Rodin

Customer Success Story

Autodesk® Inventor®

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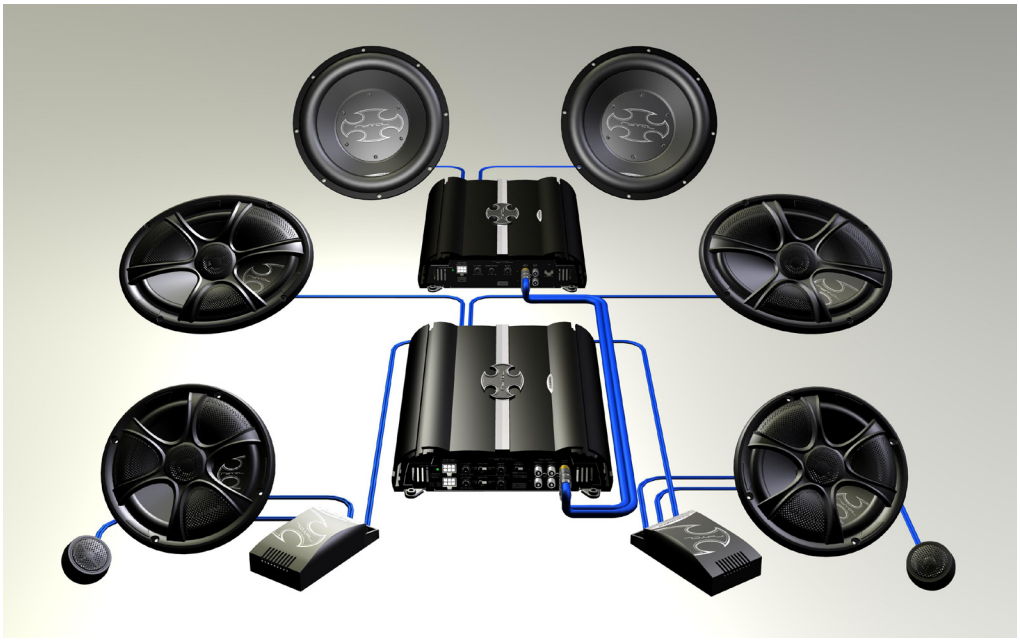
—Phil Eichmiller
Industrial and Mechanical Designer
Rodin

Sculpting Better Sound.

Autodesk® Inventor® software brings Rodin's imaginative speaker designs to life.



Project Summary

Formerly known as Phoenix Gold, Rodin has specialized in sound engineering and system design since 1985. The company considers the design of speakers, amplifiers, and cables an art. Pushing the boundaries of innovation became easier once Rodin moved from 2D AutoCAD® to 3D Autodesk® Inventor® software, the foundation of the Autodesk solution for Digital Prototyping. By migrating to Autodesk Inventor, Rodin can:

- Create innovative, mathematically defined designs faster
- Develop a full set of sheet metal designs in a day rather than a week
- Complete product manuals six months ahead of production
- Cut tradeshow costs by half
- Reduce miscommunication with manufacturing partners

The Challenge

To reduce costs, Rodin relies on selected partners to manufacture their products. But when communicated as 2D drawings, Rodin's designs are often lost in translation.

"With AutoCAD drawings, people must use their imaginations to 'see' the shape of a design," says Phil Eichmiller, industrial and mechanical designer at Rodin. "Before moving to 3D, we typically went through several physical prototypes before our manufacturing partners got it right."

Difficulty communicating wasn't the only thing clogging Rodin's design pipeline. Using AutoCAD for sheet metal design proved time-consuming. "For example, to perfect bend deductions, you move things around by small degrees," says Eichmiller. "It takes a lot of diligence and manual manipulation to get it right."

The Solution

By moving from 2D AutoCAD to 3D Autodesk Inventor software, Rodin is reducing manual design tasks, producing fewer physical prototypes, and communicating more effectively with manufacturing partners. As a result, the company spends more time creating innovative designs that produce exceptional sound.

Automating Sheet Metal Design Tasks

The sheet metal functionality in Autodesk Inventor simplifies the complex math designers once labored over in AutoCAD. "In the 3D model, you know that you're getting a consistent flat pattern without performing manual mathematical calculations," explains Eichmiller. "With Inventor, you just have to view the screen to know things line up."

Autodesk®

With Autodesk Inventor, Rodin cuts costs, innovates faster, and improves communication throughout the design-to-manufacture process.

Because Inventor software automates precise calculations, the sheet metal design process is not only faster, but less error-prone. "For the first time, the shop can replicate finished parts on the first try," says Eichmiller.

Fewer Physical Prototypes

Digital Prototyping plays a huge role in Rodin's improved design process, and it has convinced Eichmiller that migrating from 2D to 3D was a smart move. For example, Rodin's manufacturing partners must no longer produce several physical prototypes before they manufacture a design correctly. With 3D digital prototypes, there's very little chance for miscommunication of design intent.

"3D digital prototypes are very easy to interpret," says Eichmiller. "Inventor models facilitate instant and clear communication—even between teams that speak different languages."

Rodin has also been able to reduce physical prototyping by using digital prototypes to make design decisions earlier in the design process and get approval on lifelike renderings of product alternatives. "Inventor lets us produce realistic images of products for review by decision makers," explains Eichmiller. "We can easily run through various iterations, making minor changes to color or texture before we spend a dime on tooling. Upper management now signs off on designs with confidence, without viewing a physical prototype."

Precision Designs Realized

Because sound quality is determined by the precise shape of speakers, the geometry of designs is critical. With Autodesk Inventor, Rodin's designers can focus on the functional requirements of their design, rather than figuring the mathematics behind the geometry manually, which is both time-consuming and error-prone. As a result, Rodin's designers can quickly validate their innovations by rapidly creating digital prototypes.

"A tweeter horn needs a special shape to disperse high frequency," explains Eichmiller. "With Inventor, it's easy to perform the mathematical calculations required to achieve innovative horn shapes."

Most importantly, the innovations Rodin's designers achieve in the design phase are not lost during manufacturing. "We've increased quality because we can send models to our manufacturing partners with confidence that they will build them without misinterpretation," says Eichmiller. "They simply plug our 3D models into their CNC machines. Within a few weeks, we can test the sound of our innovative speaker shapes precisely as we've designed them."

The Result

Making the transition from being a 2D drafter to a 3D designer wasn't a problem for Eichmiller. In fact, he quickly became an Inventor expert, and now teaches basic and advanced Inventor classes at a local community college when he's not perfecting speaker designs at Rodin. "Other design programs can be confusing, counterintuitive, and hard to learn, but not Inventor," says Eichmiller. "My students grasp how to use Inventor right away, thanks to its easy-to-use, intuitive interface."

At Rodin, Inventor has proved invaluable. While it once took a week to develop a full set of sheet metal designs for a line of products, it now takes a day with Inventor. Before, product manuals always followed far behind production. Now, they are completed six months before production, and rely on information pulled directly from Inventor.

Rodin is even using Inventor to save time and money on tradeshows. Eichmiller explains, "Inventor

helps us plan the tradeshow floor layout and create realistic renderings of our booth. Because Inventor works well with very large assemblies, I can design booth fixtures down to the last nut, using products from my manufacturing database. We can output the drawings required by the tradeshow's electrical and lighting contractors, and even design booth pieces so they fit into smaller boxes that are less costly to ship. By bringing tradeshow design in-house, we're cutting our expenses in half."

Most importantly, Inventor is helping Rodin create more innovative designs. "Putting a tweeter where it needs to be involves making a horn shape that's mathematically defined," explains Eichmiller. "Doing this in 2D is nearly impossible. With Inventor, we're achieving excellence in every aspect of our designs, from defining the precise shape of a horn to determining the best way to mount the speaker on a wall."

For More Information

To find out how Autodesk solutions can help you get innovative products to market faster, visit www.autodesk.com/inventor.

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Images courtesy of Rodin.