

The Electrification Module's automated CFD model generation and parameterization eliminated delays from CAD updates, cut setup time by 60%, and enabled faster optimization.

Challenges faced in Electrification Module:

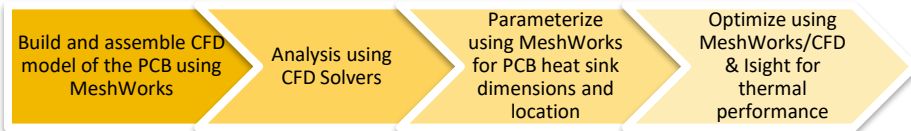
Creating efficient thermal analysis workflows posed significant hurdles due to the lengthy CFD model setup process, which traditionally required extensive time for geometry preparation and meshing. Engineers faced delays waiting for CAD updates before simulations could proceed, making it challenging to explore multiple design alternatives, such as variations in IC placement and heat sink dimensions. These constraints hindered rapid design evaluation and slowed down the overall product development cycle.

The Solution:

Using DEP MeshWorks, the CFD model was rapidly developed through automated geometry preparation and meshing, significantly reducing setup time compared to conventional CAD tools. The software enabled parameterization of critical design variables, such as heat sink dimensions and IC placement, eliminating the need to generate new CAD files for each design iteration. This approach removed delays associated with CAD updates and allowed real-time exploration of multiple design configurations. Additionally, DEP MeshWorks automated the iterative steps of geometry modification, meshing, and analysis, resulting in a substantially shortened design cycle.

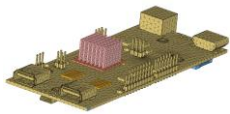
Value:

- Achieved a 60% reduction in CFD model creation time compared to other tools.
- Eliminated CAD waiting time by enabling parameterization and optimization without new CAD files.
- Delivered optimized heat sink dimensions and IC placement, resulting in improved thermal performance.

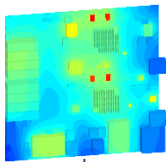


Work Flow - Driven by MeshWorks

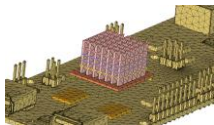
Build and assemble CFD model of the PCB using MeshWorks



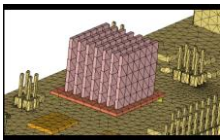
Analysis using CFD Solvers



Parameterize using MeshWorks for PCB heat sink dimensions and location



Optimize using MeshWorks/CFD & Isight for thermal performance



Productive Electrification Module

Achieving Range Improvement For EVs With Optimized Design

