

The Cost of Thermal Failure

Today's electronic engineers face challenges coming at them from every angle. *Balancing power, heat and performance in designs is no easy feat.* As technology advances, devices have become more compact and more complex. Thermal performance has become ever more important as excess heat increases the risk of device failure.

In the face of these issues, some engineers still remain reluctant to use simulation. More often than not, this reluctance comes down to the high initial investment associated with thermal simulation packages. This investment, however, is nothing compared to the potential long-term costs involved in failing to address thermal complications throughout a design.

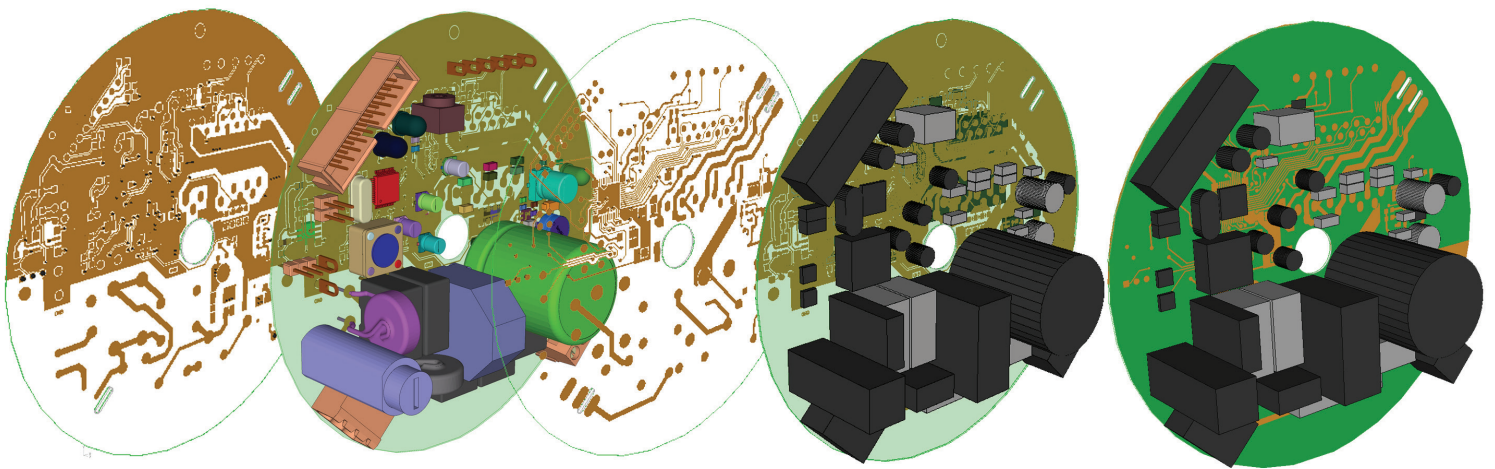
For both manufacturers and design engineers, the financial cost of a design failure can be catastrophic. When we factor in other measures, such as the cost of creating one-off PCBs, enclosures and assemblies as well as the environmental testing required, the total

cost of a prototype-level design failure skyrockets. We reached out to experts in the industry to find the true cost of design failure, and our research found that:

- An average budgeting endeavor can cost a team upwards of **three times the initial price** — even before a working prototype has been produced.
- Restarting a design process can take **weeks, months,** or potentially **even longer.**
- Our research suggests that **a single design failure** can cost upwards of **£10-20,000** to rectify.

“Tools that enable design checking should be deployed at the earliest stage: each remake can cost thousands, but even if the cost of remaking is minimised to a few hundred pounds the biggest issue is the time lost.”

Rod Piwowarski, CEO Lascar Electronics

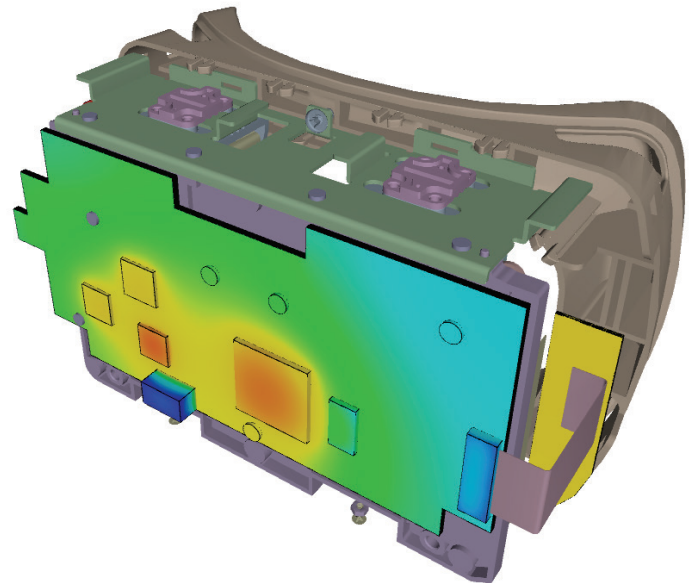


Redesigning is an Expensive Endeavour

By going back to the drawing board in this way, engineers inevitably face significant additional costs; whether through the purchase of additional materials for multiple prototypes, or simply the human hours put into perfecting a flawed design. In the case of system designs with multiple parts, this cost can inflate hugely, with many people or teams needing to be involved in the redesign process.

While it would be easy to assume that such design failures are uncommon, our recent The Heat is On research project found that:

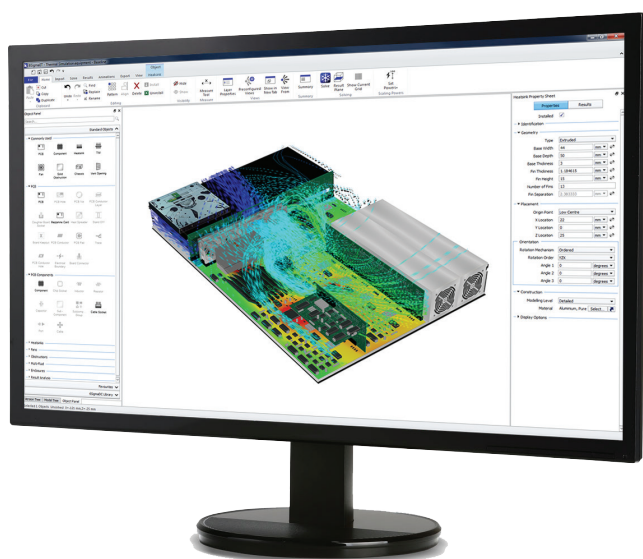
- 99.5% of engineers have experienced *design failure*
- 75% of these engineers still do not test the thermal operations of their design until *after their first prototype is complete*



The Benefits of Thermal Simulation

In the best-case scenario, a design failure can lead to a costly redesign. In the worst case, it could result in a total product recall.

The irony, of course, is that in many cases such costly failures are occurring as a result of engineers trying to save money. Rather than paying upfront for effective thermal simulation software, too many engineers rely on thermal complications emerging during the prototyping phase of their designs. This not only results in costlier, more time-consuming design processes, but it can also lead to lower quality electronics and, ultimately, less reliable end products.



6SigmaET, a computational fluid dynamics (CFD) simulation tool, brings new levels of productivity to electronics cooling design. Thanks to its ease of use, it overcomes many of the problems that have plagued analysis tools from the beginning. Boasting substantial automation and intelligence, 6SigmaET is already being used by a global community of design engineers.