

## SITUATION

Xtek Inc. is an industrial manufacturer with a long track record of using technology as a competitive advantage. In fact, it derives its name from the words "Exact Technology." The company produces hardened steel gears, rolls, couplings and wheels used to move and position heavy equipment. For many years, much of the company's design work was done using FORTRAN and C-based programs which calculated stresses, loads, and parametric geometry. Eventually, Xtek rewrote these older programs in Microsoft Visual Basic. Xtek's plan was to have a CAD system draw parts automatically using the Visual Basic output. Initial attempts to use AutoCAD and individual PCs for this failed, so company officials went looking for another CAD system.

## OBJECTIVES

- ✓ Select a powerful 2D CAD system capable of:
  - generating designs automatically using output from in-house Visual Basic programs.
  - presenting designs in layout format or as detailed part drawings.
- ✓ In addition to providing powerful, stand-alone drafting capabilities, ensure the new system is well-integrated with solid modeling and finite element analysis, and offers an assembly modeling capability.

## PROCESS VISION

Continue to use technology to deliver innovative, expertly engineered products for critical-wear and critical-performance industrial applications.

## ACTIONS

- ✓ Xtek selected I-DEAS® because, in addition to meeting the company's requirements for robust 2D drafting and solid modeling, the software surpassed the others evaluated in ease of modifying designs. Also, the fully integrated aspect of the I-DEAS product line supported Xtek's plan for future technology expansion.
- ✓ The engineers perform most design work with I-DEAS Drafting™ software since 2D cross sections provide sufficient visualization of the company's mostly cylindrical parts. They use I-DEAS Drafting to read the data file generated by the Visual Basic program and then to automatically draw the coupling assembly, either as a layout or as detailed part drawings.

# Xtek Exacts Toll on the Competition

*"We think we're on the leading edge of technology as far as providing tools for our engineers. I-DEAS helps us give our customers the best engineering solutions. Comparing I-DEAS to our previous software, AutoCAD, is like comparing a Rolls Royce to a Volkswagen."*

- Patrick Casey, Manager  
of Engineering Systems  
Xtek Inc.



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- ✓ The engineers also leverage the manage sets feature of I-DEAS Drafting which displays all parts in the assembly simultaneously, and in the correct geometrical part-to-part relationship. With this functionality, Xtek engineers can modify a part and immediately see how it affects adjacent parts. This was impossible to do in AutoCAD.
- ✓ I-DEAS solid modeling capabilities are used to generate 3D models for finite element analysis (FEA) when part failure occurs in the field.
- ✓ Xtek replaced its PCs with X-terminals and two application servers. This allows the engineers to display Microsoft Windows applications, such as in-house Visual Basic programs, and UNIX applications, such as I-DEAS, simultaneously on their X-terminals.

### RESULTS

- ✓ The software's layout format gives almost immediate (within 50 seconds) scaled graphical feedback about components generated from Visual Basic calculations. A drafting macro produces detailed proportional drawings and Bills of Material.
- ✓ With the old FORTRAN-AutoCAD approach, creating a single scaled layout of a part could take up to one and a half weeks. Applying I-DEAS Drafting and Microsoft Visual Basic allows for several design iterations in one to three days, resulting in better designs.
- ✓ Engineering mistakes are also greatly reduced, since the majority of work is done automatically.
- ✓ Editing, making changes to accommodate customer-specific details, and checking drawings, which previously took between five and eight weeks, is now done in about half the time.
- ✓ The hardware upgrade has reduced administrative overhead. Rather than having to maintain a variety of brands of PCs, with different configurations of video cards, hard drives, network cards, monitors, and different-speed CPU chips, all maintenance and upgrading is done on two servers.

### PLANS

Xtek plans to leverage its investment in I-DEAS design data by increasing the use of finite element analysis 20-to-30 percent, and integrating I-DEAS Generative Machining™ software into manufacturing processes.

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