

MAKING DESIGN THE DIFFERENTIATOR:

HOW CONSUMER PRODUCTS COMPANIES ARE RESHAPING
THEIR DESIGN PROCESSES—AND THEIR BUSINESSES—WITH 3D DESIGN



CONSUMER PRODUCTS COMPANIES KNOW THAT, TODAY, DESIGN MATTERS MORE THAN EVER.

Sophisticated shoppers are equipped with an increasing awareness of aesthetics, an abundance of product choices, and advanced research capabilities thanks to the internet. Product purchases that were once based on impulse or price, are now the result of committed comparison shopping by consumers searching for the newest, the best, the lightest, and the most durable. As a result, design decisions are increasingly making the critical difference between a product's success or failure.

Industrial designers and mechanical engineers alike are called upon to meet a broad range of imperatives—some of which are potentially contradictory:

- Continual improvement to product features and functionality
- Shorter timeframes between conceptualization and completion
- Faster turnaround between product iterations
- Integration of new, high-performance materials such as specialized plastics and alloys
- The need to incorporate advanced technologies
- Requirements to reduce weight and/or materials usage
- The need to bring products to market quickly
- Alignment with marketing, logistics, and packaging requirements



FEATURED CASE STUDY

ALTWORK Revolutionary, Ergonomic Multi-Posture Workstations

Altwork® saw an opportunity to design a workstation that enabled the computer to move with the body. The company turned to SOLIDWORKS® 3D design and visualization systems to create (and test) designs for this entirely new class of workstation—including those that work in zero gravity.

BENEFITS:

- Rapid development of highly complex, unprecedented new products
- Ability to rapidly conceptualize, modify, test, and validate designs
- Streamlined collaboration with broad vendor base
- Ability to rapidly identify and reconcile collision or clearance issues

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FEATURED CASE STUDY

HIGHWAY1

Supercharging Design for Early-Stage Startups

Highway1 helps hardware entrepreneurs take great product ideas from napkin-sketch concepts to full realization. Because they work on everything from smartphone-enabled light switches to innovative air purifiers, Highway1 is faced with a widely divergent area of specialized design needs—and limitations on the capital, tools, and technologies available to meet them. The company chose SOLIDWORKS as its product development platform for its versatility, reliability, broad adoption among engineers and manufacturers, and ease of use.

BENEFITS:

- Startup firms succeeded in creating production-ready designs within tight, 16-week time frame
- Companies gained access to essential design and engineering tools to complete product development
- Enabled seamless engagement with manufacturing partners
- Facilitated in-company and inter-company collaboration

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FEATURED CASE STUDY

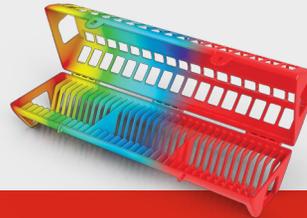
CARLISLE FOODSERVICE PRODUCTS

Equipped for Future Growth

Carlisle FoodService Products had been a longtime user of 3D design solutions, but growing competition meant the company needed ways to increase productivity and shorten product development cycles. Carlisle knew that adopting an easy-to-use, modernized 3D design solution would provide a distinct competitive advantage—especially if the new system could grow along with the company. Based on ease of use and extensibility, the company selected SOLIDWORKS 3D Design, knowing that it had the ability to add additional capabilities as new needs arose.

BENEFITS:

- Projected 12-15 weeks annual time savings
- Projected \$20,000 annual consulting cost reduction
- Reduced cycle times
- Improved development workflows



» LEARN HOW CARLISLE USES SOLIDWORKS HERE

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THE DESIGN DILEMMA: CAN WE REALLY HAVE IT ALL?

In order to meet the many demands facing them, designers and development teams require new tools and processes capable of meeting a similarly growing list of needs:

• COLLABORATIVE CAPABILITY

Decentralized, globalized businesses often require collaboration not only within an in-house team, but often across disciplines, distances, national boundaries, languages, and time zones.

• MATERIALS SENSITIVITY

Designs often must withstand changes to material formulations, such as subtle changes to automotive alloys and the corresponding impact on characteristics such as weight and tensile strength.

• TIGHTER SPECIFICATIONS AND TOLERANCES

Miniaturization, safety regulations, and other factors can dictate increasingly tight tolerances.

• RAPID PROTOTYPING

Accelerated time-to-market demands mandate the ability to quickly move past the concept stage to prototyping and testing.

• INTEGRATED TESTING CAPABILITIES

As design cycles have become shorter, the need to evaluate real-world performance and spot potential performance issues throughout the process has become critical.

FEATURED CASE STUDY

CAMELBAK®

3D Helps Leading Hydration Brand Develop Products for Three New Markets

Camelbak began establishing itself as the world's leading provider of innovative hydration solutions with its unique line of "reservoir" backpacks. The company subsequently expanded to include successful products for the bottled water, filtration, and military markets—an expansion achieved using advanced 3D design, simulation, and data management tools. The addition of SOLIDWORKS 3D capabilities has enabled the company to roll out a range of innovative products, including the industry's first BPA-free plastic water bottle and the successful Forge® insulated travel mugs.

BENEFITS:

- Expanded product offerings to serve multiple new markets
- Supported lifetime guarantee
- Shortened prototype creation time by 90-95%

» READ THE FULL
CAMELBAK STORY HERE

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Naturally, the needs mentioned on the previous page are in addition to, rather than in place of, basic considerations such as efficiency, cost, and speed of overall execution. These basic drivers are still of critical importance in a highly competitive and constantly changing business environment.

The bottom line: new design imperatives require new design approaches. These, however, are seldom achievable without new design tools and technologies.



FEATURED CASE STUDY

COOL GEAR INTERNATIONAL Advanced Product Development Software Enables Product Line Growth

Consumers worldwide trust Cool Gear™ to provide stylish, innovative food and beverage containers that keep food fresh—and are a match for active, busy lifestyles. Colorful, attractive Cool Gear products use the company's unique "freezer gel" technology to safeguard flavor and freshness while communicating excitement and individuality through their colorful, contemporary designs. SOLIDWORKS has enabled Cool Gear to expand product development, as the number and diversity of its products.

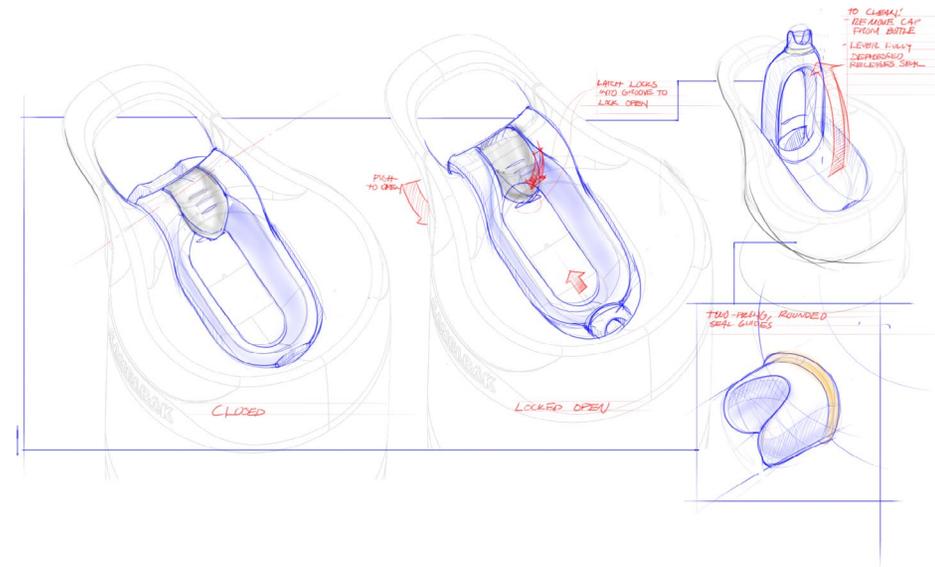


BENEFITS:

- Succeeded in doubling product line
- Increased product line diversity
- Supported Igloo Products merger
- Facilitated major brand partnerships

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THE BENEFITS OF 3D DESIGN: MOVING BEYOND THE PLANE

Without exception, the consumer products we make and use are multi-dimensional, but historically the tools we have used to design them were not. As a consequence, the products we have been able to create—and the speed and efficiency with which we can create them—have been limited by this fundamental distinction.

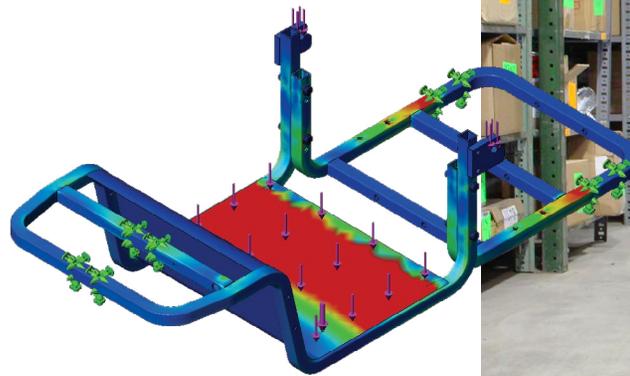
A design, after all, is a conceptual model of the finished product, and there are distinct limitations on how effectively a two-dimensional design can represent a three-dimensional product—let alone convey characteristics such as density, tactility, volume, and mass. Even the most sophisticated 2D CAD system remains subject to such limitations.

With the advent of practical, accessible 3D design tools, technology is able to close more of the gap between concept and the resulting material reality—and businesses have been realizing significant benefits as a result. As 3D design becomes a de facto standard in the consumer products industry, it becomes increasingly evident just how cumbersome, inefficient, and costly 2D design methodologies have been.

BETTER DESIGNS EQUAL BETTER PRODUCTS AND BETTER BUSINESSES.

For those who have made the commitment, the upgrade to 3D product development typically delivers significant Return on Investment (ROI), not only within the realm of product design, but within product development and throughout the manufacturing process. 3D design adopters have reported substantial time and monetary savings, as well as improved efficiency, heightened quality, and accelerated innovation.

Because a 3D rendering is, by definition, a more realistic representation of a finished product than a 2D one, 3D design technology offers the obvious and immediate benefit of enabling designers to more accurately visualize the product's characteristics and test their observations. As a result, potential flaws and opportunities for enhancement can be recognized and acted upon more swiftly. Design issues that may once have only come to light after multiple 2D design iterations can often be recognized and addressed at earlier stages, reducing the number of design cycles and overall design time needed for completion.



SOLIDWORKS Finite
Element Analysis for
Amigo Mobility

FEATURED CASE STUDY

AMIGO MOBILITY

3D Capability Streamlines Development Cycles,
Opens New Markets

Heightened competition within the mobility solutions market, changing customer needs, a need for shortened product development cycles, and a desire to continuously improve its products led Amigo to reconsider its use of 2D design solutions. The company began an iterative transition process towards adoption of the SOLIDWORKS 3D design platform and environment.

Amigo found that the SOLIDWORKS easy-to-use tools made it possible to rapidly model parts, place them within an assembly, and simulate performance.

BENEFITS:

- Reduced design cycles 50-75%
- Eliminated physical parts testing
- Reduced prototyping requirements
- Expanded product line

» [READ THE FULL AMIGO
STORY HERE](#)

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FEATURED CASE STUDY

K-ARRAY

Amping up the Product Development Process

K-Array's transformative approach to the design, fabrication, material usage, and aural fidelity of professional audio systems have made it a go-to choice for performers, producers, venue managers, and others seeking lightweight, transportable, high-performance speaker systems. The need to communicate and collaborate effectively with partners and vendors using compatible design environments led the company to move past its reliance on 2D systems in favor of SOLIDWORKS 3D.

BENEFITS:

- 20% design cycle reduction
- 20% reduction in time-to-market
- 20% reduction in materials wastage
- 30% increase in design reuse

» LEARN HOW K-ARRAY
REDUCED TIME-TO-MARKET HERE

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FEATURED CASE STUDY

DOMOTECH APPLIANCES

3D Design Accelerates Appliance Innovation, Shortens Development Cycles

Domotech Appliances specializes in creating innovative, high-quality kitchen appliances for leading global brands, maintaining a footprint on store shelves—and family kitchens—around the globe. The SOLIDWORKS design platform helps them respond more quickly to evolving tastes and technologies, and allows the company to stay one step ahead of its competitors.

BENEFITS:

- 90% reduction in development cycles
- Elimination of physical prototyping
- Increased design accuracy
- \$40,000 prototyping savings for a single client



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FEATURED CASE STUDY

BRUNSWICK

Rolling Out New Concepts, Faster, with 3D

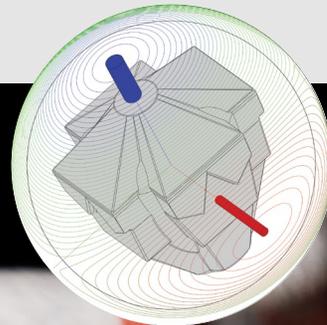
Committed bowlers are serious about their game and about their personal performance. Brunswick® is committed to providing bowlers with every advantage in attaining their personal best, and the company continually refines its products to incorporate the latest advances in technology and materials. Using SOLIDWORKS, the company has made a series of innovations to core designs, varying core shape, and the density of materials in the balls' inner and outer cores.

BENEFITS:

- Ability to map dynamics on bowling ball cores
- Developed variety of core designs to match lane conditions
- Introduced new DV8 line of high-performance bowling balls

» READ THE FULL
BRUNSWICK STORY HERE

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3D DESIGN CONFERS A WIDE RANGE OF ADVANTAGES, NOT JUST TO DESIGNERS AND ENGINEERS, BUT THROUGHOUT THE ENTERPRISE.

• ASSOCIATIVE CAPABILITY

Contemporary 3D design programs “flow” changes—even those made late in the design cycle—to other systems by referencing a single 3D model. Drawings, assembly instructions, NC programs, and documentation are all updated automatically, which eliminates multiple layers of re-work and revision in the related activities.

• FASTER, EASIER DESIGN CHANGES

3D design largely eliminates the need for time-consuming manual updates to multiple design views—a problem compounded in assemblies, where there is the consequent need to also update other parts.

• PERFORMANCE VALIDATION AND OPTIMIZATION

The ability to accurately analyze 3D designs to simulate design behavior helps engineers to improve performance, save material, or improve manufacturability.

• DIRECT-TO-MANUFACTURE CAPABILITY

Unlike 2D designs, 3D designs do not need to be converted to a 3D CAD model prior to generating toolpaths on machines utilizing a 3D CAM program. When designs change, NC toolpath data is updated accordingly.

• FACILITATION OF 3D PRINTING FOR RAPID PROTOTYPING

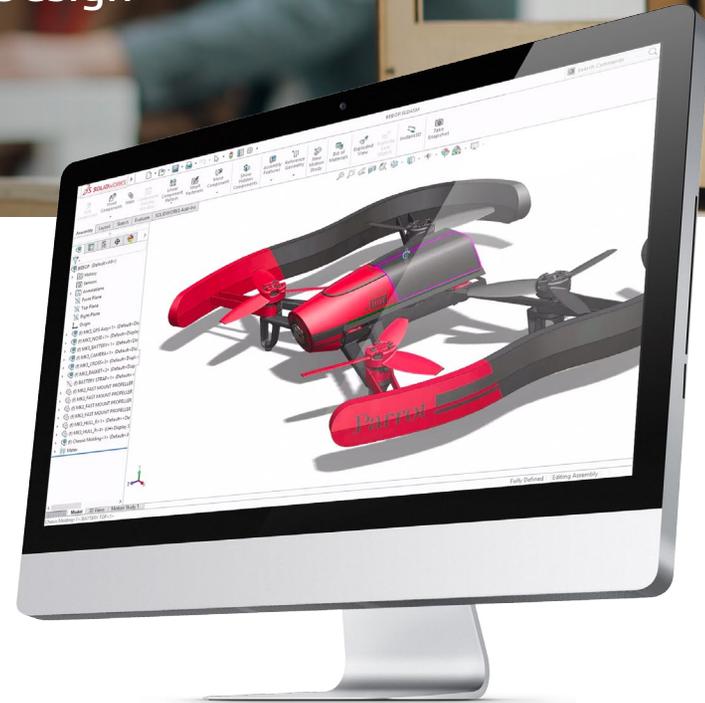
With no need for the conversion demanded by 2D designs, one-off samples or prototypes can be created quickly, enabling automated manufacturing and inspection systems to read dimensions and tolerances directly from 3D models.

Heightened productivity and accelerated innovation are key goals for businesses operating in today's highly competitive environment. The considerable advantages 3D design offers in terms of improved efficiency, expanded innovative capacity, reduced cost, shortened product cycle times, quality improvements and more, are factors which stand to improve the competitive position—and the bottom line—of companies with the vision to adopt it.

MAKING DESIGN THE DIFFERENTIATOR:

How consumer products companies are reshaping their design processes—and their businesses—with 3D Design

For more information and to see how SOLIDWORKS has helped companies transform their businesses, go to www.solidworks.com/consumerproducts



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