

SITUATION

Electro Scientific Industries, Inc. (ESI), headquartered in Portland, Oregon, designs and builds sophisticated manufacturing tools for the electronics industry. The company produces advanced laser trimming and processing systems for hybrid, multi-chip module, semiconductor, and packaging manufacturers; equipment for the production of discrete components; and machine vision products.

ESI's customers are always pushing the state-of-the-art in electronic component design. To supply industry-leading tools, ESI must anticipate the direction technology will take and then get its products out quickly. The company had to cut its cycle time or risk seeing its competitors get to market faster.

OBJECTIVE

Reduce product cycle time by 75 percent over the course of 10 years to bring the development cycle for a typical product from two years to six months.

PROCESS VISION

Upgrade from 3D wireframe CAD (CADkey and AutoCAD) to solid modeling and adjust development processes to take full advantage of a solids-based, fully integrated CAD/CAM/CAE solution.

ACTIONS

- ✓ ESI selected I-DEAS® as its CAD/CAM/CAE standard. Process experts from SDRC and ESI then conducted a process audit, adapting ESI's processes to capitalize on the efficiencies of SDRC's tools. I-DEAS design and analysis applications and I-DEAS Team Data Manager™ software are now in use at seven ESI sites. Currently 75 designers and engineers are using the software, which they run on Windows NT workstations.
- ✓ New machines are modeled in solids using I-DEAS Master Modeler™ along with specialized I-DEAS applications such as I-DEAS Harness Design™ (for modeling pneumatics and routing tubing through the system).
- ✓ Designers optimize a system's internal layout in I-DEAS to minimize interference in the first prototype.



ESI Cuts Cycle Time in Half With I-DEAS®

"Our machines typically have the size and complexity of an automobile, with more than 1,500 unique parts and as many as 300 subassemblies. Using I-DEAS software has allowed us to visualize and analyze the relationships of all the parts in 3D, and improve collaboration among our team members. As a result, we've been able to cut a year off the development cycle for a new system."

- Laila Hirr
Engineering Manager
Electro Scientific
Industries, Inc.



Get
There
Faster®

ESI Cuts Cycle Time in Half With I-DEAS

- ✓ Engineers use I-DEAS Model Response™ to evaluate the machine's structural framework, optimizing the design in the software to make sure that it is stable enough for precise operation of lasers or high-speed mechanical drills.
- ✓ I-DEAS models are converted to VRML format and made available for review and approval to people who don't use CAD, such as management, customers, marketing, and technical documentation staff.
- ✓ Geographically separate engineering sites (either ESI facilities or those of external contractors) share I-DEAS models by checking them in and out of the I-DEAS Team Data Manager library. In addition, ESI now conducts multi-site design reviews electronically. Using tools such as NetMeeting, participants simultaneously view and discuss I-DEAS models.

RESULTS

- ✓ Working in solids cut development time in half for ESI's new semiconductor memory yield improvement system called the Model 9800. Developing previous systems took two years.
- ✓ ESI was able to create a more accurate layout of the system using solid modeling, which reduced the need for costly revisions to physical prototypes and tooling.
- ✓ I-DEAS enabled better collaboration. Using the library functions of I-DEAS Team Data Manager, team members could place part files into the overall system assembly. These were then recognized as part of the original design, sparing ESI the task of rebuilding the assembly to reflect individual component updates.
- ✓ ESI also extended the availability of I-DEAS data by transmitting solid models over the WAN to improve collaboration among multi-geographic engineering locations, as well as vendors.
- ✓ ESI's new product development process allowed downstream applications such as analysis, manufacturing and technical documentation to have access to I-DEAS design information earlier. This allowed more of the development effort to take place concurrently.

PLANS

ESI is working to achieve its goal of a 75 percent cycle time reduction in less than 10 years. To help make this possible, the company plans to start using I-DEAS Generative Machining™ software to create machine toolpaths directly from design data. It also plans to further improve communication of product design information among non-engineering functions.

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