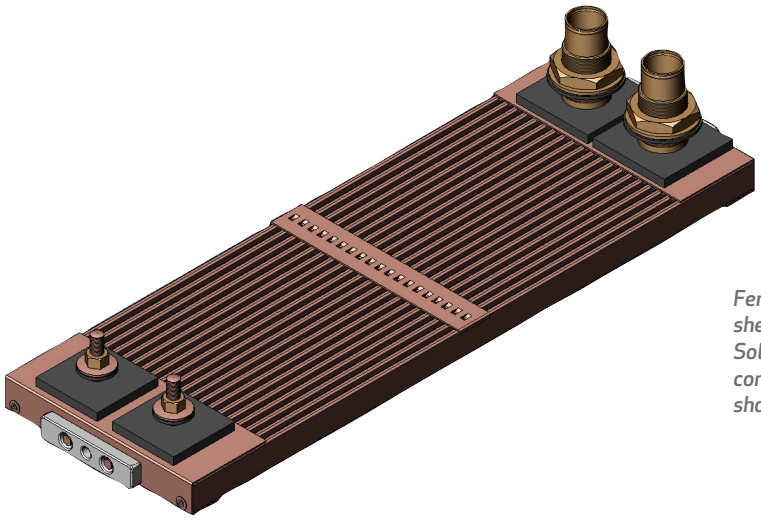
R.W. FERNSTRUM & COMPANY

Supporting flexibility in marine cooling system design with SolidWorks software



Fernstrum dramatically improved its sheet-metal design capabilities with SolidWorks software, enabling the company to use more innovative, complex shapes in its cooling system designs.

R.W. Fernstrum & Company is a leading manufacturer of cooling systems and custom heat exchangers for marine applications, including propulsion systems, thrusters, generators, and air conditioners. Because the company's cooling systems are used primarily on commercial marine vessels, its development platform paralleled the traditional approach to ship and boat design, which—similar to architectural design—historically relied upon 2D design tools. Like many of its customers, Fernstrum until recently had used the AutoCAD® 2D design package to develop its standardized and customized cooling products.

When the company attempted to obtain a new version of AutoCAD software in 2005, its reseller instead offered an upgrade to the Autodesk Inventor® 3D package at a discounted price, according to Todd Fernstrum, vice president of manufacturing. "We had been contemplating a move to 3D to improve design visualization and communication with our customers," Fernstrum recalls. "After we implemented Inventor, we decided to take a more serious look at other 3D systems. We believed making our own assessment of available 3D CAD systems was a more prudent approach than basing our decision on a discounted upgrade."

The company was in the midst of evaluating Solid Edge® software when Fernstrum received an evaluation version of the SolidWorks® 3D CAD software system. "After completing the SolidWorks software trial, I was excited about what we could do with it," Fernstrum recounts. "Inventor struck me as a new application that was not 100 percent ready. I went to a SolidWorks software seminar and learned how much more mature SolidWorks software is. After using both packages and considering the level of functionality we were getting for the price, as well as the availability of training, we were simply more comfortable going with SolidWorks software."

Fernstrum & Company selected the SolidWorks 3D CAD software system as its standard development platform, replacing Inventor with three seats of SolidWorks software, because of the system's ease of use; sheet-metal, design visualization, and configuration capabilities; design communication tools; and superior training and support.

Results:

- Increased innovation in sheetmetal components
- Improved handling of configurable design variables
- Enhanced design visualization and communication
- Accelerated production of technical documentation

SOLIDWORKS

Improving sheet-metal capabilities

By implementing SolidWorks software, Fernstrum dramatically improved its sheet-metal design capabilities, enabling the company to increase its efforts toward innovation in cooling system design. "All of our heat exchangers utilize rectangular tubes with a sheetmetal header that wraps all the way around the tubes, where the parts are brazed together as an assembly," Fernstrum explains. "Using SolidWorks software, we can redesign our forming dies to accommodate more innovative, complex shapes. With SolidWorks software, we are able to lay the sheet metal out flat, and fold it back on the computer to show how the part goes together. In our business, the quality of the finished part is everything. SolidWorks software gives us more confidence that the part will go together as planned."

The company also uses SolidWorks SimulationXpress analysis software, which is included with SolidWorks software, to validate the performance of custom designs. "We do a lot of custom products. With SolidWorks SimulationXpress, we can analyze one or two simple parts; so when we derive other custom parts, we know they will perform as intended."

Supporting custom-design variations

Although Fernstrum develops many of its heat exchangers from a standardized base, the quantity of possible variables and options for each application results in a large number of unique custom designs. Handling design variations manually can be tedious, time-consuming, and prone to error and miscommunications. Using the configuration capabilities of SolidWorks software, the company anticipates saving time and money by utilizing design tables to address design variations.

"Many of our tubular heat exchangers are laid out in the same pattern—from four to 32 tubes wide—but can involve thousands of different combinations when you take into account variables such as the ambient water temperature, engine or other source ratings, maximum hull speed, mounting configurations, and available space," Fernstrum explains. "With SolidWorks software, we can use design tables to address any and all combinations from a single base design."

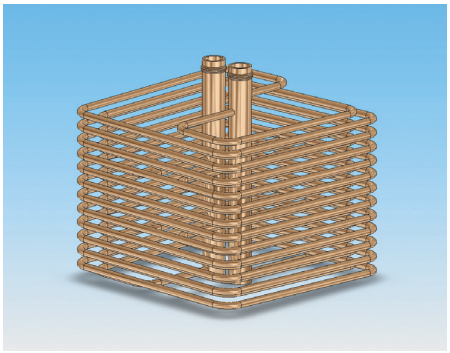
Enhancing communications with eDrawings

Using SolidWorks eDrawings® files, Fernstrum has improved design visualization and communication with the company's customers and production personnel. "With eDrawings, we get better visualization of designs on the shop floor for prototype and final production," Fernstrum says. "We also use eDrawings files to send design information to our customers. eDrawings is simply an easier way to visualize and communicate design information."

The company also uses eDrawings software and photorealistic renderings to support the production of product catalogs and technical documentation, including installation and maintenance manuals for many different installation configurations.

"EDRAWINGS IS SIMPLY AN EASIER WAY TO VISUALIZE AND COMMUNICATE DESIGN INFORMATION."

Todd Fernstrum
Vice President of Manufacturing



With SolidWorks software, Fernstrum can use design tables to develop different configurations from a standardized heat exchanger design.

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