

HOWE AND HOWE TECHNOLOGIES, INC.

Pushing the limits of extreme vehicle design with SolidWorks



Using SolidWorks design software, Howe and Howe Technologies operates on the cutting edge of extreme vehicle fabrication and robotics.

Twin brothers Geoff and Mike Howe were already working as engineers before they knew what engineering was. At age six, they took a toaster apart to figure out how it worked. At eight, they built a log cabin with a hand ax they got as a birthday present. At 10, they made a robotic arm using old bicycle parts.

Today, those same precocious inventors have become two of the top minds in the field of extreme vehicle fabrication and robotics. After developing the world's fastest robotic tank, the Ripsaw, in 2001, Howe and Howe Technologies, Inc., won a string of contracts from the US Defense Department and private companies. Known in Defense Department R&D circles as the "Wright Brothers of the Military," at 31, they were among the youngest contractors to ever receive a prime-level contract from the US Military and set the record for the world's smallest all-terrain armored vehicle in 2010.

Howe and Howe Technologies President Michael Howe says the journey that led the brothers from making Mad Max-type off-road vehicles as a hobby to creating robotic, military-specified vehicles as part of a multimillion-dollar company required hard work, persistence, and the best tools and technologies. "With everything we build, we take the top technologies available and push them to the limits," Howe explains. "We take the same approach when choosing design and fabrication tools. We want the best software and hardware that we can find, so we can test the boundaries of what is possible."

Howe's firm initially used AutoCAD® 2D design tools, but soon realized it would need a 3D development platform. "In 2003, the Army wanted us to get involved with 3D design and tried to push us into using Pro/ENGINEER® software," Howe recalls. "We wanted to make sure that we chose the right 3D design tool for the long term."

Challenge:

Accelerate the design, fabrication, and assembly of extreme robotic vehicles, while simultaneously pushing the limits of innovation.

Solution:

Implement SolidWorks Premium software to take advantage of 3D design to improve visualization and automate manufacturing.

Results:

- Shortened fabrication time by 1000 percent
- Reduced scrap costs by 850 percent
- Transformed hobby into multimillion-dollar business
- Increased innovation in extreme vehicle design

A web search led Howe to SolidWorks® 3D design software. After completing online tutorials for both Pro/ENGINEER and SolidWorks, Howe chose SolidWorks Premium software as the development company's 3D solution because it is easier to use, outputs more compatible design data, and integrates well with the firm's fabrication systems.

"SolidWorks is definitely on the cutting edge of interface design," Howe stresses. "It has a short learning curve, and our new engineers pick it up in about a week. We can also output different CAD formats, because SolidWorks plays well in the sandbox. This makes us compatible with a wide range of customers."

Efficiency gains grow business

SolidWorks software has enabled Howe and Howe Technologies to become more efficient, take on additional projects, and grow its business. "We've gone from two guys working off-hours to a multimillion-dollar research and development company," Howe notes. "The efficiencies that we've instituted using SolidWorks allow us to compete successfully against the big defense contractors."

"We are known in military circles for our accuracy, inventiveness, and cost-effectiveness," Howe adds. "We are riding a wave of innovation that has become possible because of tools like SolidWorks."

From art to part in no time

One area where Howe and Howe Technologies enjoys productivity gains with SolidWorks design tools is in the fabrication of roll-cage chassis, which typically requires cutting, fitting, and assembling 450 pieces of tubular steel. Since implementing SolidWorks, the firm has reduced its roll-cage fabrication time tenfold and has cut costs related to scrap by 850 percent.

"We use SolidWorks weldments and 3D models to define the path of our plasma torch and tubular CNC cutter," Howe explains. "With SolidWorks we can define the sine waves in a part and use this to drive the Y axis on the cutter so it rolls and orients the tube while cutting, adding the two-inch fish mouth and mate to each piece with extreme accuracy. SolidWorks helps us to dramatically improve efficiency in roll-cage cutting and fabrication."

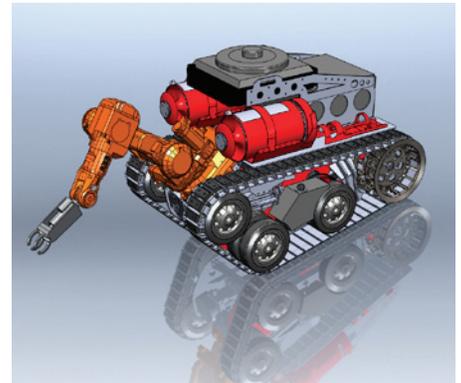
Pushing the limits of technology leads to TV

The success of Howe and Howe Technologies has also attracted the interest of Hollywood. The company recently created a highly modified version of the Ripsaw for use as a prop in an upcoming Hollywood film.

The two brothers and their firm are also the subject of a TV show on The Discovery Channel called "Black Ops Brothers, Howe & Howe Tech." In each episode, the tumultuous twins push the limits of innovation by building new, ingenious, and often insane machines. The Howe brothers put everything they have into their inventions. SolidWorks solutions are helping them push technology as far as they can.

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Michael Howe
President



SolidWorks software has helped Howe and Howe Technologies continue to set milestones in extreme vehicle and robotics design, including the world's smallest all-terrain armored vehicle.



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