

# Alto Aviation

Design and manufacturing firm reduces development time and costs by 30% by sharing 3D models in Adobe® PDF

## Alto Aviation

[www.altoaviation.com](http://www.altoaviation.com)



### Industry

Manufacturing

### Challenges

- Decrease development time and costs
- Catch inadvertent errors before manufacturing
- Increase responsiveness to customers
- Safeguard intellectual property

### Solution

- Share 3D PDF files with a broader audience
- Collaborate more effectively with anyone
- Accelerate design reviews
- Automate business processes

Alto Aviation is using Adobe Acrobat and 3D PDF files to accelerate product development and reduce costs, while automating forms-based processes to increase efficiencies.

### Results

- Saved 30% in product development time and costs
- Managed design changes in hours or days versus weeks
- Supported rapid business growth
- Increased sales due to responsiveness
- Safeguarded proprietary designs

### Systems At A Glance

- Adobe Acrobat 9 Pro Extended
- proALPHA ERP system
- Kubotek KeyCreator

## Clearer communication makes all the difference

Alto Aviation initially adopted Adobe Acrobat® software as a secure and flexible means of storing documents as universally accessible Adobe Portable Document Format (PDF) files. Since then, the company, which designs and manufactures premium cabin audio systems for corporate aircraft, has started to take advantage of Adobe PDF to securely share its 3D designs and other product data.

IT Director Jim Gutterman has been impressed by the resulting business benefits and competitive advantages. “By delivering designs in Adobe 3D PDF, we reduced product development cycles and costs by an average of 30%, and in some cases up to 90%,” he says. “Moreover, we can respond to customers with design changes in hours or days versus weeks.”

## Leveraging Acrobat and PDF

Alto Aviation serves top customers such as Gulfstream Aerospace, Dassault Falcon Jet, Embraer, and Sikorsky. The company also provides high-fidelity audio entertainment systems for leading after-market firms that retrofit corporate jets.

Every Alto Entertainment System is a complete audio system with custom equalization specific to each individual aircraft model. The company’s line of products includes custom components—each tailored for an aircraft’s specific environment and cabin spaces. Alto engineers, for instance, might design a specialized subwoofer to fit under a specific type of airplane seat.

With so much custom design involved in Alto Aviation’s everyday business processes, engineers needed a way to better communicate with customers as well as its supply chain. The company is also in a rapid growth phase, and must constantly look for ways to improve its processes.

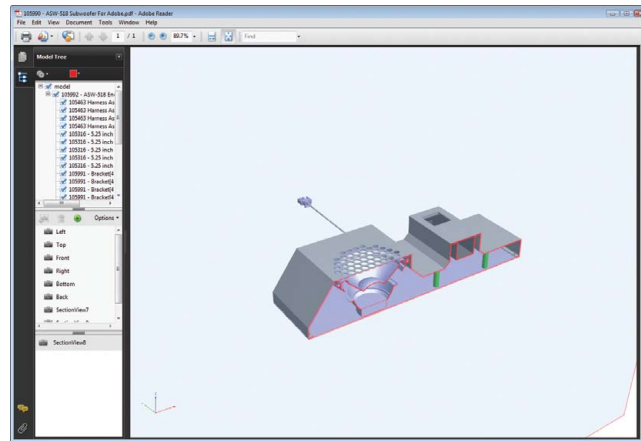
Prior to adopting Acrobat and Adobe PDF, the process of sharing 3D designs was largely paper-based. After creating 3D designs using CAD software, Alto engineers output them as 2D hard-copy drawings and sent them via overnight delivery services for review and mark-up. The iterative design review process took days and could result in inaccuracies because 2D drawings and images were often hard to interpret.

The adoption of Acrobat and Adobe PDF offered an immediate improvement, because 2D design documents could be output to Adobe PDF, shared via e-mail, and marked up digitally. However, the difficulty of interpreting 2D drawings remained an issue.

## Increasing the efficiency of the design process

Improving collaboration using 3D PDF files provided a quantum leap in the effectiveness and efficiency of the collaborative design process. Using Acrobat Pro Extended software, Alto Aviation’s product designers can convert CAD design files to highly compressed 3D PDF files. File sizes on average can be compressed 100 times smaller than originals, which can be dozens of megabytes in size. The resulting 3D PDF files can then be easily distributed via e-mail and opened using free Adobe Reader® software.

Using Adobe Acrobat Pro Extended, Alto Aviation's product designers can convert CAD design files to 3D PDF files. Using Adobe Reader 9 or later, customers can view 3D designs, save 3D views, add comments, and interact with the designs by rotating, zooming, and measuring drawings. This dramatically improves collaboration and enables Alto to gain valuable feedback early in the product design cycle.



*"By delivering designs in Adobe 3D PDF, we reduced product development cycles and costs by an average of 30%, and in some cases up to 90%. Moreover, we can respond to customers with design changes in hours or days versus weeks."*

Jim Gutterman,  
Director of IT,  
Alto Aviation

Anyone using Adobe Reader 9 or later can view 3D designs, save 3D views, and add comments directly on the models. They can also interact with the design by rotating, zooming, and measuring drawings for greater understanding of the 3D designs. The result is that participants up and down the company's supply chain no longer need an expensive CAD system or any special software to view a 3D design. This dramatically improves the collaborative and workflow process and enables Alto to gain valuable early feedback.

"Our customer might realize after reviewing a 3D PDF file that our subwoofer would interfere with a bracket that wasn't in the original seat frame drawing," explains Gutterman. "With 3D PDF and virtual technologies that allow customers to view my computer desktop over the Internet, we can work through the issue in real-time. We can fix the design right away and output it to an Adobe 3D PDF faster than ever."

Alto Aviation engineers can further improve communication by creating a single PDF portfolio that can contain CAD drawings, data sheets, Bills of Materials, sketches from customers, and more. Files can readily be secured with passwords and permissions before they are transferred, helping protect the company's business-critical intellectual property.

#### **For More Information**

[www.adobe.com/products/acrobat/](http://www.adobe.com/products/acrobat/)  
[www.adobe.com/manufacturing/3d\\_solutions.html](http://www.adobe.com/manufacturing/3d_solutions.html)

#### **Dramatic cost savings and increased sales**

Using the new 3D document sharing processes, issues are often identified and remedied before designs go to manufacturing. The cost avoidance of catching an inadvertent design flaw early on can run 30%, on average. While the average benefits are substantial, Gutterman notes that sometimes they are astounding. In a few instances, the ability to share 3D assemblies with customers has enabled Alto to catch major errors early on, resulting in 90% savings in product development time and costs.

In addition to reducing costs for Alto Aviation, the use of 3D PDF is benefiting the other side of the company's balance sheet. "Our customers are bowled over because they can send us a change one day, and we can respond within a few hours or the next day with a revised design," he says. "Word is getting out about how nimble we are, and it's resulting in increased sales. Delivering designs in Adobe 3D PDF is key to making this happen."

#### **Automating business processes**

As a next step, Alto Aviation is expanding its use of Adobe solutions to automate many forms-based business processes. The company is currently converting everything from HR forms to engineering change orders (ECOs) to Adobe PDF. "With automated forms processes, we will be able to increase efficiency and also gain tighter control over critical processes such as handling design changes," says Gutterman. "It's just one more way Adobe Acrobat is saving us time and costs and simplifying our processes."



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