

SITUATION

Grove Worldwide is a leading manufacturer of mobile hydraulic cranes and aerial work platforms. Its product line includes vast and varied weldments made from flat and formed plates. These weldments are placed into higher and higher levels of subassemblies, which eventually become a complete machine assembly with 5,000 or more individual parts. Grove engineers had been relying on a 2D CAD system to support its product design efforts, but they knew that 2D drawings could never fully and accurately reflect the behavior and properties of such assemblies. And part interference was nearly impossible to identify using their existing 2D drawings-based engineering process. To stay competitive and to stay innovative, Grove knew it had to change.

OBJECTIVES

- ✓ Replace existing mainframe-based 2D CADAM with a 3D solid modeling system running on networked UNIX workstations, while protecting the company's huge investment in 2D data.
- ✓ Enable the designers and engineers to perform more finite element analyses of product behavior and properties, such as weights, materials, and centers of gravity, thereby improving product quality and durability.
- ✓ Reduce the number of engineering change orders (ECOs) that were being generated during the prototyping stage due to part interference.

PROCESS VISION

Create and enable a truly integrated product development process in which geographically distributed product development team members could access, share and control product design and engineering information.

ACTIONS

- ✓ After an extensive evaluation, Grove chose I-DEAS® software primarily because it offered a proven migration path from 2D CADAM to the fully integrated power of 3D, concurrent product engineering.
- ✓ Using the CADAM-to-I-DEAS data translation capabilities and training from SDRC ExperTeam™, Grove quickly transferred its legacy data from CADAM to I-DEAS, and its engineers are now developing and analyzing designs directly in 3D.

Grove Lifts Product Quality With I-DEAS®



"Grove's tradition has been to push new markets and technologies by innovating new ideas into the marketplace. SDRC plays a critical role in this by making sure we develop our machines better than the competition, that we develop them faster than the competition, and that we can produce the results we're looking for in terms of increasing market share."

- Stephen Schoonmaker
Manager of
Engineering Systems
Grove Worldwide



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There
Faster®

Grove Lifts Product Quality With I-DEAS

- ✓ A small team begins a project by developing a concept design in 3D. After management and marketing approval, the team is expanded to include additional designers, engineers, and analysts who develop and optimize the virtual product models in I-DEAS.
- ✓ Throughout the development process, Grove relies on I-DEAS Team Data Manager™ software as the enabling technology for data sharing and control, automating the process of design check-in, check-out, reference, update and approval.

RESULTS

- ✓ After a week of customized 2D training, Grove engineers began migrating from CADAM to I-DEAS. Meanwhile, CAD management translated about 50,000 active drawings and 50,000 non-active drawings from the CADAM system. Less than 50 drawings out of the 50,000 active ones could not be translated successfully.
- ✓ During the transition process, which lasted about a year, more than 200 users were trained. Productivity remained high as Grove developed customized 2D functions to replace CADAM functionality; and the costly mainframe was decommissioned.
- ✓ Using I-DEAS software, Grove now creates independent, constrained 3D models of each assembly level for their complex products. Design information for a group of parts can be accessed much more easily than it could using 2D drawings. More importantly, when engineers need to make changes to the part, I-DEAS automatically updates all affected assembly models and drawings as well.
- ✓ Grove engineers are also using I-DEAS and its 3D assembly models to automatically calculate weights and centers of gravity, as well as generate bills of material reports and convert unit systems, tasks that were difficult or impossible to do with the 2D system.
- ✓ In addition, since the software enables analysis and other traditionally downstream applications to be involved at earlier stages of design, Grove team members are now identifying potential problems much earlier in the development process. As a result, the number of ECOs is dropping dramatically. In the first project alone, using I-DEAS resulted in a 50 to 60 percent reduction in change requests that were due to drawing inconsistencies or the part not fitting with other parts. This has also led to reduced development cycle time and improved product quality.

PLANS

As Grove continues to build its integrated product development environment, the company is working to involve functions beyond engineering, as well as expand communications with facilities in Europe.

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