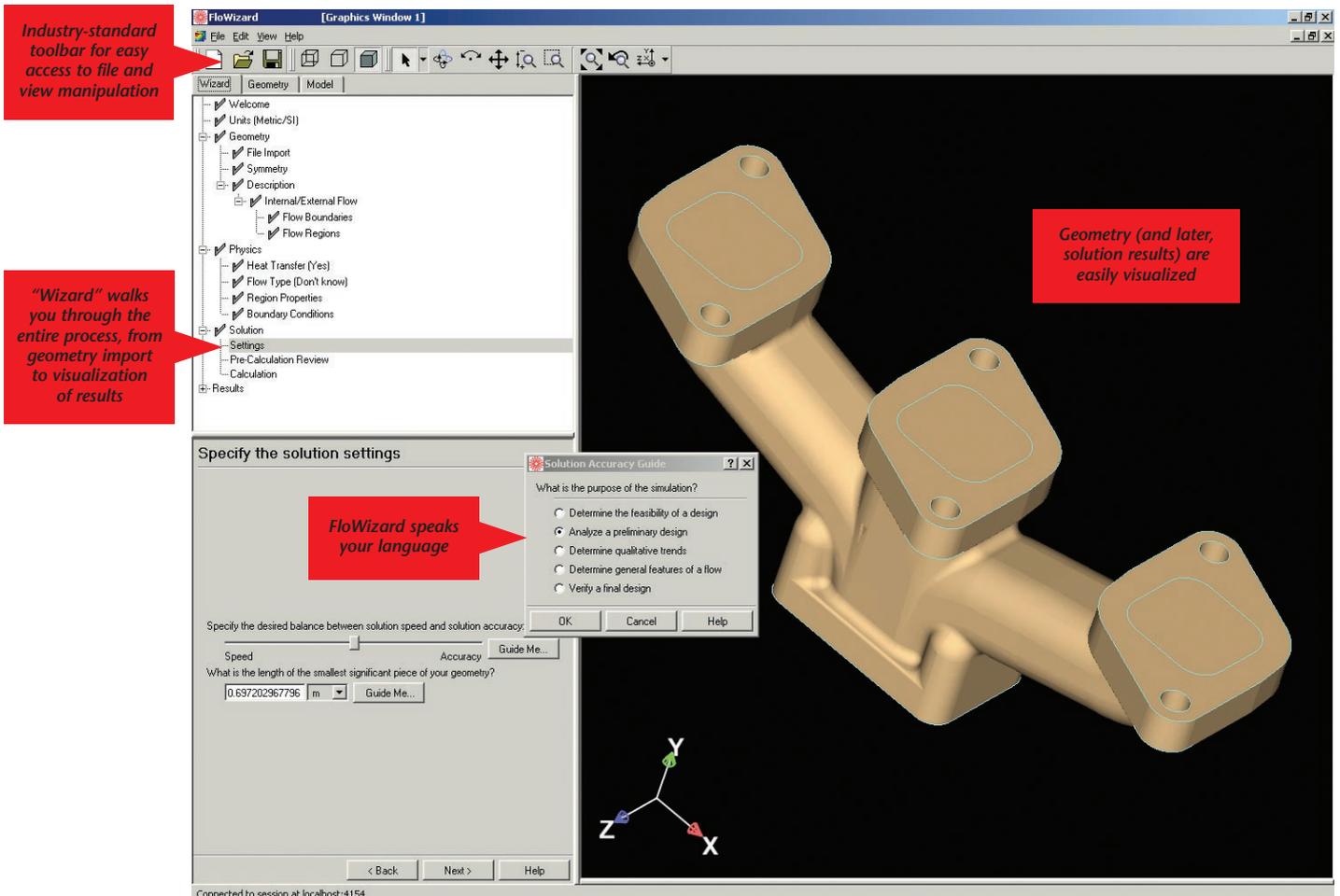# FloWizard to Help Design Engineers

By Scott Gilmore and André Bakker, Fluent Inc.

Fluent has been hard at work building a new CFD product, called FloWizard, for aiding in the design decision process. FloWizard received an enthusiastic welcome from clients at Fluent's European Users' Group Meetings in September and October. It is built upon Fluent's next-generation technology. Due for release in 2004, it is a highly-automated tool specifically aimed at design and process engineers. A wizard guides users through a step-by-step process from beginning to end, using terminology that is easy to understand.

With the power to simulate laminar or turbulent flow, with or without heat transfer, and special options such as moving belts and conducting walls, FloWizard is the ideal CFD tool for first-pass analyses early in the product development cycle.
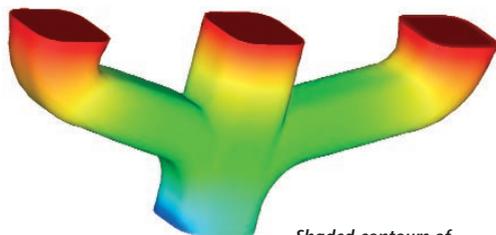
A typical FloWizard session begins with import of a CAD geometry. The user identifies the fluid passageways, inlets and outlets, and sets the boundary conditions. Material properties for the fluid and solid regions are selected from a comprehensive database, or can be entered

Industry-standard toolbar for easy access to file and view manipulation

"Wizard" walks you through the entire process, from geometry import to visualization of results

Geometry (and later, solution results) are easily visualized

FloWizard speaks your language

FloWizard

independently. FloWizard cleans the geometry and builds the mesh automatically. Users specify the desired solution accuracy by simply dragging a slider or selecting from a list of goals for the simulation. Once the problem setup is complete, the solver goes to work, automatically steering convergence with no intervention required by the user. When the simulation is complete, reports and state-of-the-art visualization tools are available to make the most of the results.

When used up-front in the design cycle, FloWizard can help engineers eliminate bad designs – those that don't meet basic performance guidelines – early on. This means that the large group of possible design candidates can more quickly be narrowed to a smaller group of serious design candidates. Ultimately, both time and money are saved, since the duration of the design cycle is shorter, and fewer prototypes need to be built, tested, and optimized at the downstream end. FloWizard offers many advantages to companies that are considering adding a design-focused, general-purpose CFD product. All case, data, geometry, and mesh files are fully compatible with FLUENT and GAMBIT. This means that CFD models developed in FloWizard can be read into FLUENT (or GAMBIT) for more detailed analyses (involving more physical models or a hand-crafted mesh) later on. Furthermore, with built-in knowledge from hundreds of person-years of CFD experience, FloWizard can automatically detect erroneous or questionable inputs and outputs, and will alert users. In-house CFD experts can be automatically notified of such alerts so that they can proactively assist users to ensure high-quality flow simulation results. In addition, FloWizard allows multiple users to simultaneously view the same simulation from different locations. Thus, CFD experts can view results and offer guidance to design engineers, if needed, at any time. In addition to providing this important mechanism for collaboration with in-house CFD experts, FloWizard also offers novel on-line support and training programs. FloWizard will soon be available to help companies efficiently incorporate CFD into their entire product design cycles. ■

Shaded contours of temperature on a manifold