



Ansys + Elausa

“Using Ansys Icepak software for our automotive interior lighting project transformed our approach to thermal management. The accurate simulations saved us time and allowed us to optimize material choices without the need for costly prototypes. Ansys has been a vital partner in our development process.”

— **Antoni Vilatimó**
Laboratory Engineer / Elausa

/ Using Ansys for Thermal Optimization in Automotive Interior Lighting Projects

In the automotive industry, effective thermal management of electronic components is crucial, especially in space-constrained environments like interior ambient lighting. This project involved a new type of light-emitting diode (LED) with integrated circuits (ICs), needing a thorough understanding of thermal behavior to ensure reliability.

/ Challenges

The primary challenge was managing the power output of the LED printed circuit board (PCB) in high ambient temperature and within a limited space surrounded by plastic materials, which restricted airflow. The team required a simulation tool that could accurately model thermal performance and integrate seamlessly with existing electronic computer-aided design (ECAD) systems. Ansys Icepak® electronics cooling simulation software was chosen for its usability, precision, speed, and excellent technical support.

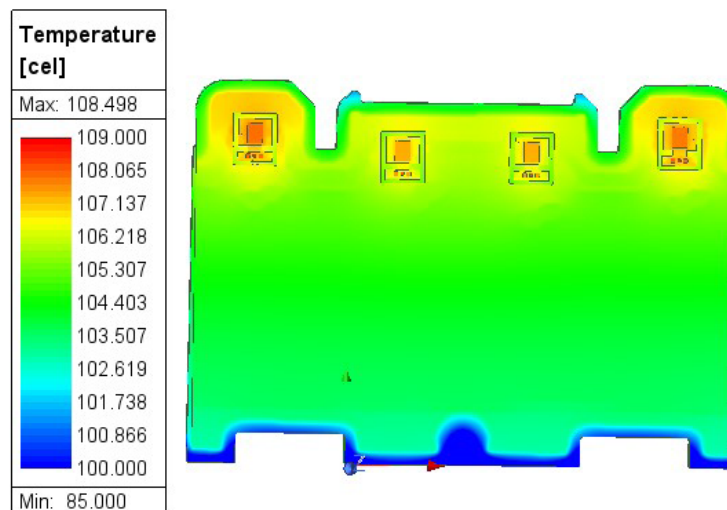
/ Technology Used

- Ansys Icepak software

/ Engineering Solutions

To address the thermal management challenge, the team utilized Icepak software to perform comprehensive simulations of the PCB. Key features that facilitated their success included:

- Advanced computational fluid dynamics (CFD): enabled detailed conjugate heat transfer analysis to predict airflow and temperature distribution
- ODB++ import functionality: streamlined the integration of PCB layout designs for precise simulation of heat conducted through copper traces and vias
- Material testing capabilities: enabled rapid evaluation of materials for optimal thermal performance without prototyping
- Customizable meshing approach: facilitated accurate modeling of complex geometries, which was essential for tightly packed designs, and enabled an extensive meshing optimization, which significantly reduced computation time without losing accuracy



Thermal results of a section of the LED printed circuit board (PCB) inside the car surroundings

/ Benefits

Icepak software provided significant advantages throughout the development process.

- Accurate and fast thermal simulations: enabled the assessment of materials with differing thermal conductivities to optimize component cooling
- Time savings: eliminated the need for physical prototypes, accelerating the design cycle and saving more than two months in time
- Seamless ECAD Integration: enabled easy import of PCB designs using ODB++ format, facilitating detailed simulation of copper planes and via configurations
- Enhanced technical support: Provided ongoing assistance, ensuring the team could leverage the full capabilities of the software and become autonomous quickly

By utilizing Icepak software, the team successfully maintained low operating temperatures to enhance the reliability and lifespan of their automotive lighting solutions.

/ Company Description

Elausa Electronics, founded in 1988 and headquartered in Catalonia, Spain, specializes in designing and manufacturing electronic systems, particularly for the automotive and industrial sectors. As an Electronics Engineering Manufacturing Services (E2MS) provider, the company offers comprehensive solutions that range from design to production, assembly, and testing. This approach allows Elausa to support a variety of applications for both the industrial and automotive sectors.

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When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

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