

Next Generation Graphics Board

Objective

A graphics card manufacturer is upgrading their card to support a new generation of video applications. The upgrade is projected to dissipate 120 Watts of heat, a significant increase over the old card's 85 Watts. ECS was asked to determine if the proposed thermal solution would be able to cool the new card.

Simulation and Results

ECS created a thermal model of new card using the geometry and thermal data provided by the company. Fan performance tests were conducted in ECS's lab with the fan mounted to the heat sink in order to capture the impedance losses associated with the heat sink. These results were incorporated in the model, rather than relying on the fan vendor's performance curves, which may have yielded overly optimistic results. The proposed assembly was found to be sufficient to cool the graphics chip, but not sufficient to cool the memory. ECS made refinements to the proposed design, which brought the memory chips to temperatures below their limits.

Conclusions

This study shows how ECS used a combination of modeling, experimentation, and experience to help solve a thermal design problem at the concept stage of a new product.

