

BIGBELLY SOLAR

COMPACTING TRASH VIA CLEAN SOLAR POWER WITH SOLIDWORKS SOFTWARE



Using SOLIDWORKS software, BigBelly Solar was able to reduce material costs while improving product quality.



Results:

- Improved design quality and control
- Cut material costs by using 30 percent fewer steel parts
- Developed the world's first solar-powered trash compactor
- Increased sales 300 percent following product redesign

BigBelly Solar designs and manufactures innovative solar-powered trash compaction systems that lower fuel costs and carbon emissions by reducing garbage truck trips. Used in busy places—such as shopping districts, food courts, and entertainment venues—and in remote locations—including parks and beaches—the BigBelly trash compaction system uses the sun's energy to compact and store five times the amount of garbage as trash receptacles of the same size. By decreasing the number of garbage pickups required, the BigBelly generates cost savings, and reduces exhaust emissions at the same time.

According to Jeff Satwicz, BigBelly Solar product manager, the decision to standardize on SOLIDWORKS® CAD software during the early conceptual design phase was an important factor in ensuring that ongoing development would satisfy growing customer demand. "We made the decision to use SOLIDWORKS software as our standard platform from the very beginning," Satwicz recalls. "We outsourced much of the design work to consultants who had a variety of design packages to choose from. We instructed them to use SOLIDWORKS software, since we intended to use it when we brought the design work in-house. We had one design partner use a competitor's product on a major project. We ended up transferring the design back to SOLIDWORKS because we were happier with SOLIDWORKS as a CAD design tool."

BigBelly Solar chose SOLIDWORKS software because of its ease of use and widespread popularity among partners. The company also valued the software's visualization, sheet-metal design, and integrated analysis capabilities. "I had used SOLIDWORKS in college, and had become proficient with it. Our vendors all used SOLIDWORKS software, and the initial design was done on that platform. SOLIDWORKS was simply the most logical choice for us to take this product forward," Satwicz says.

INNOVATING THE FIRST SOLAR-POWERED TRASH COMPACTOR

BigBelly Solar used SOLIDWORKS software to take the BigBelly solar-powered trash compactor from a single proof-of-concept prototype—that debuted at Colorado's Vail ski resort in 2004—through several additional demonstration prototypes, to a full commercial product run in the spring of 2005. A product redesign was completed in 2007. During BigBelly's first year on the market, the company realized a four-fold increase in unit orders, and then tripled sales following the product redesign in 2007. The innovative compactor—which stores energy via a protected solar panel to drive an electric motor that compacts trash—can operate for a full day with the energy equivalent used to toast a slice of bread.

"Because we decided to use SOLIDWORKS, we had the tools to optimize the design and accelerate development, enabling us to cultivate and grab a significant share of this market," explains Satwicz. "We not only delivered the world's first and only on-site solar-powered trash compactor, but also quickly refined and improved upon our initial design. We plan to continue that effort by leveraging the integrated analysis tools available with SOLIDWORKS software."

SHEET-METAL DESIGN CUTS COSTS, IMPROVES QUALITY

During the BigBelly redesign, the company used SOLIDWORKS sheet-metal design, SOLIDWORKS SimulationXpress, and interference detection tools to cut material costs, reducing the number of steel parts in the compactor by 30 percent. Because the SOLIDWORKS model contains all sheet-metal design information—including bends, flat patterns, holes, and features—the company ensured quality control of the design during fabrication, and produced a lighter, lower-cost product.

"By using SOLIDWORKS for mechanical design, we can make use of the pre-packaged sheet-metal features, which integrate seamlessly with our sheet-metal manufacturer's system," Satwicz notes. "Because we are working with the same set of data, we eliminate a lot of guesswork from the sheet-metal fabrication process, which results in fewer surprises and consistently high quality."

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— Jeff Satwicz, Product Manager

KEEPING DESIGN PARTNERS ON THE SAME PAGE

Working with a team of strategic partners that use SOLIDWORKS software provides BigBelly Solar with effective control of the product development process, while streamlining communications. Satwicz says using a standardized platform cuts days and weeks from the development process, minimizes the potential for errors and delays, and gives BigBelly Solar greater control of product quality and innovation.

"Because all of the work completed by our design and manufacturing vendors flows through us, we have total control of what we are doing in terms of product releases," Satwicz stresses. "SOLIDWORKS enables us to keep everyone on the same page so we can control revisions, eliminate rework, and minimize the chances for mistakes—all of which serves to improve quality."

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SOLIDWORKS tools helped BigBelly Solar to design the world's first eco-friendly, solar-powered trash compactors and preserve market share.

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