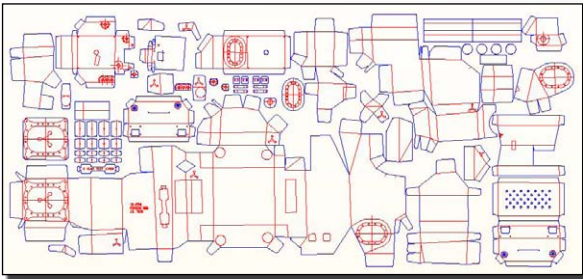


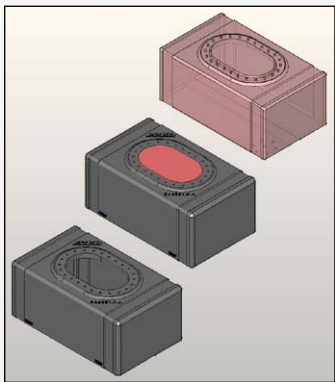
Direct modeler builds a better fuel tank

Our engineers at Aero Tec Laboratories use KeyCreator 3D CAD software to design crash-resistant, non-exploding fuel bladder tanks for aircraft, racecars, and performance boats. The company makes many standard bladder tanks and custom designs for high-end customers such as NASCAR, Ferrari, Boeing, Lockheed, NASA, and the U.S. military. Our customers rely on our tough and durable flex-tank products. They also require the tanks to fit in ever-changing compact spaces. Design revisions for custom fits are frequent and necessary. Here is where KeyCreator's direct modeling approach helps us satisfy our customers.



Flat Pattern of Porsche 996 Fuel Bladder. This is used to program CNC Cutting Table

The company has been using KeyCreator since the software was known as CADKEY. I am familiar with SolidWorks and Pro/Engineer from my previous employers. Having worked with both featured-based and direct modeling, I can say that KeyCreator lets us complete tasks at least 20% faster than if we used traditional feature-based CAD.



Prune and Graft function used to determine internal volume of fuel bladders and tanks, as well as using to copy features

KeyCreator 3D Direct CAD is a complete direct modeler that does not use a feature tree to create geometry. Users simply create or modify models by directly manipulating displayed geometry. The software works on any geometry regardless of whether it is imported from another CAD system or is a native KeyCreator file.

Not having to work from a feature tree lets us quickly make a lot of changes. Working directly on models makes it easier to manipulate models so they meet design or customer requirements. KeyCreator also impresses customers when used in online collaboration meetings. The software lets us display a design and start making changes on the fly with our customers watching. They always ask what program we are using.

Customers send us many CAD file formats, including Catia, SolidWorks, Pro/Engineer (or Creo), and Rhino formats. The direct modeling in KeyCreator gives us the flexibility to work with these files. And when we receive native Catia V5 files from our sister branch in England, KeyCreator can manipulate these files more easily and with fewer errors. That's because we import native files directly into KeyCreator Direct CAD instead of using STEP or IGES files as a go-between. The software models native Catia V5 files as shells. KeyCreator trims and stitches the shell into a solid and then create solid features so we can make design changes.

Designs often vary year to year, resulting in slightly different part dimensions. For instance, many customized fuel bladder designs start with a pre-existing basic shape. Instead of breaking existing models and starting from scratch, KeyCreator's Direct Dimension Driven Editing and Dynamic Move modifies the pre-existing shape on the fly by letting us select faces and then pull them into the desired location or otherwise modify them. In addition, prune and graft functions help us develop or modify new designs by allowing the copying and pasting of pre-existing features from another model for use into the current design.

Aero Tec Labs has also made a customized KeyCreator KXL executable file that creates flat patterns from 3D models. This gives us the proper bending flaps to manufacture designs. It takes only two clicks to complete what would have taken about 16 clicks, saving at least an hour of engineering time on each design.

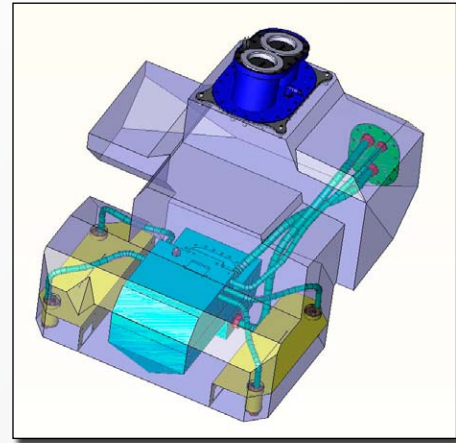
Many fuel tanks and bladders are part of larger, more complex assemblies, so file size can become an issue. File sizes can easily reach 500 to 600 MByte. After recent face-to-face training with "Dr." Walt Silva, author of introductory guides to KeyCreator, we began using referenced assemblies. Switching to this new way of referencing (which lets parts used more than once in an assembly be dynamically referenced in each of their locations) lets Aero Tec Labs keep files from getting too large. The training gave us the confidence to expand our use of KeyCreator and increase our productivity. One wish is that KeyCreator included automatic cabling and piping functions. Instead of having to create splines, it would be faster to have a logic-driven tool that would let users click to points and quickly generate cabling or piping features.

We expose college interns to lots of practice with mechanical design and using KeyCreator Direct CAD. After a few months, it's clear how much they appreciate direct modeling. We send them off with educational seats of KeyCreator, and they continue to use it for senior design programs. The college is considering using KeyCreator in its CAD department. More colleges should do this to give students and new CAD users another way of completing design work.

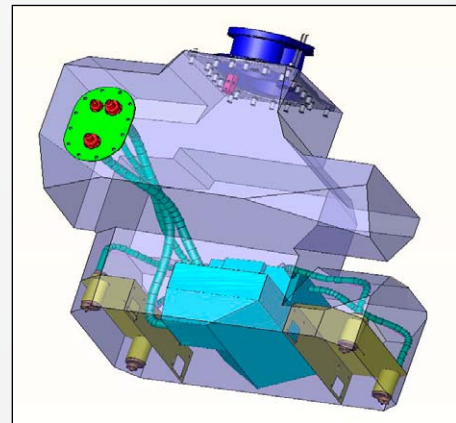
I highly recommend KeyCreator Direct CAD Modeling, especially if you work with several CAD file formats on a daily basis or if you need to make changes quickly. You'll find that what would normally take four to five days is now completed in four to five hours. That's what it has done for Aero Tec Labs.

The software comes from Kubotek USA Inc.,
2 Mount Royal Ave., Marlborough, MA 01752,
(508) 229-2020, www.kubotekusa.com

Authored by:
By David Legemaat,
Senior Mechanical Design Engineer
Aero Tec Laboratories
Ramsey, N.J.
www.atlinc.com



CAD Model of Porsche 996 Fuel Bladder as viewed from Front Topside



CAD Model of Porsche 996 Fuel Bladder as viewed from Rear Underside



Finished Porsche 996 Fuel Bladder Assembly FIA FT3 Approved