

SUB-ZERO FREEZER COMPANY

Streamlining luxury refrigerator development with SolidWorks Professional



Sub-Zero has surpassed its initial productivity goals, compressing its design cycles substantially, by using SolidWorks software.

Sub-Zero Freezer Company is the market leader in the manufacture of luxury residential refrigeration, freezer, and wine storage units. Throughout its history, the company has pursued a strategy of engineering innovation, including the introduction of its dual-refrigeration system. Sub-Zero engineers had used AutoCAD® 2D design tools until the late 1990s, when management determined that the company could boost productivity, accelerate time-to-market, and extend its history of innovation by moving to a 3D CAD system.

“We wanted to move to solids because of the potential for greater efficiencies,” explains Design Documentation Supervisor Brenda Stewart, who was the CAD administrator at the time Sub-Zero made the transition to 3D. “Improved handling of sheet metal was a big driver in the decision to move to 3D. Working in 2D, we experienced delays and missed some production dates. We believed that by moving to 3D solid modeling, we would be more efficient and gain additional flexibility to support downstream users.”

After evaluating several 3D CAD systems, Sub-Zero narrowed the field to three finalists: IronCAD®, Pro/ENGINEER®, and SolidWorks® software. The company then sent three key designers to a week of training for each package. “After several months of benchmark assessment, SolidWorks software rose to the top of the list,” Stewart recalls.

Sub-Zero standardized on SolidWorks Professional—running 55 concurrent seats on 170 workstations—because of its ease of use, short learning curve, and large community of trained users. The company also values the sheet-metal design and configuration capabilities of SolidWorks software, as well as the integrated SolidWorks SimulationXpress design analysis application.

Results:

- Shortened design cycles by 50 percent
- Increased productivity through configurations
- Cut weeks from mold development
- Saved time on sheet-metal flat patterns while improving accuracy

Compressing design cycles

By implementing SolidWorks software, Sub-Zero has surpassed its initial productivity goals, compressing its design cycles substantially. One of the first major efforts that Sub-Zero designers undertook in SolidWorks Professional was the complete redesign of the company's under-counter refrigerator lines. Stewart says the project took just one year to complete, a 50 percent reduction over the previous two-year design cycle.

Since then, users like Designer John Andrews have continued to harness the power of SolidWorks Professional to shorten development time, particularly due to its greater flexibility for making design changes. "We want to keep the intent of the industrial designers, but we must translate their ideas into a form that meets our manufacturing needs," Andrews explains. "Because our industrial designers are also using SolidWorks software, we can take their model files directly, and make manufacturing modifications quickly and efficiently. Working on a standard platform, we are able to get product engineering data out to the manufacturing floor almost immediately."

Tools for every aspect of product development

Sub-Zero saves additional time by accessing different SolidWorks Premium tools—including sheet-metal, configurations, simulation, and mold development and analysis capabilities—to automate almost every aspect of product development. Using the sheet-metal design tools found in SolidWorks software, Sub-Zero engineers not only save weeks on the development of flat patterns for forming, bending, and brake-pressing sheet metal, but also improve the accuracy and fit of sheetmetal parts.

With configurations, the company can easily expand a product line from a base design, as well as create special configurations to support different functions, such as a simple configuration for easy viewing, a detailed configuration for manufacturing drawings, and special sheet-metal configurations to support automated and brake-press manufacturing.

Andrews uses other tools, such as integrated SolidWorks SimulationXpress analysis software, to check stresses on mounting brackets to ensure they can handle specified loads. Combined with SolidWorks software draft analysis capabilities, this tool has cut weeks from the mold development process.

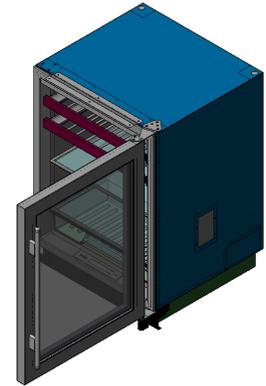
Creating a monument to food preservation

With the SolidWorks Professional design platform in place, Sub-Zero completed development of the Pro 48, the largest refrigerator/freezer combination in the company's history. With nearly 30 cubic feet of storage space, the unit features wall-to-wall stainless steel and integrated LED lighting. The company refers to the Pro 48 as a "monument to food preservation."

"There's a lot of technology in the Pro 48," Andrews notes. "SolidWorks 3D CAD software helps us take elegant concepts from our industrial designers and quickly prepare them for manufacturing, exchanging files seamlessly. The software automatically updates assemblies with every dimension adjustment. Powerful sheet-metal design capabilities enable us to make the part the way we want it to look versus predicting the final shape of a flat-pattern design. Inevitably, the design is right the first time."

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John Andrews
Designer



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