Cobalt Makes the Differential

Dale Speakes is a designer and prototype fabricator in the Pacific Northwest. He's spent years on the racing circuit, building cars and managing racing teams. He started using Ashlar-Vellum software with version 2 .7 when he had to learn CAD as a necessity—and do it quickly.

Recently, Speakes was confronted with a special problem. He was contracted by Dennison International to reverse engineer the differential for the 1957 Ferrari Testa Rossa prototype, owned by vintage racecar enthusiast Jon Shirley. Unlike traditional differentials, Ferrari used a special cam and pawl system developed for racing.

When Mr. Shirley first met with Speakes he immediately asked, "What software are you using?" Shirley, former president of Microsoft, knows the importance of software. Speakes originally chose Ashlar-Vellum because of its intuitiveness, however, he was relatively new to Cobalt™. "I had been using Cobalt for less than a year when I started this project. When I got in a jam the wealth of knowledge available from the user forum helped me power right through."

Borrowing the parts from another car in Shirley's collection, Speakes reverse engineered the differential and associated components. A coordinate measuring machine duplicated the cams' profile, then it was imported into Cobalt where Speakes used the polar duplicate and mirror tools to create the inner and outer cams in which the pawls ride.

Says Speakes, "In the 1950's the machining technology would not hold to today's high standard. Using Cobalt we removed the cam profiles' anomalies and optimized the parts, making them completely symmetrical."

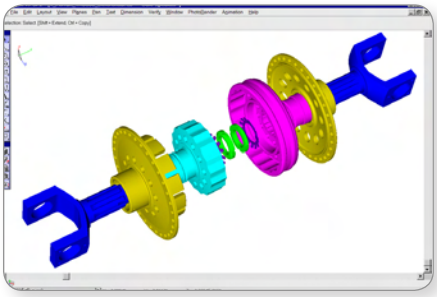
Speakes prefers using Cobalt for all of his design work. "The software's strength is free-form design coupled with the flexibility to use sketches and constraints when desired." Creating a parts assembly, he quickly checked tolerances, making necessary adjustments. Sketches and constraints let him simply change dimensions, automatically updating the model. He commented,

"Cobalt's intuitive interface and ease of use allow me to maximize my billable hours on any project."

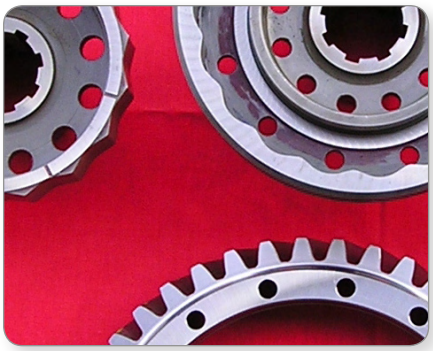
Speakes appreciates Cobalt's ability to create engineering drawings directly from his model, which helps him hold his subcontractors accountable for their work. "If a great design can't be communicated with industry-standard drawings it won't get built."

Speakes holds three patents. He believes creativity, leveraged with the intuitiveness of Cobalt, breeds success, and continues using it to design and fabricate everything from aircraft parts to architectural pieces.

The fully restored Ferrari won Best-of-Class at the prestigious 2006 Pebble Beach *Concours d'Elegance* in Carmel, California.



Above: Speakes used Cobalt to reverse engineer the Ferrari's missing cam and pawl differential.
Below: the completed cams.



Background/Contact:

For more details on the project contact:

Dale Speakes
Prototype Technology
11203 Benston Dr. East
Suite 300
Puyallup, WA 98372
235 435 1750
dale@gtprototype.com