

Western Saw Plays the Angles and Wins with SolidWorks and CAMWorks Combination



- It's tricky and dangerous to cut window and door holes out of concrete walls, especially at a building's corner.
- Western Saw used SolidWorks 3D CAD software, SolidWorks Simulation software, and CAMWorks computer-aided manufacturing software to quickly develop a track-mounted corner saw attachment. This breakthrough product is more affordable, lightweight, safe, and efficient than the traditional products for corner cutting.
- Because of the efficiency of its software and a new ability to machine its own prototypes, Western Saw cut a year and a half off the traditional development cycle. It also struck a positive impression with customers at an important industry conference.

Time, quality, and worker safety can make or break the development of a commercial building. These are precisely the benefits of a breakthrough Western Saw product that quickly and safely cuts corner openings out of concrete walls – without undermining building strength.

The Oxnard, Calif., company used SolidWorks® 3D CAD software to conceive, design, and analyze the new track-mounted chainsaw attachment. Engineers combined SolidWorks software with CAMWorks® computer-aided manufacturing (CAM) software, a SolidWorks Certified Gold Partner product, to automatically machine parts for working prototypes.

“With SolidWorks and CAMWorks, we went from concept to design to iterations to working prototype in six short months with just a single engineer on the project,” says Anthony Baratta, the company’s chief engineer. “We cut a year and a half off the typical development cycle. When you design the baseline SolidWorks 3D model properly, simulation and iteration are fast.”

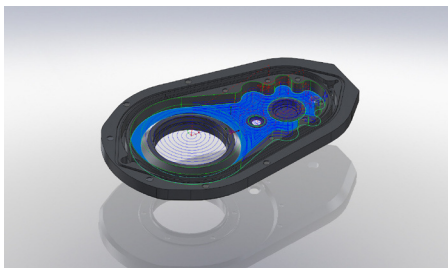


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Chief Engineer, Western Saw



The WSX-1 track-mounted chainsaw attachment



A machined pocket where oil will occupy and cool the high-speed gears

Problem: Cutting Tricky Wall Openings

The track-mounted chainsaw attachment addresses a unique challenge the layperson rarely considers. When a concrete-walled industrial building requires an opening for a garage bay, loading dock, window, or other portal, a powerful track-mounted circular saw is generally in order. It's called a wall saw. But when two perpendicular cuts intersect at a corner or when that opening is at a corner, things get complicated fast. You can't make the cut with the wall saw; the arc of the saw blade would go "past the mark" or into an opposing wall, creating stress cracks that undermine the weight-bearing structure of the building.

Until now, the solution for corner cutting has been switching to a powerful straight-edged chainsaw – either an affordable (\$2,500) yet dangerous handheld device or an expensive (\$13,000) track-mounted one that takes a half an hour of setup. Though safer, the latter still draws the operator into the danger zone. Western Saw's new WSX-1 is a new third option, squarely addressing the issues of time, money, and safety. It offers the economy of a handheld chainsaw and even more safety than the track-mounted corner saw. It's a corner saw adapter that operates by the same remote control mechanism and on the same mount as the standard track-mounted wall saw.

Time: The WSX-1 takes 30 seconds to install, not 30 minutes. It mounts directly on the same base of the circular wall saw using the same power and motor assembly. Just slide out the circular blade flange and press the chainsaw assembly onto the carriage's universal mount. Reconnect the water hose and start cutting. No hydraulics or electrical connections to make.

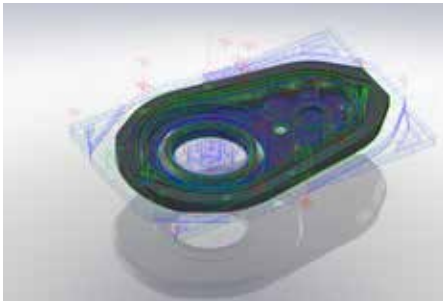
Money: Although the Western Saw track-mounted corner cutting system costs roughly the price of a handheld chainsaw, you get the performance of specialized devices costing five times as much. And since you're only switching out the cutting assembly, the Western Saw attachment weighs only 13 pounds vs. 75 pounds for a track-mounted corner saw. That makes a huge difference for workers lugging tools around.

Safety: Unlike other products, the WSX-1 operates by the same remote controls and power plant that were used for the wall saw to cut the main part of the opening. That means the operator can stand back 10 feet or more. There's none of the risk of holding a chainsaw or operating the device by hand.

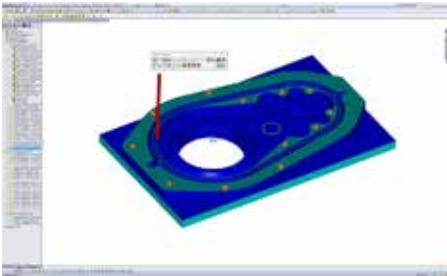
Dramatically Shortened Design Cycle

Western Saw credits the combination of SolidWorks and CAMWorks for expediting the development of the product and enabling an elegant design. As Baratta designed the device in SolidWorks, he used SolidWorks Simulation Professional software to perform full finite element analysis, including stress, deformation, thermal, natural frequency, static, fatigue, and basic fluid flow. Since SolidWorks Simulation is completely integrated with SolidWorks design software, all simulations are performed directly from the SolidWorks interface.

Whenever an analysis turned up an issue, Baratta quickly optimized the design. "SolidWorks, both the modeling and simulation products, are just really fast, intuitive, and flexible," Baratta says. "They let us iterate continuously so we could quickly move to manufacturing. Since SolidWorks is completely integrated with CAMWorks, all three processes – design, simulation, and machining – operate as one."



All of the tool paths



After simulation in CAMWorks

CAMWorks is computer-aided manufacturing software that enables a design in SolidWorks to create computer numerical control (CNC) code to drive prototyping and manufacturing equipment like Western Saw's Haas milling machines and gantry router.

"In the past, we'd manually operate our milling machines, but the WSX-1 is far more complex than machining operations on our diamond saw cores, carbide saw bodies, and diamond core bit tubes," says Baratta. "With SolidWorks and CAMWorks, we can quickly make sophisticated prototypes instead of sacrificing time and money sending the work out to a service bureau."

Full integration of SolidWorks and CAMWorks software means there is just one file, instead of two, incorporating both the solid model data and tool paths. This ensures that the current versions of parts are ones that are machined, and that problems don't crop up in translation of models into special CAM software files. This is a risk of using other CAD/CAM combinations. Moreover, changes to the model or tool path show up in both places. A CAM operator, for example, can choose to manually tweak a tool path and have those changes modify the model. Likewise, changes to the model automatically update the tool path. All this integration delivers valuable speed and accuracy via a foolproof avenue of communication between design, engineering, and manufacturing.

The SolidWorks/CAMWorks integration also provides business flexibility. If Western Saw decides to manufacture the new product, they already have the programs on file from the last prototype. If the company chooses to have another company manufacture it, Western Saw can send over the SolidWorks files with the CAM data already embedded.

"Although CAMWorks is powerful, it's just as easy to learn as SolidWorks," says Baratta. "By the end of the first day of our training (provided by SolidWorks and CAMWorks reseller GoEngineer), we were making parts. Both pieces of software have been very intuitive and with an extremely short learning curve. By adding CAMWorks and SolidWorks Simulation to our design/prototype verification arsenal, we've been able to develop more complex designs while containing development time. We get a jump on the market while helping contractors thrive and construction workers stay safe. We'll never know exactly how many injuries the WSX-1 will prevent."

For more information, visit

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