



CASE STUDY /

Fewer Prototypes with Simulation-Based Design — Xerox

“DesignSpace is an ideal tool in early product development for conceptual simulation-based design and was instrumental in the success of developing the iGen3 digital printing system. Also, full Ansys is one of our primary analysis tools for advanced simulation, particularly in multiphysics applications where multiple physical factors must be evaluated. In typical product development programs at Xerox, simulation-based methods using these types of predictive tools have definitely helped reduce the number of prototype testing iterations, each costing tens of thousands of dollars and weeks of time. In the end, development time and costs are reduced. But more significantly, our high-quality standards are met and time to market is shortened in developing innovative winning new products such as the iGen3, enabling Xerox to grow top-line revenue and increase market share.”

Dr. Korhan Sevenler

Director, Product Lifecycle Management / Xerox Corp.

Xerox provides the document industry's broadest portfolio of offerings. Digital systems include color and black-and-white printing and publishing systems, digital presses and book factories, multifunction devices, laser and solid ink network printers, copiers and fax machines. Xerox services include helping businesses develop online document archives, analyzing how employees can most efficiently share documents and knowledge in the office, operating in-house print shops or mailrooms and building Web-based processes for personalizing direct mail, invoices, brochures and more.

/ Company Description

Xerox Corporation is a \$15.7 billion technology and services enterprise that helps businesses deploy smart document management strategies and find better ways to work. Its intent is to constantly lead with innovative technologies, products and solutions that customers can depend upon to improve business results.

/ Challenges

To expand its business beyond conventional office copiers, Xerox embarked on a strategy to penetrate the commercial printing market currently dominated by traditional offset presses. The company set out to develop the iGen3: a toner-based digital printing system with image quality "look and feel" comparable to offset presses – yet with a faster speed of 100 pages per minute, greater economy for short-run press jobs and the ability to customize each page with variable information to create personalized brochures, tailored catalogs, on-demand books, newsletters and direct-mail pieces.

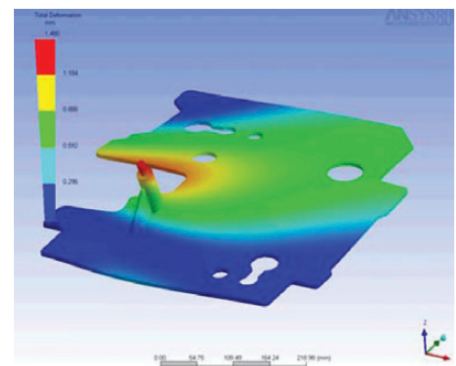
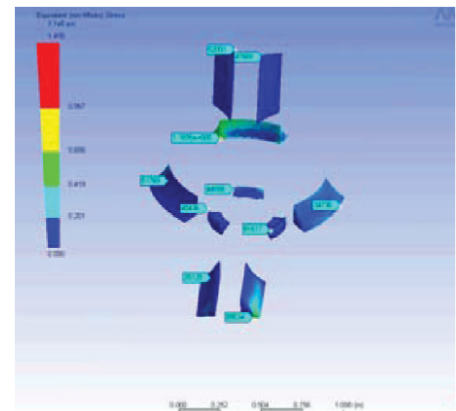
The challenges for the engineers developing the iGen3 were immense. The product pushed the limits of the technology for speed and performance, and every one of the thousands of interconnected parts and assemblies had to operate flawlessly for years of reliable service that is the hallmark of Xerox's brand value. Moreover, design work had to be completed quickly so the product launch could take advantage of the window of opportunity in the rapidly evolving market.

/ Technology Used

- Ansys® Structural™
- Ansys® DesignSpace®

/ Engineering Solution

Xerox met these challenges with a simulation-based design approach where analysis is performed up front in development. This process enables engineers to find and correct potential problems earlier in the cycle compared to the traditional method of building and testing numerous physical prototypes near the end of development. In development of the iGen3, DesignSpace was particularly useful in quickly simulating the many interconnected parts and assemblies that are welded, glued, press-fit and otherwise joined together. In the analysis of welds in a support pin, for example, DesignSpace imported the geometry directly from I-DEAS, automatically recognized bonded contact between the welds joining the individual parts (the pin, base-plate and a reinforcing gusset) and allowed for different material properties and dissimilar meshes of contacting parts.



/ Benefits

The analysis allowed engineers to determine structural deflection and weld stresses much faster than would have been possible with other simulation packages, which would have required the user to manually define bonded contact and build separate models for each of the parts – including the six welds holding the assembly together. Simulation-based design has enabled Xerox to:

- Reduce the number of physical prototyping cycles late in development when making design changes is costlier and more time-consuming.
- Bring the iGen3 to market on time while keeping costs in line and maintaining the quality and reliability. The machine is now regarded as one of the premier flagship products at Xerox and sales have been strong.

ANSYS, Inc.
Southpointe
2600 Ansys Drive
Canonsburg, PA 15317
U.S.A.
724.746.3304
ansysinfo@ansys.com

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