

Cost-Effective Innovation

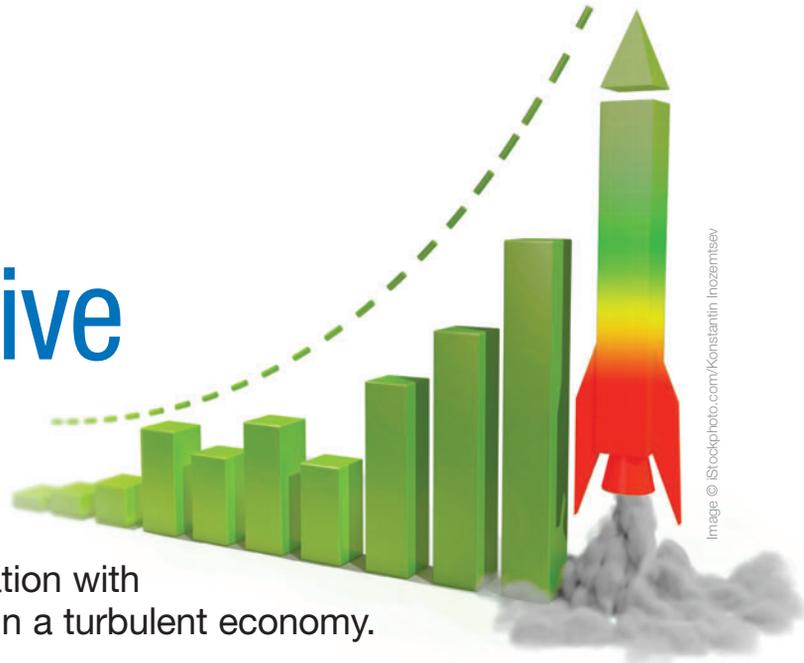


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Best-in-class companies systematically integrate simulation with design processes to succeed in a turbulent economy.

By Thierry Marchal, Industry Director, ANSYS, Inc.

As some companies successfully yet conservatively navigate their way through the economic recovery, many are still mired in the aftermath of the crisis. Either way, in these tough times all executives are continually struggling with two seemingly opposing initiatives:

- Cost savings to mitigate the negative impact of the economic climate on sales
- Innovation that can propel a company beyond the crisis as quickly as possible

Neither of these initiatives can be sacrificed for the other, especially for companies that are seeking to do more than just merely stay afloat. The challenge is finding practical ways to accomplish both objectives at once.

- Product safety is an ongoing concern across all industries. Minimizing — or, better yet, eliminating — risk of injury from the use of a company’s products and processes is always a top priority. Products need to be safe throughout their entire life cycle.
- Green design is increasingly important, with sustainability and ecological issues leading to unprecedented levels of innovation in product development processes.

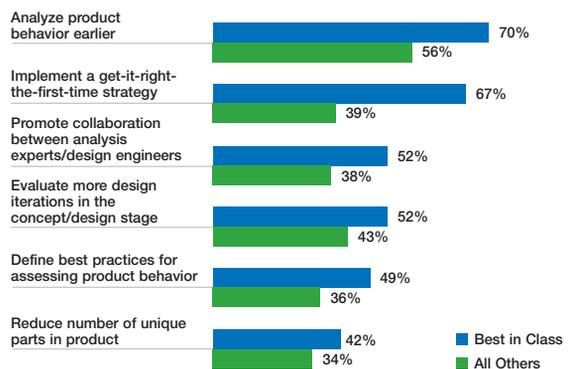
The first companies to emerge from these tough times will be tomorrow’s market leaders.

While the competition is reeling, visionary companies are taking advantage of this time to sprint ahead of the pack through innovation. Clearly, the first companies to emerge from these tough times will be tomorrow’s leaders. New solutions are necessary not only to create or sustain this business leadership but also to address major challenges facing manufacturing companies today and in the years to come:

- Product integrity is a must have in highly competitive markets. Product failures and recalls cost companies dearly. A product that needs to be repaired or replaced severely cuts into profits and badly damages brand image.

Race to the Finish Line

Companies are locked in a race to the finish line, and the focus today is on innovation. Winning at developing high-demand, high-quality products means breaking with the past and redesigning legacy product development processes that decrease costs, shorten time to market and reduce financial risks.



Strategies to Improve Product Design
Source: Aberdeen Group, April 2010

Business as usual is not an option anymore.

Business as usual is no longer an option. For major innovations, the traditional approach of creating numerous physical prototypes and conducting lengthy test cycles for each design is not practical because doing so would require large budgets that cut into profits, and long development cycles that often bring products to market too late. Rather, new processes must be implemented so that companies can design higher-quality, innovative products on time and at lower cost.

A recent report titled *Cost-Saving Strategies for Engineering: Using Simulation to Make Better Decisions* from the Aberdeen Group sheds light on best practices applied by successful companies targeting time, cost and quality. According to the report, best-in-class companies utilize engineering simulation to systematically design new products in the virtual world. Such companies spring back from tough times faster than competitors by optimizing their development process and implementing a get-it-right-the-first-time strategy by predicting and analyzing product behavior earlier in the design process. They also evaluate more design iterations in the concept/design stage.

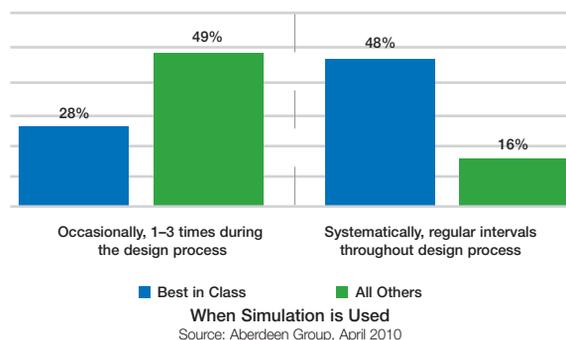
In such an approach, engineering simulation:

- Reduces physical build-and-test experiments, shortening time to market and make a positive impact on the bottom line
- Opens the door to more dramatic enhancements and truly innovative solutions

Using Engineering Simulation Systematically

If many companies are now using simulation during their design processes, the most successful ones are differentiating themselves by using engineering simulation systematically during the design process, applying as a standard the Simulation Driven Product Development concept. These successful companies integrate and deploy simulation at the core of their processes, encouraging tight interactions between analysts and designers around a virtual product developed in a common, integrated software environment.

Effectively and accurately predicting the behavior of new products often requires analyzing the interaction of complex, nonlinear physics and incorporates structural analysis, fluid dynamics, electromagnetic modeling, fatigue analysis and other types of investigations. Furthermore, interactions between the numerous individual parts of a product as well as between the product and its environment call for more comprehensive geometrical modeling, necessitating complex meshing and advanced high-performance computing (HPC).



Being a Best-in-Class Company

Although the concept of Simulation Driven Product Development may be an ideal design process goal for many companies, the approach cannot be successfully implemented without considerable forethought, know-how and insight to set up and deploy the required advanced technology solutions. This deep understanding of design processes is what drives ANSYS product strategy. The ANSYS Workbench platform is the framework upon which the industry's broadest and deepest suite of advanced engineering simulation technology is built. Within a single multiphysics platform, an entire simulation process is tied together, enabling complex multiphysics analyses. There is a growing list of best-in-class companies that have chosen to adopt and deploy ANSYS solutions for their get-it-right-the-first-time strategy.

This issue of *ANSYS Advantage* illustrates how successful companies, through the integration of engineering simulation into their design processes, develop radically innovative solutions while benefiting from savings that sometimes exceed millions of dollars.

The Next Decade will be Virtual

There is no doubt anymore about the potential benefits of engineering simulation, and laggards will quickly experience the downside of non-adoption: an inability to maintain innovative competitiveness. Tomorrow's leaders will systematically develop detailed virtual models, leveraging these simulation tools to optimize cost savings and innovative new designs that will yield huge competitive gains in the coming years. ■

Tomorrow's leaders will systematically develop detailed virtual models.

References

Cost-Saving Strategies for Engineering: Using Simulation to Make Better Decisions; Aberdeen Group Survey Report: April 2010.

The Impact of Strategic Simulation on Product Profitability; Aberdeen Group Research Brief: June 2010.