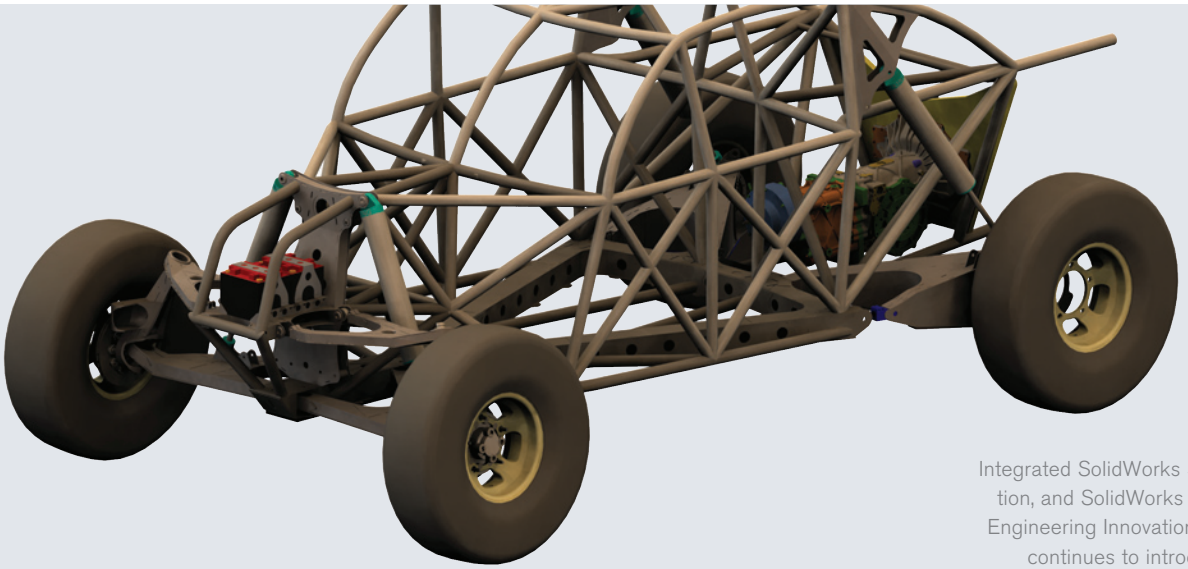
Engineering Innovations L.L.C.

INNOVATING RACECAR DESIGN WITH SOLIDWORKS PREMIUM



Integrated SolidWorks Simulation, eDrawings communication, and SolidWorks collision detection capabilities help Engineering Innovations save time and control costs as it continues to introduce innovations in racecar design.

- Introduced several innovations in racecar design
- Shortened design cycles
- Cut development costs through integrated assembly analysis
- Reduced travel costs through SolidWorks eDrawings® design communications

Corey Kausch, company president, founded Engineering Innovations in 2002. From the start, he realized the consultancy would need the best 3D design and engineering tools to produce the innovative concepts that represent its mission. Since Kausch had used a variety of CAD tools in college, he knew that choosing the right platform would impact the company's success.

"Ever since I took an AutoCAD® 2D design class in 1995, I have had an interest in CAD packages," Kausch recalls. "I remember thinking that drawing something by hand was easier than using a 2D system and that there had to be better packages. I knew racecar design involved assemblies of components with different functional characteristics, so I tried to learn about as many CAD packages as possible." He investigated systems such as I-DEAS®, Pro/ENGINEER®, CATIA®, Mechanical Desktop®, and SolidWorks®.

Kausch selected the SolidWorks 3D CAD system as Engineering Innovations' design solution, implementing two seats of SolidWorks Professional and one seat of SolidWorks Premium software. He chose SolidWorks software because of the system's ease of use, robust large-assembly capabilities, integrated SolidWorks Simulation analysis software, and advanced design communication tools.

"I found SolidWorks software to be the most user-friendly CAD system," Kausch stresses. "Plus, I wanted a package that reduced modeling time. So whenever I tried a CAD system, I always kept track of how much time it took to model a part. SolidWorks is not only the fastest modeler, but also provides the large-assembly and integrated analysis tools we need to cut additional time and costs from our development process."

SolidWorks

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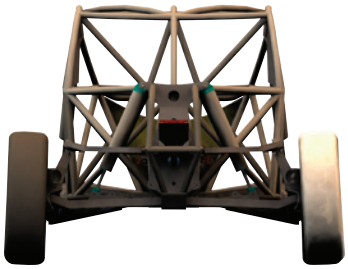
Corey Kausch, President



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Innovation after innovation

Since choosing SolidWorks software, Engineering Innovations has produced a string of revolutionary advances in Indy Car and off-road racecar design. “Using SolidWorks software provides the most efficient way to do quality engineering for our customers,” says Kausch.

Drive axles on an Indy Car sustain stress and drag because of the velocity of the air traveling around them. Considering this fact, Engineering Innovations redesigned the drive axles to optimize their diameter precisely to the length of a race. “The drive axles get pounded by the air traveling past them. Our challenge was to reduce the frontal area as much as possible by minimizing the diameter without a structural failure,” Kausch explains. “We did a failure analysis in SolidWorks Simulation based on the length of a race, so we could go as small as possible and still withstand the stress of an entire race. We were able to cut four pounds of drag from each side, resulting in almost one-mph faster times in events where a fraction of a second can determine the victor.”

Another company innovation is the plunging axle design for off-road racing vehicles. The plunging axle extends wheel travel to as much as 34 inches and triples a vehicle’s torsional capability, which is why the 2005 off-road points champion utilized this innovative design.

Assembly analysis saves time and money

SolidWorks Premium software provides the assembly analysis tools Engineering Innovations needs to detect part interferences and structural issues. “Performance and safety innovations are what our company is all about,” Kausch says. “We use SolidWorks collision detection and SolidWorks Simulation software extensively, because these capabilities enable us to identify and resolve potential problems early in the development process.”

SolidWorks assembly analysis capabilities played a key role in the company’s third innovative design: an off-road control arm that can withstand collisions with large rocks. This complex assembly of 30 to 60 sheet-steel components fits together like a linear jigsaw puzzle, with welded tabs holding the assembly together. Notes Kausch, “With SolidWorks Simulation, we can simulate what would happen if this assembly collided with a boulder the size of a Volkswagen bug at 130 mph.”

Design communication reduces travel costs

In addition to cutting time and costs from the development cycle, SolidWorks is helping Engineering Innovations control travel expenses through the use of eDrawings files. With customers located across North America, the company has discovered that eDrawings files minimize the need for traveling to customer sites to confer on design concepts.

“Our clients love eDrawings files,” Kausch says. “In racing, the pace is fast – and our customers always need something yesterday. With eDrawings files, we can keep them up to date without having to incur travel costs.”

SolidWorks

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