
SESSION 12: Aerospace Coolers, Drive & Control Electronics

Paper 12.8

Wednesday ORAL Session

4:30 PM

Performance Testing of the West Coast Solutions C3E and the Northrop Grumman MicroCooler for Spaceflight Missions

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This paper describes a series of experiments during which the West Coast Solutions Compact Cryocooler Control Electronics (C3E) was shown to successfully drive the Northrop Grumman MicroCooler over a wide range of operational conditions. The C3E is a low cost, compact, radiation hard cryocooler electronics module developed primarily for cost-constrained, but nevertheless mission critical military and civilian spaceborne small cryocooler (< 50 WAC) applications. This MicroCooler and C3E combination is also applicable for airborne and terrestrial tactical applications that require a high reliability, long life cryocooler. This testing reported herein is a precursor / dry run for upcoming testing planned for the summer of 2024 with the MicroCooler and an enhanced version of the C3E dubbed the C3E-PT. The C3E-PT incorporates Northrop Grumman-specified features to better leverage strengths of the MicroCooler design. The test results with the C3E and a look ahead to the upcoming testing with the C3E-PT are described herein.