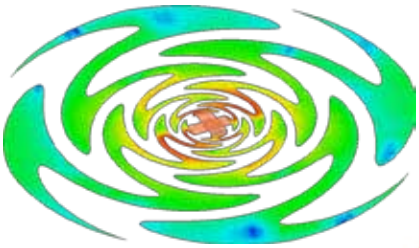
ANSYS®

Realize Your Product Promise™

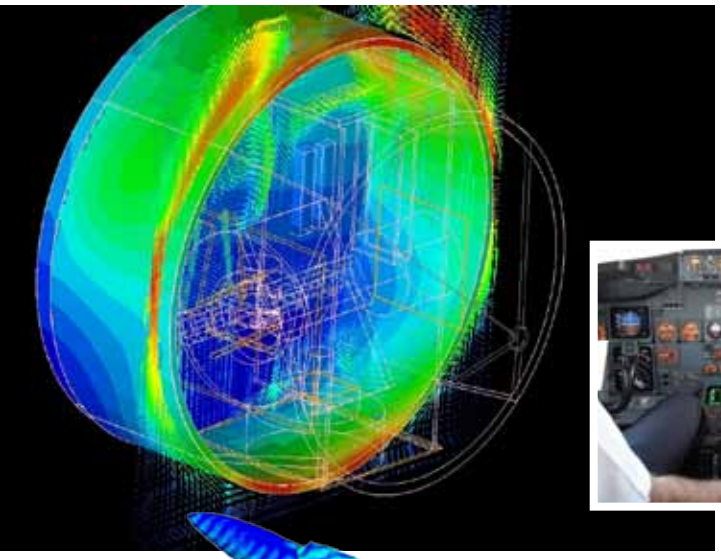
in Electronics and Semiconductors

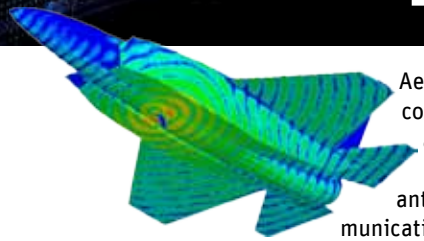
ANSYS



Challenged to Succeed

With ever-shortening product life cycles, semiconductor and electronics companies face incredible pressure to innovate, quickly and consistently. Can your business keep up?





Aerospace and defense electronics companies invest heavily in R&D, and our products play a central role in developing airborne antennas, radar systems and communication devices. We also contribute to the "more electric aircraft" concept, which represents a major industry driver. ANSYS software helps engineers confidently and reliably replace traditional mechanical and hydraulic systems with fault-tolerant, lightweight electronic and power systems.

Perhaps no industry faces greater pressure to drive ongoing innovation than electronics and semiconductors. With rapid technology advances, intense global competition and demanding customers, electronics companies are doomed to fail if they don't keep pace with very short product life cycles and frequent new product launches. From semiconductors to cell phones and tablets to servers and networking devices, by the time a new product is launched, the next generations are already in development.

Every market segment has its own unique performance demands, but generally across the industry electronics engineers are continually challenged to develop smaller, lighter-weight, more powerful, more feature-rich and more energy-efficient products — at a lower cost.

How can your electronics engineering team produce a steady stream of truly game-changing innovations, quickly and cost effectively? Today, the strategic application of engineering simulation — in which products are designed and validated in a virtual environment — is separating the leaders from the followers.

"The cell phone is coming closer and closer to your average laptop computer. So it's very important to move from rule-of-thumb design for many real-world design parameters. Typical examples include the move to more than one CPU core and increased operating frequency. This requires a more detailed analysis, and ANSYS provides enabling tools."

Jonas Persson
Technical Manager
ST-Ericsson

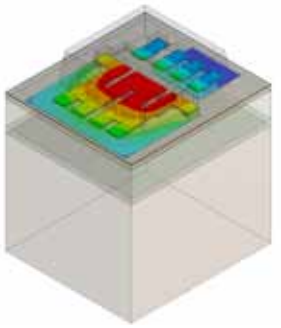
ANSYS: A Conductor for Innovation

Advanced engineering simulation solutions from ANSYS are helping the world's leaders in electronics as they leapfrog the competition and win market share. With our focus on bringing clarity and insight to the most complex physics phenomena, we can help your business join this elite group of industry trendsetters.

By driving dramatic time and cost improvements throughout the development cycle, software from ANSYS helps bring innovations to market quickly, before competitors can anticipate your next move. Because your engineers work in a low-risk, virtual design environment where anything is possible, they are more likely to produce the truly revolutionary, outside-the-box innovations that have become a requirement for success in the electronics industry.

Supply chains may span multiple continents and include dozens of multi-tier component suppliers. Launching true product innovations means involving these global stakeholders in product development efforts. Our solutions provide a powerful, collaborative platform for sharing performance data and insights throughout the development cycle. When components are assembled into finished products, there are fewer surprises, and you can launch new designs with innovative features much faster.

Such features mean nothing if they sacrifice product integrity. As well-publicized electronics recalls have demonstrated, product confidence is just as important as speed in earning customer loyalty and protecting your long-term brand reputation. With high-fidelity solvers supported by proven multi-domain physics, our software enables your business to combine extreme speed with incredible accuracy — so you can fulfill your product promise in the marketplace.



"Delphi's initiative on upfront analysis has resulted in outstanding business value in terms of improved designs developed very efficiently. The use of ANSYS has certainly facilitated this. Perhaps the best indicator of its effectiveness is management support for widespread use by such large numbers of Delphi engineers around the world."

Fereydoon Dadkhah
Senior Engineer
Delphi Electronics & Safety Systems

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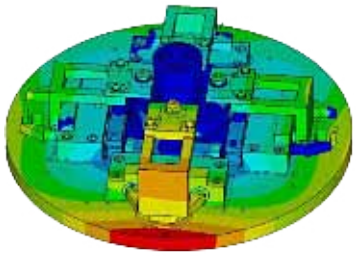
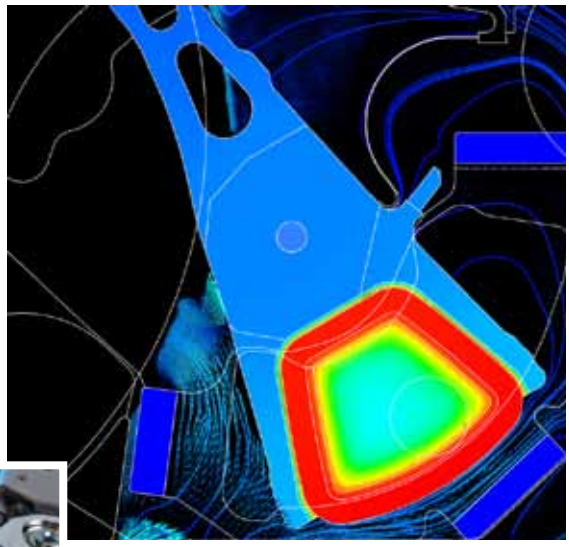


Sparking Innovation Across Industries

Sophisticated electronic product design requires a multiphysics, multi-scale approach. ANSYS delivers the broad capabilities your business demands.



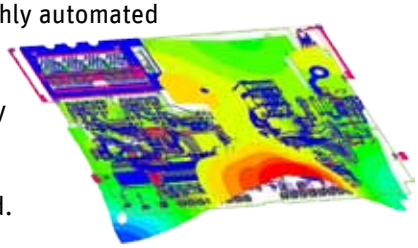
Using ANSYS software, engineers at Samsung made an important discovery that allowed them to improve thermofluidic performance of the hard disk drive. Samsung engineers find that simulation during the early stage of development is an important contributor to successful time to market.

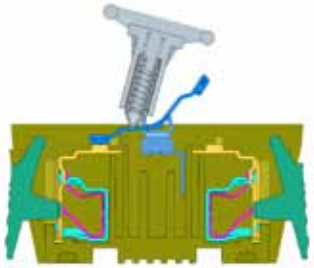
If your engineering team operates in challenging environments, dealing with the complexities of high-speed channel, antenna, semiconductor package or electromechanical systems design, our tools can help you find optimal solutions.

Today's products come in ever-shrinking packages — and they are often developed by working in partnership with multiple tiers of suppliers in different time zones and cultures around the world. Only ANSYS offers the broad electromagnetics capabilities, industry-leading multiphysics solutions and collaborative technology tools to support the needs of global engineering teams.

The comprehensive multiphysics capabilities of our solutions support electronics engineers as they study performance at both the component and systems levels, considering a range of forces and impacts on overall product performance.

In addition, ANSYS brings the global supply chain together via engineering knowledge management, highly automated workflows and a common, easy-to-use technology platform that's accepted as an industry standard.





Schneider Electric used ANSYS software to perform thermal and electrical simulations on a wiring system switch device assembly. The study extended into analyzing the effects of electrical–thermal contact resistances, impact of radiation heat transfer in compact electrical devices, and impact of overcurrent and high ambient temperatures on the product's thermal performance. ANSYS simulation gave the Schneider Electric team confidence to apply that same modeling approach to the entire product family.

An Electrifying Range of Applications

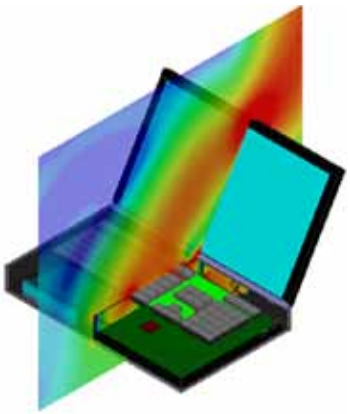
Around the world, in nearly every industry, leading engineering teams leverage the power of our software to develop exciting electronics products that promise to revolutionize the market.

Electronics systems engineers face many challenges in the aerospace industry. R&D groups use powerful ANSYS tools to eliminate EMI issues between onboard radar tools and other electromagnetic systems, both in the air and on the ground.

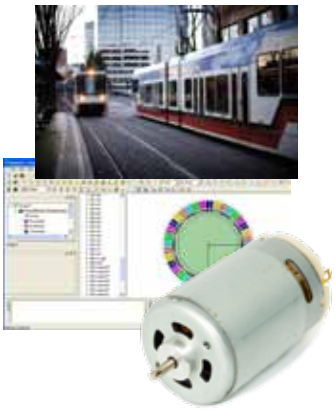
In the automotive industry, engineers are working on next-generation electric powertrains as well as on GPS navigation, automated steering, and safety and lighting systems that are predicted to make passenger cars more electrical than mechanical in nature. In designing and verifying these innovations, engineers balance electrical performance requirements with thermal durability, structural integrity, light weight and energy efficiency.

In consumer products sectors, ANSYS software delivers the multiphysics capabilities to ensure that power, signal and structural integrity are maintained at the highest possible levels. A special challenge is balancing fast data transfer and other performance demands with the electromagnetic output limitations imposed by government regulators.

In driving innovation within the electronics industry today, ANSYS stands ready to help your business address its own product engineering challenges.



Our technology can handle the complexity of modern interconnect design from die-to-die across ICs, packages, connectors and boards. By leveraging advanced electromagnetic field simulators dynamically linked to powerful circuit and system simulation tools, engineers can understand the performance of high-speed electronics products before building a prototype.

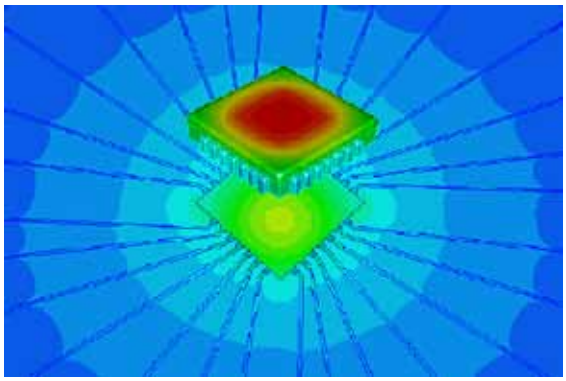


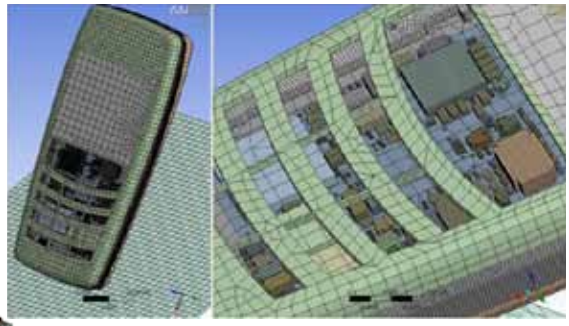
In the energy storage industry, electric double-layer capacitors (ultracapacitors) are becoming widely accepted for use with advanced batteries, such as for use in transit buses and trains. Hybrid–electric system designers at Maxwell Technologies use ANSYS to design such systems, leveraging comprehensive tools capable of addressing multi-domain and mixed-signal design by allowing a coupled analysis of the motor, circuit, controller and drive systems.

ANSYS

Industry-Leading Technologies that Advance Your Business

ANSYS is the only software provider that offers the breadth, depth, speed and quality of solutions needed to drive innovation across every facet of modern electronics design.



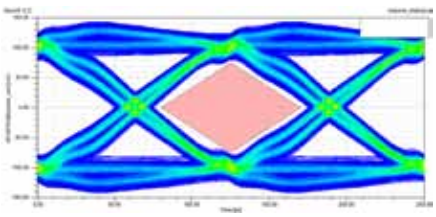


ANSYS solutions incorporate tools for an end-to-end electronics product solution, from chip to package and board design, including detailed meshing, automated contact detection, thermal deformation and drop testing.

ANSYS is the acknowledged industry leader in simulation for electronics applications. Our solutions span the full range of signal integrity, power integrity, and high-frequency and low-frequency electromechanical analyses, enabling engineers to study and improve performance for virtually any electronics application.

But today's electronics products represent sophisticated systems that require engineers to consider a variety of physics. If you have ever dropped your cell phone or laptop, you know the valuable role that structural engineering plays in electronics product design.

In addition to our best-in-class electromagnetics capabilities, we can provide your team with the solvers you need to conduct structural, thermal and fluid dynamics analyses for innovative and optimal design. By analyzing performance at the component level — as well as at the system level via multiple physics solvers — electronics engineers can have the highest-possible confidence that products will perform as expected in the real world.



"ANSYS is a virtual laboratory for us. It provides quite a return on investment: We drastically reduce the number of prototypes. And if you know the price of a whole test bench, you know that when we are optimizing or versioning designs, we cannot afford to do a lot of prototypes."

Pierre Solomalala
Power Electronics R&D Engineer
Alstom Transport

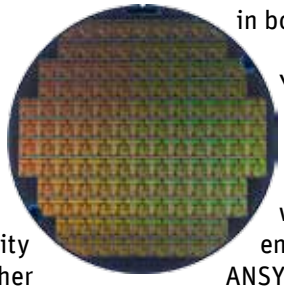
Because of their complexity, electronics product designs often require numerically large simulations. ANSYS HPC capabilities support the fast and accurate solution of even sophisticated problems such as EMI and acoustic noise reduction. By leveraging parallel processing power in conjunction with HPC technologies such as graphics processing units (GPUs) and domain decomposition, electronics engineers can streamline and automate even the most complex simulations.

ANSYS: A Product-Wide Perspective

Powerful and far-reaching, our software provides the only technology platform that offers physics depth, breadth and scalability.

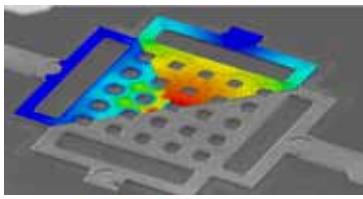
For example, semiconductor manufacturers rely on solutions from ANSYS to address a wide range of design concerns in developing new chips, packages and printed circuit boards. Our signal- and power-integrity tools help eliminate noise, crosstalk and other adverse electromagnetic effects. Heat transfer and structural mechanics software together ensure product integrity in the face of increasing package power densities and high solder-curing temperatures.

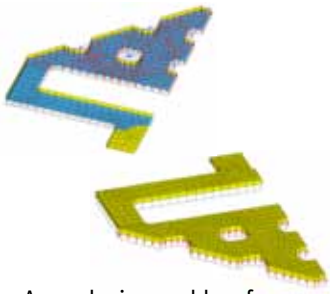
In the area of RF and microwave device design, electronics engineers rely on our tools to analyze multi-domain performance of antennas, radar systems and other products. Systems that are hundreds of meters in size can generate significant amounts of heat, and thermal solvers help ensure their safe long-term operation. Vibration and drop tests — conducted using structural mechanics tools — support the reliable performance of radar systems and antennas found in both military and civilian vehicles.



Your organization has the opportunity to optimize performance and spur innovation across virtually every facet of electronics design, with unerring accuracy. Whatever engineering challenges you face, ANSYS offers the unique capabilities to solve them.

NVIDIA is a world leader in visual computing technologies and the inventor of the GPU. The company applied our software in designing the GPU to ensure a clear communication link between pixel generation and display. In turn, ANSYS leveraged the device as an HPC enabler, which can dramatically reduce simulation processing time by as much as half.





Courtesy EPCOS NL/Philips Applied Technologies.

A perplexing problem for mobile phone users is dropped calls. EPCOS leveraged our suite to simulate the transient dynamic response of an innovative RF-MEMS switch for improving cell phone signal strength. The approach accounted for fluid, electrostatic and mechanical effects in a single model, providing fast turnaround for rapidly changing cell phone requirements.

ANSYS

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ANSYS is dedicated exclusively to developing engineering simulation software that fosters rapid and innovative product design. Our technology enables you to predict with confidence that your product will thrive in the real world. For more than 40 years, customers in the most demanding markets have trusted our solutions to help ensure the integrity of their products and drive business success through innovation.

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