

Ponderosa Roasting

Customer Success Story

Autodesk® Inventor®

Using Inventor and Digital Prototyping, we've easily reduced our manufacturing costs by 25 percent.

—Boyd Guildner
Founder and President
Ponderosa Roasting

Perfection by the cup.

Ponderosa Roasting produces innovative coffee roasters six times faster with Autodesk Inventor software.



Image courtesy of Ponderosa Roasting.

Project Summary

San Diego, California-based Ponderosa Roasting is helping coffee lovers in their quest for the perfect cup of coffee. A small, family-owned company, Ponderosa competes with manufacturing giants that have been producing coffee roasters for decades. The key to Ponderosa's success is innovation. Unlike competitors that rely on traditional roaster designs, Ponderosa constantly refines its Renegade Roasters to control practically every aspect of the roasting process. The goal: extract the best possible flavor from every bean. Using Autodesk® Inventor® software, Ponderosa can quickly iterate design options to see which gets roasted beans closest to perfection. With Autodesk Inventor software, Ponderosa has been able to:

- Develop innovative, custom roasters six times faster
- Save more than \$12,000 in rework alone
- Eliminate costly, time-consuming physical prototyping
- Cut manufacturing costs by 25 percent

The Challenge

Ponderosa makes Renegade Roasters in a range of sizes and prices—from 1-pound roasters that cost around \$6,000 to 500-pound roasters that cost as much as \$600,000. All of the company's sales result from word-of-mouth buzz. Coffee shops and industrial roasting companies that purchase a Renegade Roaster expect to be wowed by its ability to deliver sophisticated, multifaceted flavor profiles.

But it hasn't always been easy for Ponderosa to continually create innovative designs. The company's founder, president, and roaster designer, Boyd Guildner, explains: "I used 2D design tools that could not help me validate my ideas. I'd tinker with a design, cut metal, put the parts together, and then realize that the design wasn't viable. We wasted time, materials, and money."

In addition, Ponderosa had a tough time getting parts manufactured consistently because its vendors had to redraw designs prior to production. "I once asked a vendor to manufacture parts for eight 11-pound roasters," says Guildner. "Each part had different problems, even though they were manufactured from the same design."

Autodesk®

Ponderosa is so confident in Inventor-based Digital Prototyping, it has eliminated physical prototyping from the production process.

The Solution

Ponderosa adopted Autodesk Inventor software and Digital Prototyping to facilitate design innovation and reduce product development time and costs. After a four-hour session with Hagerman & Company, an Autodesk Premier Solutions Provider, Guildner fell in love with the software. "Inventor allows me to think outside the box," he explains. "With it, I can quickly explore multiple roaster designs digitally."

Validating Innovative Ideas

Because the Inventor software models that Ponderosa creates are 3D digital prototypes, Guildner can design, visualize, and simulate how his products will work under real-world conditions—without manufacturing a single part. He can verify that a roaster can be assembled as designed, and easily insert new components into an assembly. With Inventor software, it's simple for Guildner to test assembly function, both for static interference and for possible collisions between moving parts.

"There are a huge number of variables that influence the taste of coffee, and there are just as many things I can change in a roaster design," says Guildner. "For example, I may adjust the angle of veins inside the roaster's drum. Autodesk Inventor makes innovation simple. It gives wings to my imagination, because I can test many different scenarios without having to build physical prototypes."

Guildner also says that Inventor speeds the design process by making it easy for him to reuse and make changes to existing part designs without having to do tons of rework. "When you change something on a part, all the references update automatically," he notes. "Where it used to take me three weeks to update everything impacted by a small change, it now happens instantaneously."

Reducing Errors

Ponderosa relies heavily on the sheet metal tools in Autodesk Inventor software to reduce errors, speed design, and cut costs. The digital prototypes Guildner creates combine manufacturing information, such as punch tool parameters and custom bend tables, with an accurate 3D model of sheet metal folding.

Guildner knows exactly when it hit him that Inventor software could vastly improve Ponderosa's product development process. "The first product we designed on Inventor was a 33-pound roaster," he recalls. "We built five of them at once. I got the parts in and it was like an erector set. All the bolts fit, every piece of metal was bent in the right place, all the holes lined up. I was happy for a week."

Also helping to reduce manufacturing errors are tools in Inventor software for creating engineering and manufacturing documentation directly from the digital prototype. Guildner can automatically generate bill of materials (BOMs) and parts lists from digital prototypes, virtually eliminating the possibility of human mistakes.

In addition, now that Ponderosa's manufacturing partners don't need to redraw Guildner's 2D drawings, manufacturing errors are less likely. "Instead of interpreting my designs, they're directly importing the Inventor files into computer numerical-control machines," explains Guildner. "I no longer worry about errors creeping in."

The Result

Inventor software takes Ponderosa beyond 3D to Digital Prototyping. By reducing design errors before and during manufacturing, verifying that all parts fit before production, and testing various design alternatives, Ponderosa is widening its competitive advantage—and realizing significant bottom-line benefits. "Using Inventor and Digital Prototyping, we've easily reduced our manufactur-



ing costs by 25 percent," says Guildner. He also estimates that Inventor helps him develop new roasters up to six times faster.

What's more, because Ponderosa relies completely on Digital Prototyping, it's eliminated costly physical prototyping from the production process. "I have 100-percent confidence in the accuracy of my designs," Guildner says.

As for Ponderosa's return on investment? Cheryl Guildner, Boyd Guildner's wife and partner in business, says, "Autodesk Inventor has saved us at least \$12,000 in rework. People considering buying Inventor might wonder, 'Is it worth it?' We can say unequivocally, 'It is.'"

For More Information

To find out how Autodesk solutions for Digital Prototyping can help you complete projects faster and at a lower cost, visit www.autodesk.com/inventor.



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