



# HYPERSHOCK LLC ACCELERATING BATTLEBOTS ROBOT DEVELOPMENT WITH SOLIDWORKS SOLUTIONS

Case Study

Photo courtesy of Tony Woodward.

BattleBots Team HyperShock, whose robot is shown here sending Breaker Box airborne, has relied on SOLIDWORKS design tools to develop every version of the HyperShock robot since the reboot of the "BattleBots" television series in 2015.



# Challenge:

Develop battling robots quickly and cost-effectively to grow and maintain the competitiveness and popularity of Team HyperShock as part of the "BattleBots" television series.

# Solution:

Secure a sponsorship from Dassault Systèmes SOLIDWORKS in the form of CAD, simulation and visualization software licenses.

# **Results:**

- Designed BattleBots robot in one month
- Completed design iterations quickly and easily
- Collaborated with geographically dispersed team members
- Ensured that robot is as good-looking as it is tough

Captain Will Bales and BattleBots HyperShock teammate Tyler Bond have had a lifelong passion for building robots. The childhood friends built their first battling robot in the sixth grade when they met the minimum requirement of 12 years of age for BattleBotsIQ. With their very first robot the 15-pound HeiferBot, a full-body spinner made from an upside-down wok named for the black-and-white pattern on the robot and the pair's uniforms—the friends won their first battle and were hooked.

HyperShock has been one of the top fan favorites that compete on the reboot of the popular television series "BattleBots" every year. The reboot of the show began in 2015, and HyperShock has competed every season, building a strong following and fan base along the way. With HyperShock's popularity—the team sells merchandise and secures sponsorships to support its robot development efforts—Bales and Bond have added other competitive robotics veterans to the team, which is based in Miami.

Although Bales and Bond continued building and battling robots throughout their high school years, the demise of BattleBotsIQ and leaving for college put the duo's robotic battles on hiatus for several years. Then Bales, while working for a surgical robotics company, received a call from "BattleBots" CEO Trey Roski. "Trey called and said he'd just signed a deal with ABC to reboot the series," Bales recalls. "He said he needed cool fighting robots super quick and asked if I was interested. I was already working in industry at the time, and even though I was very busy, I jumped at the chance, and HyperShock was born."

Under time pressures to build the first HyperShock robot each year's rendition has been a different version of a vertical disc spinner—Bales knew the design platform that he and the team needed to use: SOLIDWORKS®. "I had been using SOLIDWORKS for a long time—ever since I learned how to use the software in middle school—and still use the software in my day job at Syntheon," Bales recounts. "It was a no-brainer to use SOLIDWORKS because it lets us iterate and communicate efficiently," Bales stresses. "Since building the first HyperShock robot, we've been fortunate in obtaining a SOLIDWORKS sponsorship, which provides additional simulation and visualization tools that are accelerating our robot development efforts."

# **DESIGNING FIGHTING ROBOT IN JUST ONE MONTH**

Due to the "BattleBots" schedule, teams have roughly one month to complete design work in order to meet production deadlines. Bales says that completing design work on the robot in such a short time frame, working after hours and on weekends, is the primary reason the team continues to use SOLIDWORKS. "Early on, I bought my own personal license of SOLIDWORKS to conduct the design work on HyperShock, but with a dozen team members and a substantial amount of real CAD work to do, acquiring additional licenses via the sponsorship has been a big help," Bales notes.



"While SOLIDWORKS Simulation tools are helping us optimize our robot designs for strength and weight, SOLIDWORKS Visualize rendering capabilities allow us to improve the robot's appearance. Creating a fighting robot that looks good is a part of our team dynamic and aesthetic. The robot design has to be unique, interesting-looking and a tough fighter. SOLIDWORKS helps us achieve those goals."

- Will Bales, Team HyperShock Captain

"Every version of the HyperShock robot has been designed in SOLIDWORKS," Bales continues. "In addition to the design speed that we have realized using the software, SOLIDWORKS is truly an industry standard data format that our vendors and suppliers work with regularly, which helps to minimize delays in production and assembly."

# **ITERATING QUICKLY, COLLABORATING EFFECTIVELY**

Using SOLIDWORKS design solutions, HyperShock can quickly conduct design iterations, share files easily, work on subsystems concurrently, and collaborate effectively, even when team members are located thousands of miles apart. While Bales still resides in Florida, Bond lives in California. Team members can share SOLIDWORKS files and collaborate on the design no matter where they are located. "With SOLIDWORKS, it's easier to communicate and collaborate," Bales explains. "We've been using the software so long and have become so proficient using it that we can push our production deadlines out and literally iterate right up to the very last minute, which definitely gives us an edge."

# **AS PRETTY AS IT IS TOUGH**

Durability and toughness are certainly the traits of a successful battling robot, and Team HyperShock is leveraging SOLIDWORKS Simulation capabilities to optimize designs for strength and weight. However, the ruggedness of a robot is not the team's only design goal. "For us, the robot has to be a good-looking fighter, which is why we avoid parallel and perpendicular lines, and try to make the design as organic as possible," Bales says.

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Childhood friends and HyperShock teammates Tyler Bond (left) and Captain Will Bales (right) react to the heat of robot battle during the team's match with Breaker Box. The pair built their first competitive battling robot using SOLIDWORKS when they were 12 years old and have continued designing and building battling robots with SOLIDWORKS as members of Team HyperShock. Photo courtesy of JCRB Photography

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