SOLIDWORKS

dtv shredder

DTV MOTOR CORPORATION
INNOVATING DUAL-TRACKED, STAND-UP, ALL-TERRAIN VEHICLE WITH SOLIDWORKS SOLUTIONS

Case Study

DTV Motor Corp. relied on SOLIDWORKS design, simulation, and product data management solutions to commercialize the DTV Shredder, an innovative mashup of different types of vehicles that combine into a unique, fun, year-round riding experience.

DASSAULT SYSTEMES

Challenge:

Commercialize the DTV (dual-tracked vehicle) Shredder concept by continuing development, securing international patents, and achieving compliance with government regulatory standards, including those of the U.S. Environmental Protection Agency (EPA), while developing other products and uses for its innovative tracked vehicle system.

Solution:

Continue using SOLIDWORKS Premium design and simulation software while adding SOLIDWORKS PDM (Product Data Management) Professional software.

Results:

- Cut design time by 50 percent
- Reduced number of prototypes required
- Expanded product line
- Secured international patents and met U.S. EPA regulatory requirements

The DTV (dual-tracked vehicle) Shredder is a vehicle unlike any other. Part skateboard, part motorcycle, part stand-up scooter, and with a continuous treaded track for propulsion like a tank, the DTV Shredder is an innovative mashup of different types of vehicles that combine into a unique, fun, year-round riding experience. Originally invented in 2009 by Ryan Fairhead while working at BPG, Inc., the DTV Shredder has since been commercialized by DTV Motor Corp., a privately owned corporation based in Canada that formed in 2016 when an investor purchased the company.

Fairhead, who now is vice president at DTV Motor Corp., grew up snowboarding, motocross biking, and snowmobiling. He says the idea for the DTV Shredder came to him when he thought about a single vehicle that was less bulky than a snowmobile, could be used year-round, and produced an exciting new riding experience. "The initial idea was to create a vehicle that you could throw in the back of a pickup truck and go anywhere during all four seasons," Fairhead recalls. "Since I developed the original Shredder prototype with SOLIDWORKS® Premium software, there's been a lot of development on the product to expand the line and commercialize it for international markets."

When DTV Motor Corp. was formed in 2016, the company continued to use SOLIDWORKS Premium product development software, despite opportunities to use other design tools, and added the SOLIDWORKS PDM (Product Data Management) Professional system to its development effort. "At one point, we had the opportunity to move to Autodesk Fusion 360® software when one of our advisors recommended it," Fairhead recalls.

"However, we decided to stick with SOLIDWORKS for several reasons: We had the SOLIDWORKS PDM infrastructure in place; we were working with a number of engineers who preferred SOLIDWORKS; we were hiring people who knew SOLIDWORKS who could hit the ground running; and a large percentage of the foundational design, engineering, and simulation work had been done in SOLIDWORKS," Fairhead explains. "It was a no-brainer to continue using SOLIDWORKS Premium to refine and commercialize our design, because it allows us to use simulation to prototype concepts, quickly revise the design, and run another simulation. Using SOLIDWORKS product development tools enables us to reduce the number of prototypes required while cutting design cycles in half."

"We're working feverishly to complete the new electric model, aiming for an end of 2021 launch. It is fortunate for us that we have SOLIDWORKS design and engineering tools to capture this excitement and meet our ambitious release goals. We've used SOLIDWORKS CAD software as our go-to tool right from day one, and the enhancements and improvements made to the software over the years enable us to take advantage of emerging consumer demands, like with the EV [electric vehicle] version of the DTV Shredder."

— Ryan Fairhead, Vice President

COMMERCIALIZING DTV SHREDDER

Using SOLIDWORKS design, simulation, and PDM solutions, DTV Motor Corp. has successfully commercialized the DTV Shredder, selling several thousand units worldwide. The company achieved this goal by securing international patents for its Continuous Variable Transmission (CVT), innovating a suspension specifically for small tracked vehicles, developing a unique track system, and complying with U.S. Environmental Protection Agency (EPA) regulatory requirements. "Refining the initial shredder concept required a lot of work on the engine design in order to meet the stringent [U.S.] EPA standards for small engine emissions," Fairhead points out.

"But we also did a lot of complex design and simulation work on the speed-sensitive steering and on the CVT transmission systems," Fairhead continues. "We realized the biggest benefits from SOLIDWORKS simulation on the CVT transmission, simulating the movement of different parts of

the transmission, but we also used simulation on our speed-sensitive steering/body lean system. The DTV Shredder has a top speed of 25 mph. When you're traveling slowly, the steering is easy. When you're traveling fast, the steering is more stable and integrated with body leans like a skateboard. SOLIDWORKS tools allowed us to develop a reliable and safe but effective way to have a tracked differential steering system."

EXPANDING PRODUCT LINE

After refining and commercializing the initial DTV Shredder design, the company leveraged SOLIDWORKS design and engineering tools to expand its product line into two recreational models—the S200-LT entry model and the all-terrain S200-XT—as well as a utility model—the S200-UT—which is designed for low speed, high maneuverability, and double the towing capacity. The company also developed a track kit, which customers can mount on their own vehicles.

"The adaptive vehicle market, where companies mount our track system to their own vehicles, was surprisingly big," Fairhead notes. "While our main focus has been on improving the design of the DTV Shredder as its own vehicle, we've sold our track kit for multiple applications, such as wheelchairs, for example. With SOLIDWORKS solutions, we have the product development agility and flexibility to take advantage of these types of opportunities."

MOVING INTO ELECTRIC VEHICLE MARKET

The latest market opportunity for DTV Motor Corp. is developing an electric version of the DTV Shredder. "With the success of Tesla and its competitors, we've seen a real uptick in excitement surrounding an electric drive version of the DTV Shredder, with our waiting list growing and tremendous interest in the electric model while it's still in development in early 2021," Fairhead says.

"We're working feverishly to complete the new electric model, aiming for an end of 2021 launch," Fairhead adds. "It is fortunate for us that we have SOLIDWORKS design and engineering tools to capture this excitement and meet our ambitious release goals. We've used SOLIDWORKS CAD software as our go-to tool right from day one, and the enhancements and improvements made to the software over the years enable us to take advantage of emerging consumer demands, like with the EV [electric vehicle] version of the DTV Shredder."

Focus on DTV Motor Corporation
VAR: Javelin Technologies, Oakville, Ontario, Canada

Headquarters: 4020A Sladeview Crescent, Unit 7
Mississauga, Ontario L5L6B1
CANADA
Phone: +1 905 829 9229

For more information
www.dtvmotorcorp.com

After using SOLIDWORKS solutions to refine the initial DTV Shredder design, DTV Motor Corp. has fleshed out the product line and is currently using SOLIDWORKS tools to expand into the burgeoning electric vehicle (EV) market.

DASSAULT SYSTEMES | The 3DEXPERIENCE® Company

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes K.K.
ThinkPark Tower
2-1-1 Osaki, Shinagawa-ku,
Tokyo 141-6020
Japan