



“ I was a PRO/E diehard so I was surprised to find after the initial pain of converting to SOLIDWORKS that I actually preferred it. ”

“ The Design Review was a great sanity check, it helped us validate that we were using best practice within SOLIDWORKS. ”

Paul Masser, Principal Designer, Adlens

Solving the big optics challenge: Adlens

Adlens is an innovative designer and manufacturer of variable focus eyewear. Established in 2005, the company has offices in Tokyo and Boston, with its headquarters and R&D facility based in Oxford.



The Challenge

Adlens has been using SOLIDWORKS as its primary 3D CAD software since 2005. It used the software to design its alpha product, The Aldens Hemisphere Variable Focus glasses. The glasses were originally designed for the developing world, specifically in Rwanda where there are 10million people with only 14 eye care professionals. By using a liquid lens, the Hemisphere glasses were able to offer access to vision correctness by allowing the user to set the lenses to their desired prescription themselves by turning two dials.

The Adlens design team now wanted to develop this technology to aid a more fashionable range of self-focus glasses. Using a non-round constraint lens the new AdlensFocuss range would also incorporate distance and reading prescription into one shared lens. By applying Variable Power Optics (VPO) lens technology to the eyewear, users would be able to turn a dial on the side of the frame to quickly adjust their prescription to the optimum power for reading, mid-range and distance prescriptions at any time.

The challenge of incorporating this technology into a more fashionable frame with non-round lenses, fell to Adlens principal designer Paul Masser. The challenge was further compounded by the fact Paul was new to SOLIDWORKS.

Having joined the design team with an extensive background in PTC Creo (Pro/E), Paul needed to learn SOLIDWORKS quickly so that he could be confident in moving forward with their design processes and the development of the AdlensFocuss. He required a “sanity check” that their CAD management, modelling approach and workflow was valid within the SOLIDWORKS environment. Paul also wanted to future proof their processes for scalability and see what other refinements they could add to their specific modelling approach.

The Challenge

To develop commercial applications of variable focus lens technology. Adlens wanted to expand their technology into more fashionable frames, which required designing fluid-filled lenses in a non-round constraint. The challenge was further compounded by the fact that the principal designer was a Pro/E user new to SOLIDWORKS

Moving Between 3D Systems

As a Creo superuser converting to SOLIDWORKS 3D CAD, Paul found there were many similarities in the basic CAD modelling principals that he could assimilate quickly. The bigger challenge was in finding out how to achieve comparable 3D functionality in the SOLIDWORKS framework and fast.

One key example was in being able to recreate the functionality of the Creo Skeleton Modelling tool which allows you to work on a part in context from a part file (or skeleton model) from within the assembly. Working with SOLIDWORKS Elite engineers at NT CAD/CAM, Paul was able to find successful work arounds that meant his team could get similar results by using a combination of methods including insert parts.

“There are still some workarounds I’d like to perfect but SOLIDWORKS do listen and I’ve put in User Software Performance Enhancement requests that have been accepted,” he says. “I was a Pro/E diehard for 17 years so I was surprised to find after the initial pain of converting to SOLIDWORKS that I actually preferred it.”

In particular, Paul and his team have had successful results with SOLIDWORKS Simulation. “We have been doing Finite Element Analysis on our frames and lens modules, applying stresses to see how much they deflect and the optical performance of those deflections. We have done some like-for-like analysis using Ansys simulation software and SOLIDWORKS is performing very well in comparison and proving very cost effective.”

The Design Solution

One of the key considerations for Paul in moving to SOLIDWORKS was getting the architecture of the product right and understanding how any design changes could be controlled through the paths they had in place for cross referencing.

By booking a SOLIDWORKS Design Review with NT CAD/CAM, Paul was able to have a SOLIDWORKS Elite applications engineer come on site, meet the team and help identify any issues to boost user productivity.

“The Design Review was all about planning for the future,” says Paul. “We wanted to expand into different eye shapes but I knew the documentation could snowball without the right processes in place. Using SOLIDWORKS meant we could keep control as we expanded. The Design Review was a great sanity check, it helped us validate that we were using best practice within SOLIDWORKS.

“SOLIDWORKS as a 3D CAD package is great for what it does. As designers, we often gloss over it, but the bread and butter features of SOLIDWORKS - being able to turn the dial and animating the mechanism - are just some of the great features we used in bringing this product to life.”

Working on the non-round lens shape in SOLIDWORKS, the design team was able to design all the frame components of the AdlensFocuss range, as well as the production equipment including jigs, fixtures and nests.

“Some of the parts were so unique to our product - such as the lens module components - that it really needed to be integrated into a CAD software like SOLIDWORKS to get a design that really worked,” says Paul.

The Results

The use of VPO lens technology in AdlensFocuss is now being hailed as the first major advancement in optic technology in over 50 years. The glasses have since won a Design Week Award for best Consumer Product Design 2015. The company is now using SOLIDWORKS for all its next generation products including embedding electronics into the eyewear.

Benefits:

- Validate best practices
- Future Proof processes for scalability
- Ease of 3D system transition
- Cost effective FEA
- Adlens design is first major advancement in optics in over 50 years

Industry:

- Consumer Products

Product Used:

- SOLIDWORKS Premium
- SOLIDWORKS Professional
- SOLIDWORKS Composer



NT CAD/CAM

“Our relationship with NT CAD/CAM just gets better and better as we mature from an R&D biased organisation into a product development company”, says Paul. “NT CAD/CAM gave us the support and confidence in moving forwards and pushing SOLIDWORKS to its limit. We are through that huge learning curve and are now thinking about next generation products, which will strengthen our relationship further.”

®AdlensFocuss is a trademark of ADLENS

Call now to book a demo or to obtain further information

0800 018 6957 www.ntcadcam.co.uk

‘Better by Design’