Electronics and semiconductor

Toshiba Tec

Design stage simulation reduces lead times and prototyping costs

Product

NX

Business challenges

Maintain market leadership position in China while creating new products to boost market share in Japan

Keys to success

Integrating CAE into the design environment allows designers to perform analyses

Multiple, early simulations help optimize products

Responsive analysis software speeds results

Results

Shorter development lead times

Lower prototyping costs

Enhanced expertise among design engineers

Upfront CAE shrinks structural analysis of critical components from two weeks to less than a day

Number one in the Chinese MFP market

Toshiba Tec Corporation's Document Processing and Telecommunication Systems Company (DPTS) offers document solutions, with a focus on multi-function peripherals (MFPs). These are devices that combine copiers, faxes, printers, and scanners in a single product.

The characteristics of the MFP market differ by country and region. In North

The e-STUDIO3500c

America and Europe, color and high-speed products are in demand while in China, products in the middle of the price range are more popular. Many nonnetworked, standalone products are still in use there. Color products are popular in Japan. DPTS boasts the largest share of the Chinese MFP market and is developing new products to increase its share of the Japanese market.

Bringing CAE to the design environment

Until recently, design engineers at DPTS did not typically perform analysis. Instead, a dedicated division did this work using I-deas™ software as its analysis tool. "Simulation is relatively difficult with MFPs because there are a lot of analog aspects to them," explains Shinji Yoda, who heads the System-LSI Design Support department at the company's Engineering and Designing Center. "When you have an assembly of three to seven thousand components, analysis is critical, but the components aren't the only things needing analyzing. With MFPs, you also have to analyze many aspects that are difficult to quantify, such as image quality, noise, interface usability, paper and toner. It wasn't realistic to think that the design engineers can perform all of this analysis."
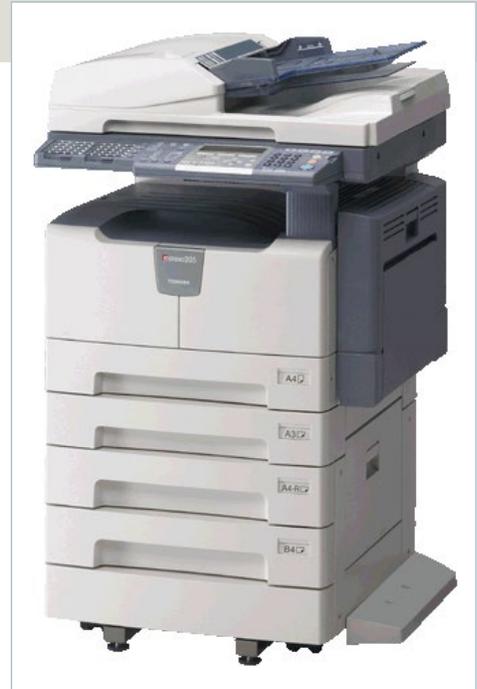
Designers have been able to take on more of the analysis; however, since the company migrated to a three-dimensional design environment based on NX™ software. At that time, the company also began the process of integrating simulation into the design process using the simulation capabilities of NX. "Since introducing NX, we are able to perform repeated simulations during the design stage using whatever information is available, before starting the prototyping

"Since introducing NX, we are able to perform repeated simulations during the design stage. This has helped us reduce our development lead times and lower prototyping costs."

Shinji Yoda
General Manager
System-LSI Design Support Department
Engineering and Designing Center
Document Processing and Telecommunication Systems Company
Toshiba Tec Corporation

**"Our goal is that designers
include analysis as part of
their design processes."**

Shinji Tsuyuki
Senior Engineer in charge of
Group Design Support
System-LSI Design Support
Department
Engineering and Designing
Center
Document Processing and
Telecommunication Systems
Company
Toshiba Tec Corporation

cycle," Yoda continues. "This has helped us reduce our development lead times and lower prototyping costs."

Increased amount of design simulation is the goal

Currently, DPTS is using NX CAE and I-deas in parallel, says Shinji Tsuyuki, senior engineer in charge of group design support at the System-LSI Design Support department in the company's Engineering and Designing Center. "We plan to complete our full migration to NX and our aim is to increase the amount of analysis our design engineers perform. Since we were migrating to NX for 3D CAD, NX CAE was the natural choice for an analysis tool."

Tsuyuki notes, "We don't expect our designers to perform all of the complex analysis, such as image quality and noise. We will still have specialized areas analyzed by other departments in the company, or we will outsource that work. In the past, most analysis would be performed to troubleshoot product issues, but in the future it will be critical to perform analysis before the prototyping stage. In other words, designers will include analysis in their design processes. Our goal is to create a process that allows us to perform design with the maximum speed and at the minimum cost."

Major speed gains in structural analysis

DPTS has high expectations for NX, including greater use of its knowledge capture and re-use capabilities. NX enables knowledge capture by converting the knowledge of experts into wizards.

A current benefit of the NX solution is that it has improved the level of expertise of the company's design engineers. Design engineers must evolve from technicians to true 3D CAD designers, and Toshiba Tec DPTS is actively committed to creating an organization to enable this process.

Another benefit is the easy-to-use NX CAE interface, which has a look and feel similar to the NX CAD system. With the previous system, users had to wait through a time-consuming data loading process before they could begin working. In contrast, the ability to start working right away with NX wins high marks from its users. In addition to its ease of use, NX is also highly responsive, which shows in such aspects as meshing speed. For one critical component, structural analysis (strength and deformation) took about two weeks using 2D data; using 3D data in NX, the analysis was completed in half a day.