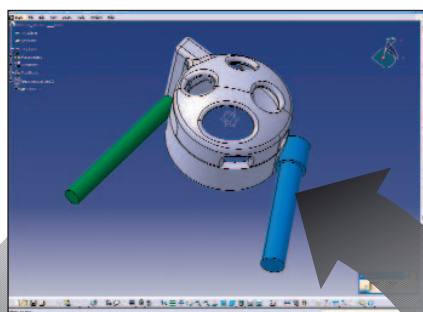
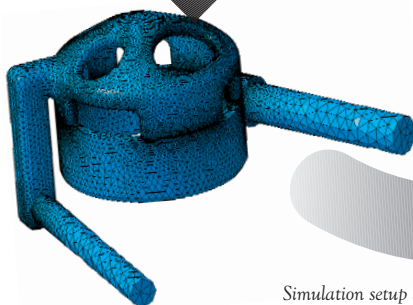
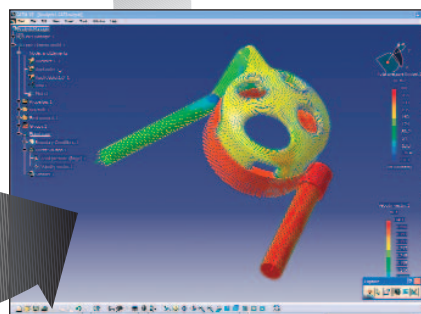


The PLM embedded solution cycle of FLUENT for CATIA

Automated flow volume extraction and meshing



Knowledge-based design optimization



Simulation setup and automated solution steering

FLUENT for CATIA: Rapid Flow Modeling for PLM

By Laurent Collonge, FLUENT for CATIA Product Manager, and André Bakker, FloWizard Product Manager

DO YOU OFTEN WONDER how to better integrate CFD into your company's product development process? How to manage the simulation data? How to integrate not just CAD and CFD, but also stress analysis, optimization software, and more?

The answer may lie in the use of a Product Lifecycle Management (PLM) solution. PLM software tools are used to document and support the complete life cycle of industrial products and to manage related services, such as product maintenance. PLM products are usually integrated with engineering software, such as CAD, and other enterprise management tools, such as project planning, resource scheduling, cost estimation, and knowledge capture software.

Fluent's large customer base includes many world-leading manufacturing companies who share the need for tight integration of their engineering and business processes. Most of these companies are making significant investments in PLM to further streamline their operations. To meet their growing needs, Fluent and Dassault Systèmes of Paris, France formed a partnership to develop the first CFD software that resides completely inside the CATIA PLM solution product. FLUENT for CATIA (FfC) is more than CFD embedded into CAD: it is CFD absorbed

into the PLM bloodstream of the world's leading manufacturing companies. FfC ensures that these companies make the most of their PLM investments.

In addition to knowledge and data management capabilities, PLM companies need fully generative relationships between the design of their manufacturing-ready geometric models and their mathematical simulation models, which include structural, thermal, and CFD analysis. Simply having the CFD model show up in the same graphics window as the CAD model is not enough. The CFD data has to fully reside in the PLM software's database structures.

One important benefit of such a system is that the geometry, CFD, and other analysis models work together to allow for complete knowledge-based optimization studies that involve all aspects of the design. Engineers can rapidly turn their CAD models into flow models, and store the resulting optimized designs and supporting CFD data together, using the same data management system. To accomplish this, deep access to both the PLM and CFD software codes is required, so Dassault Systèmes and Fluent worked closely together in developing FfC. FfC uses original CATIA components wherever possible, including meshers and

optimizers. Some of these components were actually optimized conjointly by Dassault Systèmes and Fluent to enable a tighter relationship between the two codes.

With FfC, the rapid flow modeling concept first introduced by Fluent with FloWizard, is now fully integrated in the PLM process. Rapid flow modeling is an approach to CFD simulation aimed at reducing overall time and increasing efficiency. It allows for quick engineering design validation throughout the product lifecycle. FfC embraces the high level of automation that is key to successful rapid flow modeling. Tasks that often require a lot of manual intervention, such as meshing, solution steering, and reporting, are fully automated. FfC allows PLM companies to reduce their development time, while continuing to produce competitive and innovative products.

FLUENT for CATIA has already been tested extensively at global industrial companies. The overwhelmingly positive response it receives has further strengthened the partnership between Fluent and Dassault Systèmes. FLUENT for CATIA is scheduled to be available for general distribution within the next few months. ■