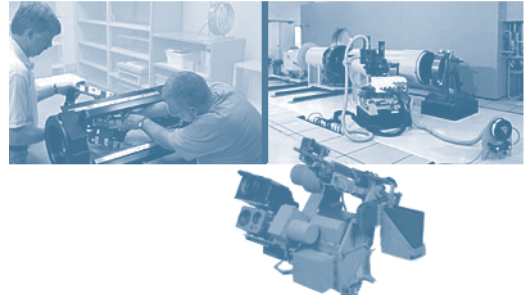


Sun® and PTC® Help Recon/Optical Break 2-Gigabyte Barrier and Build Superior Cameras and Weapon Systems

Recon/Optical, Inc., Barrington, Illinois

Defense contractor Recon/Optical, Inc. (ROI) was founded in 1922 as an aerial survey company, pioneering the relatively new field of aerial photography and mapping. From World War II through the current global war on terrorism, Recon's aerial reconnaissance cameras and weapon systems have played a critical role for the United States and its allies around the world.

Recon today is the leading provider of tactical reconnaissance cameras and remotely operated weapon stations to the aerospace and defense industry. The company's reconnaissance systems have played major roles in preventing conflict and ensuring the safety and security of military personnel across the globe.



The Challenge: Achieving Maximum Productivity

Like many companies in the aerospace and defense industry, Recon/Optical's designers are creating complex products involving thousands of parts and assemblies, which means many iterations of each design concept. To improve productivity and stability in product development, they needed to overcome the 2-gigabyte memory threshold of their current operating system. In addition, engineers needed a 3D CAD solution to improve the design of wiring and cabling process within weapon system components, so that wiring/cabling requirements could be determined earlier in the design process—not in the prototype stage.

The Solution: Pro/ENGINEER and Sun Microsystems

To overcome the limitations of the Windows® operating system, Recon installed a Sun Microsystems Sun Blade 1500 Workstation, which supplies the additional memory and processing speed required by designers and engineers when working with massive file-size component assemblies.

In addition, the company added PTC's Piping and Cabling solution to its Pro/ENGINEER® portfolio of 3D product design solutions to ensure that cabling and wiring requirements are designed within camera and weapon system components—right from the start of the design process.

Result: Saved 400 Hours Per Project

The results of the evaluation of Pro/ENGINEER running on the Sun Blade 1500 have been quite impressive. With dramatic productivity improvements for its product development team, Recon expects to save approximately \$40,000 to \$60,000 per project. The strengthened hardware infrastructure delivered by the Sun Blade 1500 versus the Windows operating system will help Recon eliminate the delays and workarounds caused by the 2-gigabyte Windows ceiling. In addition, the added memory and increased performance will benefit Pro/ENGINEER users by ensuring stability and reliability in product development process. In fact, the company expects to reduce design time in its camera projects from days to hours, and in some cases save upwards of 400 hours per project.

Recon/Optical is the world's leading provider of tactical reconnaissance cameras.

“We believe we can save at least 400 hours—approximately \$40,000 to \$60,000 working with Pro/ENGINEER on the Sun 64 bit Platform.”

—Ramesh Dwarakinath,
Manager, Opto-Mechanical
Engineering, Recon/Optical

“We use Pro/ENGINEER to design all our cameras and weapons systems. It gives us a lot of advantages, especially since we can do lots of quick layouts, which gives us a very good idea on how complex the design will be.”

—Ramesh Dwarakinath, Manager, Opto-Mechanical Engineering, Recon/Optical

When Design Becomes a Juggling Act

There you are, flying along, designing a next-generation reconnaissance camera that will fit like a glove in the newest F16 Fighter Jet, when suddenly—turbulence.

Regeneration and assembly retrieval times start slowing to a crawl. Uploading and downloading files is now taking minutes instead of seconds. You start squirming in your seat.

Immediately, you shift into ‘workaround mode’ and quickly start closing out applications—e-mail, Excel, your data management tool—in an effort to conserve memory and maintain speed. All of a sudden—wham—you’ve hit the infamous 2-gigabyte memory wall, and it’s time to reboot and start all over again.

This is the scenario that designers and engineers at Recon/Optical have been facing due to the 2-gigabyte memory limit built into the current operating systems. To avoid the wall, Recon design engineers have been forced to juggle applications to ensure maximum uptime. Lately, these engineers have become veritable magicians at inventing workarounds to solve the problem.

Amazingly, this is not an uncommon situation in the world of aerospace and defense, or many industries where large assemblies result in massive digital files. But it’s a situation that’s now about to change.

Enormous Assemblies

To get a sense of how much memory and processing power is required by large assembly manufacturers like Recon, it’s important to understand how the product development process works in such organizations.

“We handle very large assemblies,” states Ramesh Dwarakinath, manager, Opto-Mechanical Engineering, at Recon/Optical. “The camera sensors alone have more than 1,000 parts and these are very detailed files.”

Like many defense contractors who must deliver on schedule or fall off the short list of vendors, Recon faces very tight deadlines. To achieve maximum productivity levels, Recon engineers must work simultaneously with a variety of Pro/ENGINEER applications, such as the 3D modeling, simulation, and drawing packages. While the initial assembly files in each application may open up relatively small at the start of the day, it doesn’t take long before they start devouring memory.

“We especially have problems working with top-level assembly files, which might open at 500 megabytes. After working on the files for four or five hours, we can hit the [2 gigabyte] limit pretty quickly,” states Dwarakinath.

Multiple Applications and a Multitude of Layouts

For years, Recon has relied solely on Pro/ENGINEER—PTC’s flagship 3D product design solution—to design its innovative reconnaissance cameras and weapon systems.

Besides Pro/ENGINEER, Recon is using a number other PTC solutions throughout the product development process, which also require memory. Pro/INTRALINK® manages assembly and component data as changes are being made. Pro/MECHANICA® simulation and analysis tools help engineers understand the real-world performance of 3D CAD components and assemblies.

In addition to these tools, Dwarakinath recently added Pro/ENGINEER Piping and Cabling capabilities to improve wiring and cable routing design.

“We use Pro/ENGINEER to design all our cameras and weapon systems,” states Dwarakinath. “It gives us a lot of advantages, especially since we can do lots of quick layouts, which gives us a very good idea on how complex the design will be. This is helpful when we’re creating proposals. We’ll know how complex the design will be, so we’re not writing proposals in the dark.”

Creating a multitude of layouts also drives up memory usage exponentially. Yet, to run smoothly on all cylinders, engineers and designers need to have many of these applications working at the same time in the same workstation, a situation that is proving impossible at Recon with the limitations of the Windows operating systems.

Finally, push had come to shove.

“We could not work on the assembly and drawing files at the same time. It became necessary for Recon to evaluate the Sun platform due to the fact that there would be no memory use limit, plus to speed up FEA

analysis using Pro/ENGINEER," says Dwarakinath. "This would eliminate crashing and slow regeneration times."

Breaking the Barrier: The 64 Bit Sun Blade™

Knowing that Sun Microsystems' workstations have a reputation for power, performance, and robustness, Dwarakinath began working with representatives from Sun and PTC to bring on board the Sun Blade 1500 Workstation for a real-world evaluation.

Besides delivering much needed memory, the Sun Blade 1500 brings a number of other benefits to the table: increased application performance; faster graphic update; 64-bit performance at a 32-bit price; and the flexibility to run 32- and 64-bit applications simultaneously.

The combination of Pro/ENGINEER working on the Sun Blade 1500 workstation has delivered immediate results for Recon engineers. No more wasted time waiting for files to load. No more slow regeneration of assemblies. No more viewing just a section of an assembly. No more opening and closing applications and inventing workarounds to maintain uptime.

According to Dwarakinath, the Sun Blade 1500 evaluation process went smoothly. With more memory available, engineers and designers can see and manage an entire assembly—not just a single aspect. Since designers

don't have to wait for files to open and close, they're able to optimize their output, skills, and workflow. They can save money by avoiding costly workarounds, and reducing time-to-market.

Huge Savings Projected

The results of the early evaluation of Pro/ENGINEER running on the Sun Blade 1500 have been impressive to Recon management.

"It will take hours instead of days to work on our large assemblies. We believe we can save at least 400 hours—approximately \$40,000 to \$60,000 working with Pro/ENGINEER on the Sun 64-bit Platform," says Dwarakinath. "Recon is currently working on identifying funding for purchasing Sun Blade 1500 workstations as the platform for Pro/ENGINEER now and in the future."

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