3S SOLIDWORKS

PS AUDIO

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ACCELERATING HIGH-END HOME AUDIO SYSTEM DEVELOPMENT WITH SOLIDWORKS
Case Study

PS Audio relies on SOLIDWORKS 3D design tools to expand its offering of high-end, state-of-the-art audio systems and accessories for audiophiles, including preamplifiers, power conditioners and regenerators, amplifiers, digital to analog converters, high-end cables, turntables, players, and speakers.

3S DASSAULT SYSTEMES

Challenge:
Compress design cycles to support product line expansion while simultaneously delivering high-quality, production-ready home audio system product designs.

Solution:
Implement SOLIDWORKS Standard 3D Design software.

Results:
- Cut design cycles from months to days
- Expanded product offering
- Optimized heat sink efficiency
- Realized ability to share electronic and mechanical design data

You're sitting in a room when you hear the soulful sounds of a saxophone wafting from the back of the room. You close your eyes and try to determine if there's an actual musician playing there or if you are listening to an electronic recording on a home audio system. After a few seconds, you realize that you can't truly identify the source of the music without looking. This is the level of quality that home audio hobbyists and gurus—known in the industry as audiophiles—want. It's also the standard that PS Audio strives to achieve in the development and production of high-end home audio systems, components, and accessories.

Since the 1970s, the Colorado-based home audio systems manufacturer has engineered and built home audio systems of undisputed quality, serving an audiophile community that loves music and high-end audio systems. By focusing solely on making music and the products that support its reproduction, PS Audio has continued to grow and prosper at a time when many home audio system manufacturers have scaled back. As co-founder and CEO Paul McGowan says, "Our high-end home music reproduction systems are designed, engineered, and built by people who care about lifestyle, music, the environment, quality, fairness, and the trust that we've earned over the last 40 years."

In serving its devoted audiophile customer base, PS Audio strives to develop its products efficiently and cost-effectively, which is why the company replaced AutoCAD® 2D design tools with SOLIDWORKS® Standard 3D design software. PS Audio chose SOLIDWORKS because 3D product development saves time and money, and the software is easy to learn and use.

"We began using SOLIDWORKS in the early 2000s and chose it because it was affordable relative to the other programs out there and seemed easier to use," McGowan recalls. "AutoCAD, at the time, was still to transition from 2D to 3D, and we felt the 3D solution presented by SOLIDWORKS was easier for us to design production-ready products without too much of a steep learning curve."

DESIGNING IN DAYS VERSUS MONTHS

Using SOLIDWORKS software, PS Audio has compressed its design cycles without sacrificing quality, enabling the audio systems manufacturer to expand its product offering of preamplifiers, power conditioners and regenerators, amplifiers, digital to analog converters, high-end cables, turntables, players, speakers, and a host of accessories. "Compared to AutoCAD and hand-drawing, which is what we did in the late 1990s, SOLIDWORKS has been an essential tool that has cut down design cycles to days rather than months," McGowan says.

For example, Designer Chet Roe, who began working at PS Audio as an intern, uses SOLIDWORKS sheet metal design tools to save time whenever custom chassis that require modification of standard-sized chassis are required. "SOLIDWORKS saves time whenever we need to customize a chassis or fabricate sheet metal, which happens whenever we're working on a new line," Roe notes.

OPTIMIZING HEAT SINK DESIGNS

As an intern, Roe tapped the SOLIDWORKS Simulation capabilities of his student version of SOLIDWORKS to run thermal analysis on the the heat sink fin of an amplified speaker. "I took a look at the heat sink design on large amplified speakers that carry a lot of wattage and amperage," Roe says.

"The heat sink fin design matches the shape of the speakers," Roe continues. "The former design utilized a single backplate mount, and the simulation showed that there wasn't enough space back there to efficiently dissipate heat. I then looked at the two-sided fit of the heat sink on one of our power regenerators and discovered that it was more efficient at dissipating heat. I then used SOLIDWORKS to modify the design to optimize the efficiency of the heat sink."

"SOLIDWORKS saves time whenever we need to customize a chassis or fabricate sheet metal, which happens whenever we're working on a new line."

—Chet Roe, Designer

SETTING THE STAGE FOR ELECTRO-MECHANICAL DESIGNS

PS Audio's implementation of Altium Designer PCB (printed circuit board) design software in 2015 enabled the company's mechanical and electrical designers to share design data via IGES and STEP files and collaborate more effectively. The partnership between DS SOLIDWORKS and Altium, which includes SOLIDWORKS PCB (Altium Designer and SOLIDWORKS in one integrated application) and the SOLIDWORKS PCB Connector to Altium, sets the stage for more fully integrating the company's mechanical and electronic design environments.

"We've been bringing semipopulated boards from Altium Designer into SOLIDWORKS to check fits and clearances," Roe points out. "However, the board is pretty much a semi-populated dumb solid. With SOLIDWORKS and Altium working so closely together, we're excited about the possibility of further integrating development, facilitating collaboration, and increasing innovation in high-quality home audio systems."

Using SOLIDWORKS 3D design tools, PS Audio has compressed its product design cycles from months to days, enabling the high-end audio systems manufacturer to expand its product offering and continue to push the limits of what's possible with electronically recorded and played sound.

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