

Commuter Cars Corporation

DESIGNING THE FUTURE OF URBAN COMMUTING VEHICLES WITH SOLIDWORKS



Using SolidWorks 3D design capabilities, Commuter Cars was able to simplify the development of the Tango, the world's fastest urban car.

- Compressed development cycles
- Completed drawings 10 times faster
- Enhanced data compatibility with vendors
- Improved production quality

Commuter Cars Corporation developed and manufactures the Tango, the world's fastest urban car. Sitting in a Los Angeles traffic jam inspired company founder and President Rick Woodbury to develop a small, one- or two-passenger car that can weave through traffic like a motorcycle, park perpendicular to a curb, and help reduce vehicle emissions by running on electric batteries. Woodbury developed the initial design and built the first Tango model with his son Bryan. They then continued development with an automotive engineering firm that managed one of the top Formula One™ race teams based in the United Kingdom. While those early efforts represented important steps toward producing individual commuter cars to order for customers like actor George Clooney, data compatibility issues and plans to develop volume-production models persuaded Woodbury that he needed a 3D CAD system.

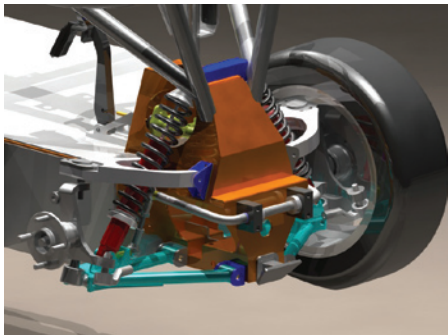
"The designers who worked on the low-production model used different design techniques, ranging from the CATIA® and Pro/ENGINEER® 3D CAD systems to 2D pattern-making technology," recalls Woodbury. "Because they used different platforms, we were left with a hodgepodge of design data compiled as a single IGES file. We discovered that the lack of clean, uniform CAD data made it difficult to obtain quotes and move development forward. That is when one of our prospective sheet-metal contractors told us to get SolidWorks® software to straighten out our files."

Woodbury realized that he would need to convert the large IGES file of the Tango into individual files and consolidate the design into a single CAD format. He chose SolidWorks software for use at Commuter Cars because of its ease of use, sheet-metal design tools, and compatibility with other CAD formats, as well as due to the recommendation of his sheet-metal fabricator. Commuter Cars also valued the technical strength and training capabilities of its SolidWorks reseller, Quest Integration.

"Working with two engineers, we redesigned the whole car in SolidWorks, which enabled us to simplify the design and produce clean versions of all the component and assembly files," Woodbury says.

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David Mounce, Mechanical Engineer



With SolidWorks design visualization and photorealistic rendering tools, Commuter Cars can fully visualize important facets of the Tango design.

Improved design data

As a result of implementing SolidWorks software, Commuter Cars has improved its handling of design data, resulting in shorter development cycles, more streamlined interaction with partners and manufacturing vendors, and more consistent product quality. According to Mechanical Engineer David Mounce, the 2D drawing functions in SolidWorks enable him to complete drawings nearly 10 times as fast as he could with AutoCAD® software, despite the fact that he is still learning how to use SolidWorks and had used AutoCAD for many years.

“With SolidWorks, it is so much faster and easier to create drawings, such as section or pull-out views,” Mounce explains. “Working in 2D, I had to extrapolate and visualize the design in my mind; but with 3D, I am able to see things, such as the impact of angles, which I might have missed working in 2D.”

“SolidWorks also gives us more options for working with partners and vendors because it can import and export a variety of other CAD and design formats,” adds Mounce.

Better sheet-metal tools

Commuter Cars found that one of the most beneficial SolidWorks capabilities is its sheet-metal design functionality, which helps the company enhance manufacturing accuracy and reduce scrap and rework. Mounce says that there is really no comparison between designing sheetmetal parts with 2D techniques and using SolidWorks.

“The way SolidWorks calculates out the bends in sheetmetal parts, which we use in the development of the chassis, saves a lot of time while ensuring accuracy,” Mounce points out. “We are getting our numbers for fabrication straight out of SolidWorks and can do our bends without having to recalculate. We send the SolidWorks files directly to our vendor, who consistently produces accurate, high-quality parts.”

Part articulation boosts visualization

By consolidating scattered part files into smoothly operating assemblies in SolidWorks, Commuter Cars was able to optimize various Tango systems, such as its high-performance suspension, NASCAR™-grade roll cage, and stabilizing ballast. Mounce says that the articulation capabilities of SolidWorks improve the visualization of car assemblies. For example, he can view how the front-end assembly functions when the wheel turns to ensure that no parts interfere with each other.

“Moving from 2D to SolidWorks 3D CAD puts you in a world that somehow prompts you to tinker, or refine, more frequently to produce a better product,” Mounce explains. “Rather than designing something in black, white, and numbers, you can spin it around, check it out, and change a little here and there to hopefully improve the design.”



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