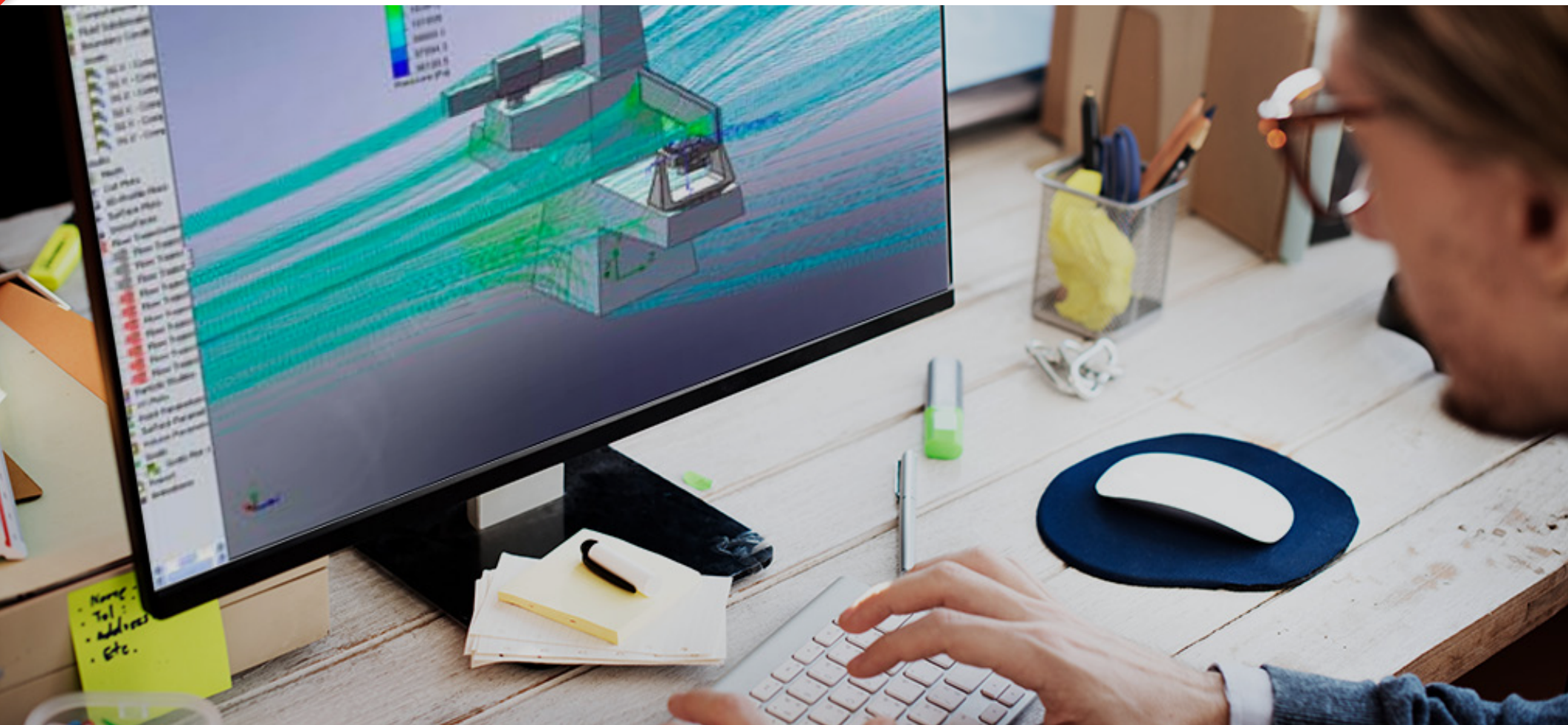




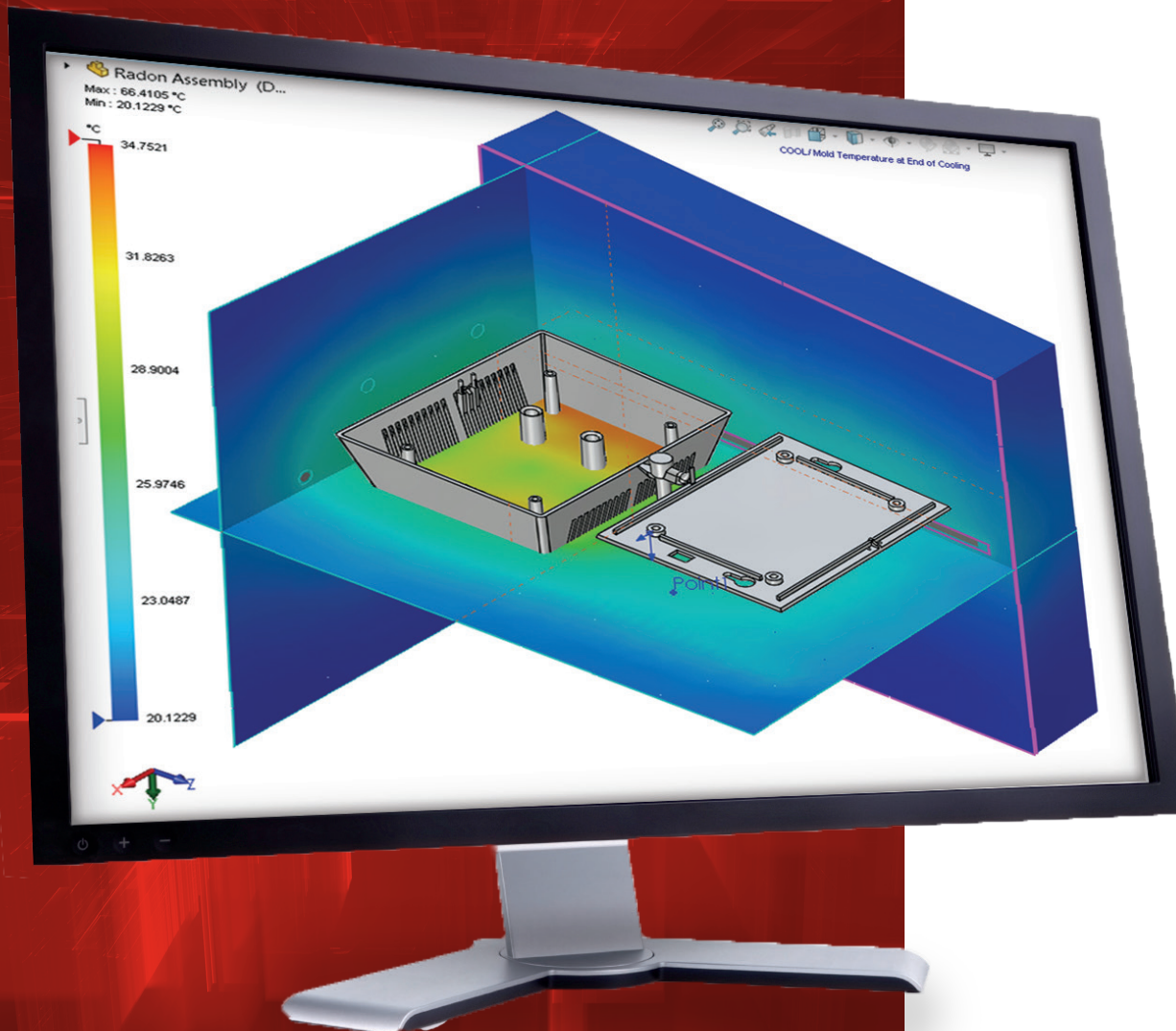
CHAPTER FOUR

STEP-UP TO SIMULATION: SECURE SUCCESS THROUGH VIRTUAL SIMULATION





CHAPTER FOUR



STEP UP TO A SMARTER WAY TO DESIGN

Virtual prototyping can be a powerful, but simple way to perfect your designs and ensure a product that exceeds customer expectations. And more companies are getting on board the virtual simulation train, every day.

What follows is a look at a study conducted by the [Aberdeen Group](#), which sought to understand the impact of virtual prototyping. It surveyed 170 companies, some of which are using virtual simulation to outpace, outperform, and out-innovate the competition. The numbers and results are striking, and underscore the importance of simulation as a tool to successfully validate designs and functionality.

THE CASE FOR SIMULATION: BUILDING NEW PRODUCTS IN A NEW KIND OF MARKET

New products are the lifeblood of modern organizations, accounting for more than one third of their total revenue. As manufacturers compete in a sprawling global marketplace, the challenge is two-fold. Not only do new products need to push the envelope in terms of originality, they need to be brought to market faster than ever before.

While companies are utilizing technologies like 3D design to develop increasingly complex products, many are wasting precious time validating innovations with physical testing and hand calculations—antiquated techniques that are no longer able to keep up with the near breakneck speeds required to bring them to market. To minimize the time spent developing and modifying designs, more organizations are turning to virtual simulation to help accelerate the process, eliminate errors, and increase the reliability of new products.

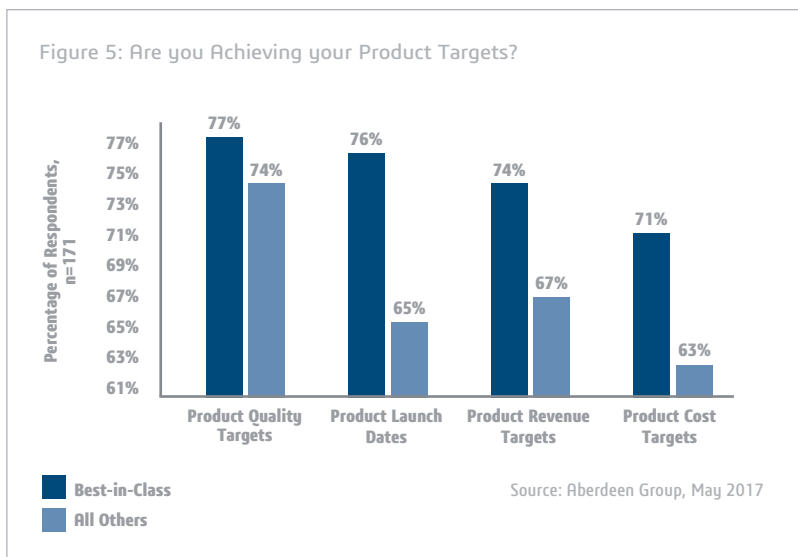


Simulation: A Tool to Ensure Success

Simulation software has been around for many years, but recent advancements in the technology are opening up possibilities for what simulation software can do. Virtual environments that are more elaborate and detailed than ever yet still easy to use, allow you to test product features and functionalities and get actionable results.

Simulation in the Marketplace

According to the Aberdeen Group study, best-in-class companies easily outperformed their peers in meeting product targets. From Figure 5, it's clear that virtual simulation maximizes a company's ability to meet product targets, both in terms of quality and meeting launch dates. This is due to two key reasons: the reduced need for physical prototyping and the freeing up of resources associated with the prototyping process.

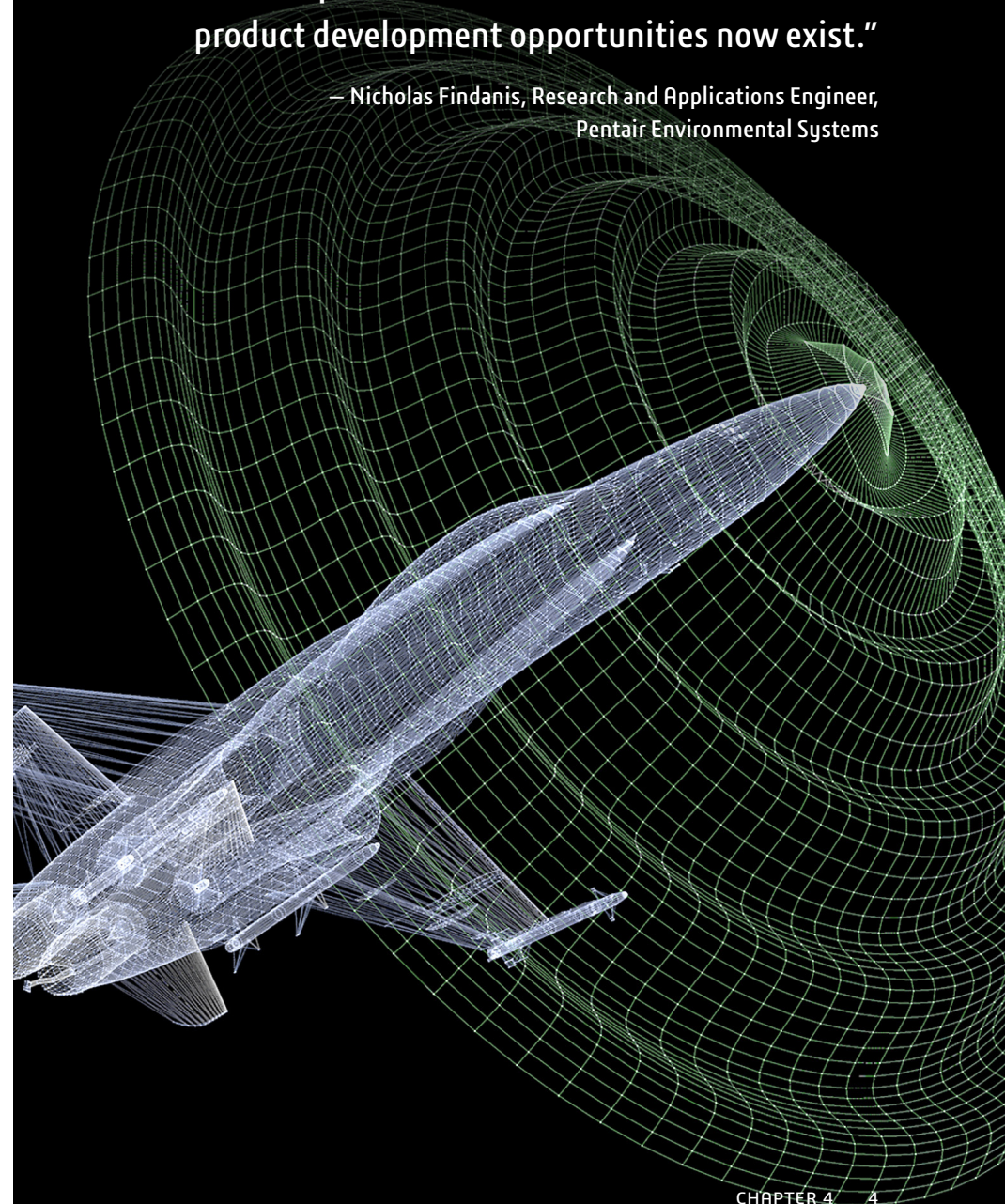


Stretching Resources

As Baby Boomers begin to retire in greater numbers, the problem of resources being stretched thin is more commonplace. Depleted resources in engineering and other high skills professions are negatively impacting the development process, and have become a major hurdle to success. Virtual prototyping helps shortcut tedious and time consuming processes, which helps alleviate the pressures on teams that are spread thin.

"We have been able to generate more ideas and test concepts because of virtual simulation. More product development opportunities now exist."

— Nicholas Findanis, Research and Applications Engineer,
Pentair Environmental Systems



Getting Less Physical

Making and testing physical prototypes adds overall time to product launches. Virtual prototyping tests designs without dependence on physical prototypes, which gives designers and engineers the ability to rapidly analyze multiple parameters or alternatives. They no longer need to spend time creating multiple physical iterations, but can optimize designs before building.

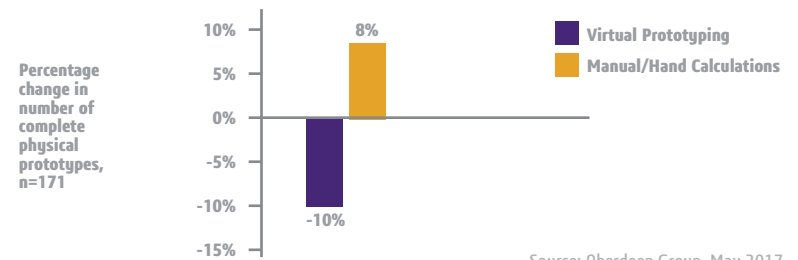
Simulation Isn't a Nicety, It's a Necessity

The many benefits of virtual simulation cannot be overlooked. The metrics resoundingly back the use of software over physical testing. Users of virtual simulation are more likely to hit their product targets, use fewer prototypes, and decrease overall costs and development times.

Simulation Software Integrated with Your CAD

80% of design engineers cite integration with a CAD environment as an important feature of simulation. The simulation tools available in the SOLIDWORKS software lineup make all of the advantages of virtual simulation available to your design team. If you're ready to explore more, visit solidworks.com/simulation, and register for a demo.

Figure 5: Virtual Prototyping Reduces Physical Prototypes



Source: Aberdeen Group, May 2017

If you haven't already, be sure to check out the rest of the Chapters in the Simulation Step-Up series to learn more about the simulation tools that will save you time and money.

THE SOLIDWORKS SIMULATION STEP-UP SERIES

Step Up to a Smarter Way to Design

STANDARD

Simulation Standard

As an add-on to SOLIDWORKS Desktop software, the Simulation Standard package is a simple way to achieve a greater understanding with minimal effort. You'll be able to easily validate performance by tracking the impact of changes on key criteria (like stress or displacement), and even get a clearer picture of how repeated or load cycles cause structural failure. This is in addition to the ability to evaluate the physics of assembly motion and add true physical-to-assembly movements.

PRO

Simulation Professional

SOLIDWORKS Professional lets you gain a more thorough understanding of how designs will react in a real-world setting. Because the process of asking questions such as "What if I reduce the size of this hole?" or "What's the best plastic for this part?" is answered and verified. You can ascertain the best available strength-to-weight ratio, frequency, or stiffness performance for your product, along with a clear understanding of how heat will affect each component.

Find out more in [Chapter 1](#) of the *Step-Up to Simulation* Series.

PREMIUM

Simulation Premium

While many simulation tools lack the power to solve large, complex models and predict true product performance, SOLIDWORKS Premium tackles these challenges with ease. You can make your work faster and easier with even more ways to test, validate, and ensure the best performance of your designs. You'll also be able to control and define composite layers, calculate temperature distribution, test loads and structural response, and conduct nonlinear simulations.

Find out more in [Chapter 2](#) of the *Step-Up to Simulation* Series.

FLOW & PLASTICS

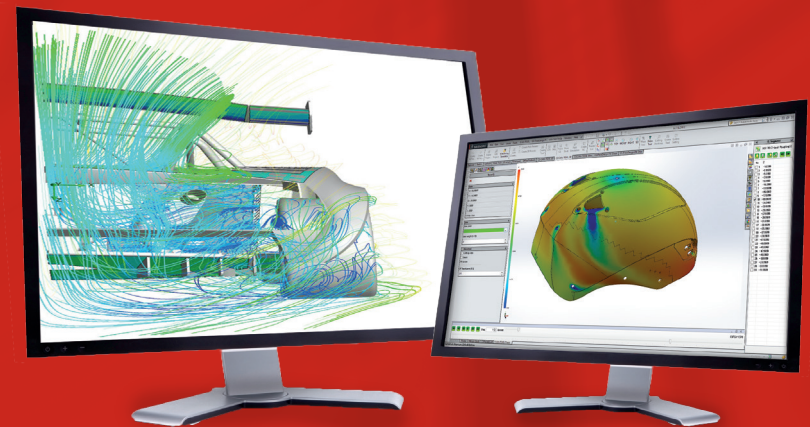
Simulation Flow and Plastics

Simulation Flow and Plastics are two specialized solutions that allow designers and engineers to efficiently assess plastic mold injection, as well as fluid flow and fluid forces on designs.

SOLIDWORKS Simulation Flow is a powerful computational fluid dynamics (CFD) tool that helps you efficiently simulate fluid flow, heat transfer, and fluid forces. Driven by engineering goals, SOLIDWORKS Flow Simulation takes the complexity out of CFD and enables you to use insights to make technical decisions in a concurrent engineering approach.

SOLIDWORKS Simulation Plastics is a computer-aided engineering (CAE) simulation software tool that predicts how melted plastic flows during the injection molding process. The ability to predict how the plastic will react makes it easier to predict manufacturing-related defects. You can then change part or mold geometry, processing conditions, or the plastic material to eliminate or minimize the potential defects, saving you energy, natural resources, time, and money.

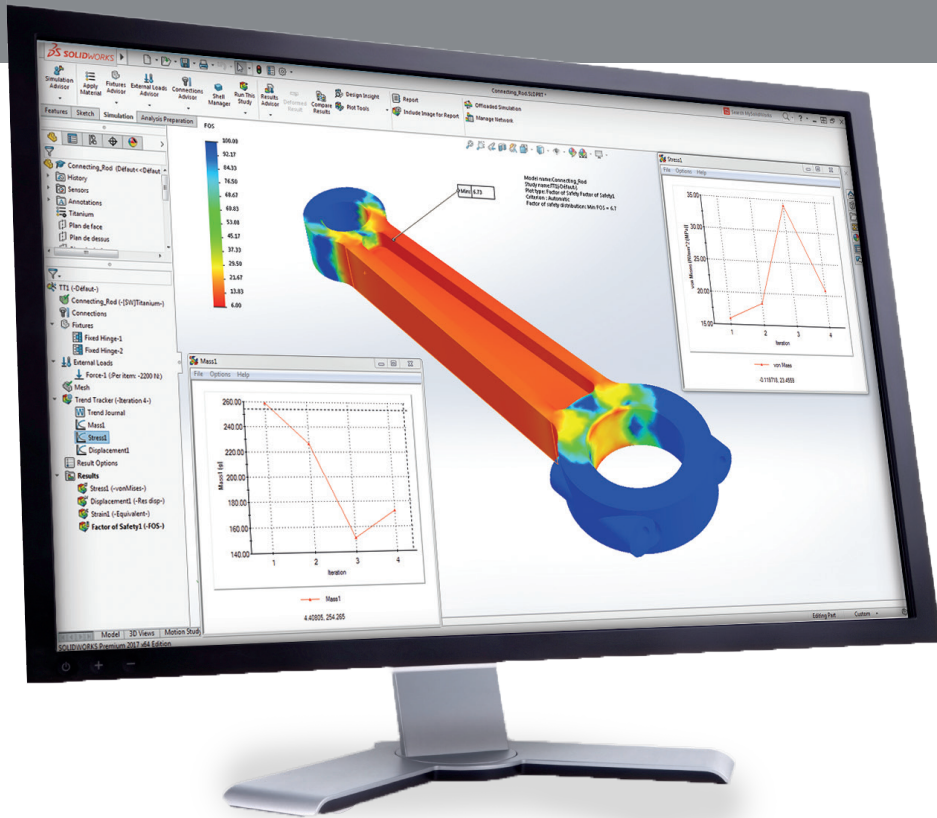
Find out more in [Chapter 3](#) of the *Step-Up to Simulation* Series.



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The SOLIDWORKS *Step-Up to Simulation* series: Step Up to a Smarter Way to Design



Find More on Simulation

Check out all the chapters in the Step-Up to Simulation Series by visiting solidworks.com/STEPUPTOSIM!