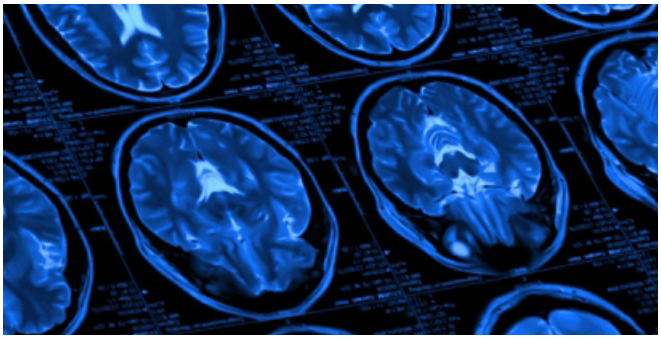
Medical

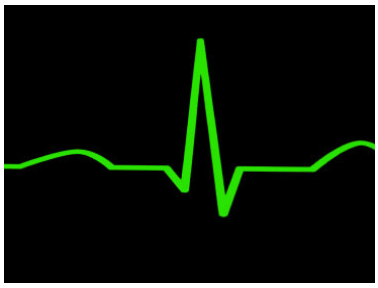
THERMAL ANALYSIS & DESIGN SERVICES FOR THE MEDICAL EQUIPMENT INDUSTRY

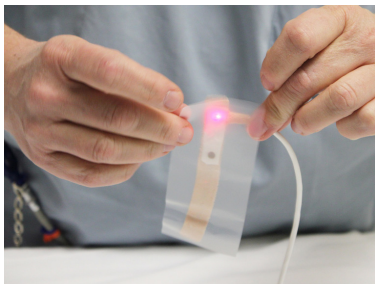
Proliferation of electronics in the medical market sector is known to all of us. Even when we compare today' presence of electronics in the medical field with only a decade ago, we see a marked reliance on electronics to provide care and diagnosis. As the result, Healthcare professionals depend on the accuracy and reliability of these instruments in order to provide reliable care to their patients. Bio-medical equipment have similar electronics cooling requirements, but with the unique sensitivity that their reliability may directly impact someone's well-being. Further, like with any other electronics, they are expected to perform at a higher response rate without failure. As the result, their thermal management is of paramount importance.

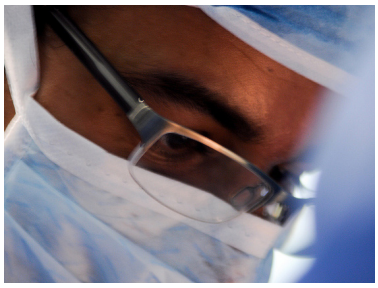
Medical applications present unique thermal challenges that are not necessary in other industries. These challenges are directly related to their use (ambient conditions) and fail-proof operation. In addition to these, a major challenge is associated with such devices interacting with humans in a compromised condition. Issues such as acoustic noise, EMI emissions, surface temperature constraints, dissemination of bacterial agents, etc. add additional complexity to the thermal design, while attempting to keep the electronics cool for the highest response rate.

Over its twenty five years of serving the electronics industry, ATS and its engineers have engaged with a broad spectrum of biomedical equipment companies, ranging from large multi-national corporations to small startups designing the next generation of medical test equipment. As the result, ATS engineers have become highly experienced with a multitude of biomedical equipment challenges and have been able to successfully analyze or design a solution that uniquely is suitable for the given client.









CASE STUDY

ATS was approached by an international medical laser company. The customer said that their competition was producing a product that was twice the cost of theirs and half the size, and was winning doctors over.

The cooling system and the packaging of the electronics were identified by ATS engineers as the two culprits for the size difference. ATS, in consultation with the client, redesigned the packaging of the electronics. ATS also suggested the use of different components with similar functionality and designed a compact and highly efficient cooling system for client's laser system.

The effort was much appreciated by the client as they felt that they now have a system that can effectively compete in the market place.

"We engaged with ATS' engineering services for the thermal design of a moderately powered laser diode used in medical applications. The design required not only for the device to be cooled effectively, it needed to be ergonomically designed for human interaction and handling of the probe by the operator. ATS completed an extensive CFD simulation to identify available heat transfer paths as well as the required cooling system. The redesigned probe was a lighter weight with a clever heat load distribution, which ensured that the laser would not over heat or impact its light spectrum. The in-depth knowledge of heat transfer and fluid flow by ATS' engineers, as well as an excellent understanding of the application of the final product, resulted in a successful and cost effective launch of this probe." - Bio-Medical Device OEM

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