

Power Supply Sizing

Problem

Power supplies are a critical component in any system, whether it be networking, avionics, or consumer. One ECS networking client needs a 33% increase in output power to support new applications, does not want the noise associated with cooling fans, and due to space constraints, needs to package the new power supply electronics in the existing chassis. Can these design objectives be met?

Solution

To give a timely answer, several simplifying assumptions were made about the components, their location on the board, their power dissipation and their temperature limits. It was further necessary to assume that certain regions of the enclosure had to be reserved for connectors and other components, and weren't available for participation in the cooling design.

With these assumptions in place, an analysis was conducted that showed that the new objectives could be met. Guidelines for optimum placement of high-power components were developed, as were guidelines for heat sink design. Improvements to enhance cooling due to radiation heat transfer were also recommended.

Summary

An architectural-level analysis was completed for our client that showed that their design objectives were achievable. ECS also provided component placement guidelines to help meet those objectives.

