military-cooling-applications>

Links:

[1] <http://www.thermacore.com>