

## COMPANY

**Parker Hannifin**

## LOCATION

**Cleveland, Ohio, United States**

## SOFTWARE

**Autodesk® Simulation CFD**

# Mystery solved

## Autodesk Simulation CFD helps Parker Hannifin see design flaws that conventional testing methods could not reveal

Autodesk Simulation CFD gives us a better understanding of product performance and, in turn, allows us to develop cost-effective, innovative, and more reliable designs in less time than using conventional methods of building and testing physical prototypes.

— **Bruno Fairy**  
Simulation and Analysis Engineer,  
Hydraulic Controls Division  
Parker Hannifin

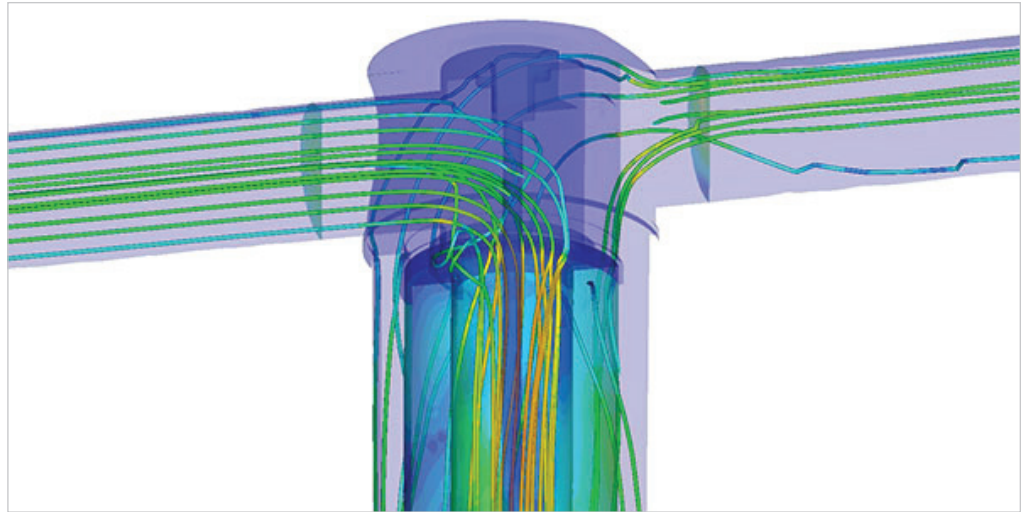


Image courtesy of Parker Hannifin

The world's leading manufacturer of motion and control technologies and systems, Parker Hannifin provides precision-engineered solutions for a wide variety of mobile, industrial, and aerospace markets. Engineers for its Hydraulic Controls Division in the United Kingdom recently faced a perplexing problem: after 18 months of applying conventional design, build, and test methods, they were unable to solve an instability issue with a wheel loader spool design. So they decided to take a virtual approach to unlocking the mystery—with Autodesk® Simulation CFD software.

“The instability one of our customers had encountered with the wheel loader was thought to be linked to cavitation inside the manifold or valve, something you cannot see very easily with conventional testing methods,” explains Bruno Fairy, a simulation and analysis engineer for the Hydraulic Controls Division. “Even with their considerable expertise and past experience, it was very difficult for our team to pinpoint the cause of the problem. They kept on building and testing prototypes, but literally could not see where the issue was. It was impossible to visualize.”

Within just a few weeks of training on Autodesk Simulation CFD, the engineering team was able to develop a model, analyze it, and finally see something that made sense to them, according

to Fairy. They then designed the solution in Autodesk® AutoCAD® software, ran the computational fluid dynamics (CFD) simulation once again to confirm it was yielding better results, and eventually, made a prototype.

“We tested the prototype on-site with the customer and it worked,” says Fairy. “The feedback from the operator was that it was the best wheel loader he had ever driven.”

The Autodesk Simulation CFD results also showed the engineers at Parker Hannifin's Hydraulic Controls Division something else: that they had been doing things right all along—they just needed a deeper level of insight into what was going on inside the product to solve the problem.

“In certain situations, virtual product development technology is the only way to solve a problem,” says Fairy. “Autodesk Simulation CFD gives us a better understanding of product performance and, in turn, allows us to develop cost-effective, innovative, and more reliable designs in less time than using conventional methods of building and testing physical prototypes.”

To learn more about Autodesk Simulation CFD, visit [www.autodesk.com/simulationcfd](http://www.autodesk.com/simulationcfd).