

# Quick Turnaround with Rapid Flow Modeling

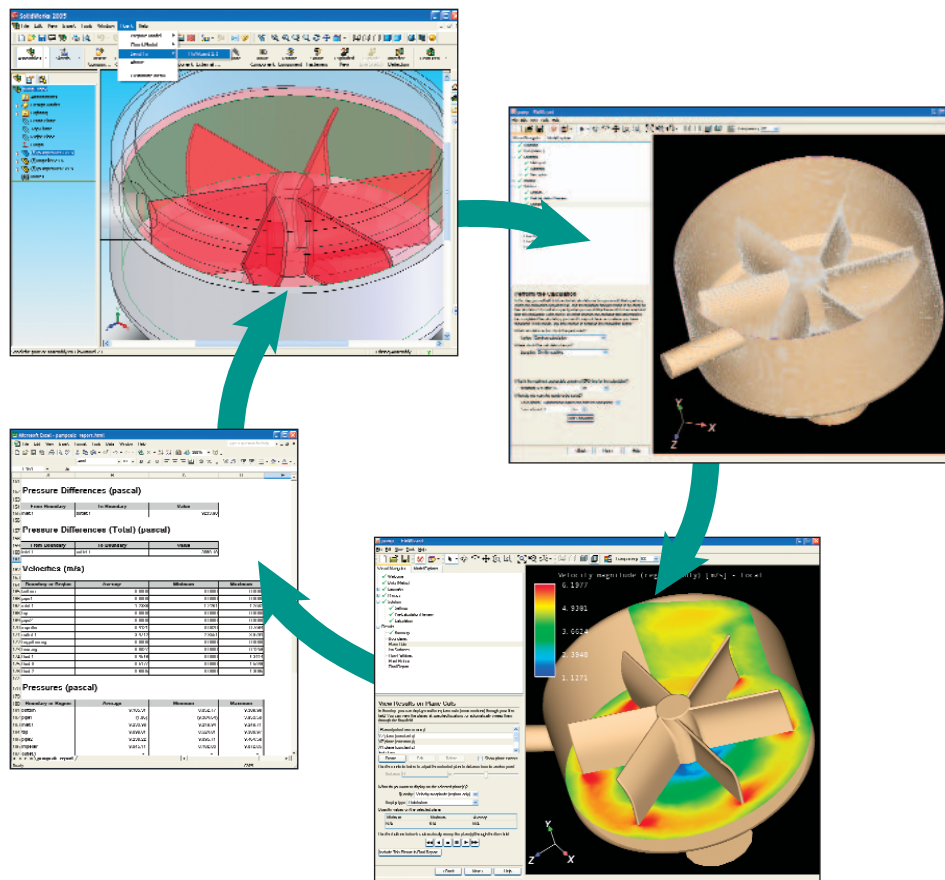
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THE OBJECTIVE OF RAPID FLOW MODELING is to bring CFD to the broader engineering design market, by providing fluid flow analysis tools that let engineers quickly turn their CAD models into CFD results. There are now two full-fledged rapid flow modeling products available in Fluent's product line: FloWizard and FLUENT for CATIA V5. With these products, Fluent is taking the lead in what is expected to be a fast growing segment of the CFD software market.

Many recent technology advances have made rapid flow modeling possible. The increased speed of computer hardware has reduced the calculation time for many CFD applications to fit within engineering design timeframes. A simulation that previously might have taken tens of hours on a workstation can now be run in well under an hour on a standard PC. On the software side, it is now possible to embed the CFD experience in highly automated products that significantly reduce the turnaround time for a fluid flow analysis.

Modern companies have an increasing need for engineering analysis to be tightly integrated into their design and PLM (product lifecycle management) processes. This requires software that interfaces well with CAD and other engineering software tools. It also means that the fluids analysis software should be accessible to engineering designers, who may have only intermittent needs to run simulations. FloWizard and FLUENT for CATIA V5 share characteristics that allow them to meet these needs. They each have a high level of connectivity with CAD or PLM products. This is important, since most of their users are engineers involved in product design. FloWizard accepts a wide variety of CAD and mesh file formats, and has tight CAD connections with SolidWorks®, Pro/ENGINEER® and UGS' NX™. FLUENT for CATIA V5 embeds the same rapid flow modeling technology deep into the CATIA V5 PLM system.

Both packages focus on modeling well understood physics, including compressible and incompressible



Starting with a pump model in SolidWorks, engineers can quickly send their model to FloWizard. There it will be meshed and solved using FloWizard's automated tools. The final results can be used by the engineer to decide upon possible design changes, thus closing the full design cycle.

fluid flow and heat transfer, both laminar and turbulent. Stationary equipment can be modeled as well as rotating machinery. Tasks that often require a lot of user interaction, such as geometry cleanup, meshing, and solving are fully automated. Not only does this save time, it also leads to a significantly reduced learning curve.

Both products make use of the fast, accurate, and well-validated FLUENT 6 solver in the background. As an additional benefit, the files generated by FloWizard and FLUENT for CATIA V5 can be shared with FLUENT users as needed. This also helps improve the level of collaboration between the analysis and design teams. Furthermore, FloWizard

offers built-in collaboration tools that let multiple users simultaneously connect to the same session for design reviews. When there is a need to model large problems, both products offer the ability to run calculations in parallel on a local or remote network.

In many companies, there is also a need to efficiently model recurring problems related to their product lines. For this purpose, custom tools can be built upon the rapid flow modeling platform. FloWizard is fully customizable using the Python programming language which has been used by several companies to build custom, organization specific analysis tools. ■