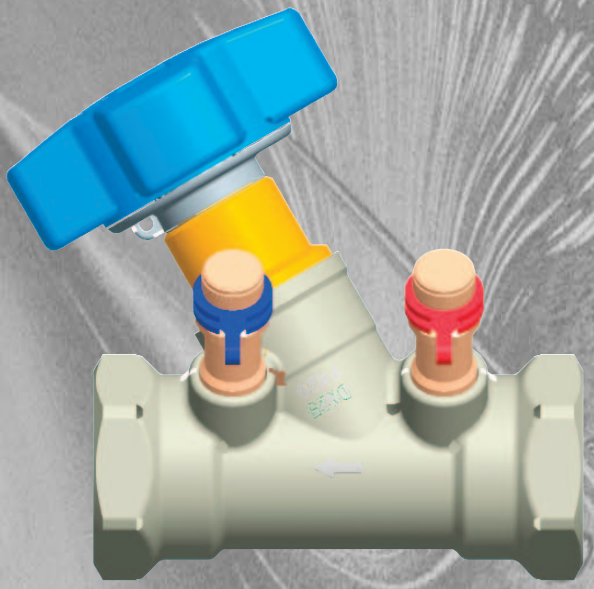
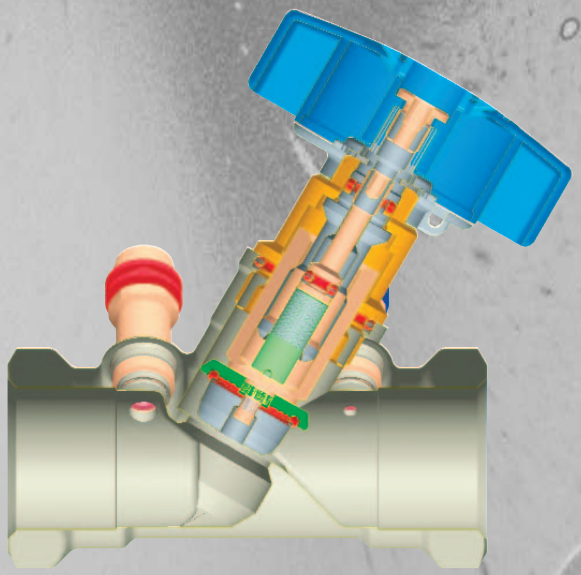
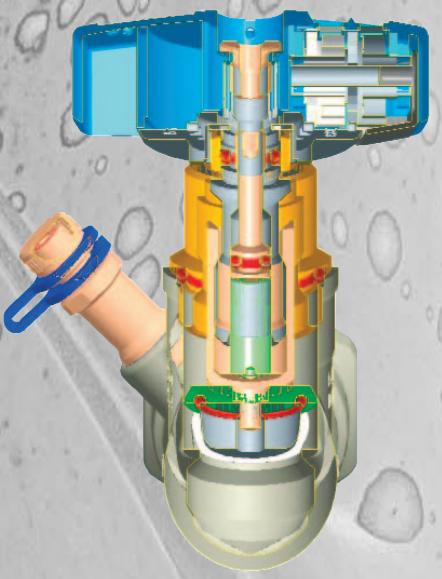




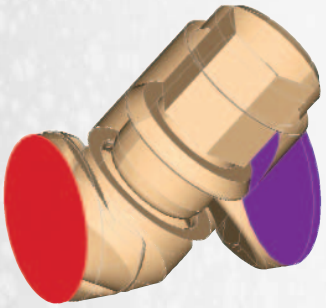


MMA's balancing valve STV 25 is used to adjust and balance the flow in heating and cooling systems. Examples of usage areas include mains, paths, branch lines, shunt groups, and cooling baffles. The valve is equipped with self-sealing measuring sockets, placed at a 45° angle in relation to the wheel center. The wheel is equipped with a digital display, and is used to set the valve at the desired flow (or valve sizing coefficient) value. When the flow value of the valve is set, it is locked. After locking, the valve can be closed but cannot be opened to a higher sizing coefficient value than the one set.

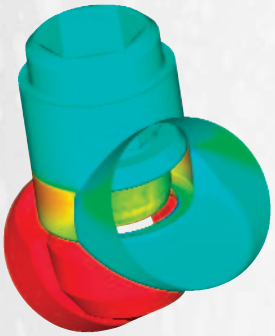
The geometry shown above was created in Pro/ENGINEER Wildfire

Balancing a STV valve

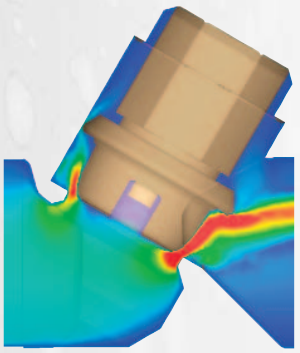
FloWizard at MMA



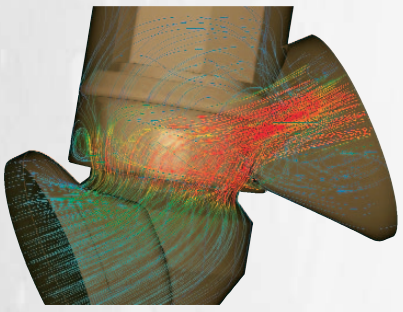
The flow region as shown in FloWizard, with the inlet in red and the outlet in purple



The total pressure distribution on the valve body walls



The velocity magnitude distribution in the flow



Flow path lines colored by velocity magnitude

VERSION 2 OF FLOWIZARD rapid flow modeling software was released in August. It offers many new features, including improved CAD connections and the ability to calculate remotely. While presenting FloWizard 2 at the Scandinavian UGM in Gothenburg, Sweden, André Bakker, FloWizard Product Manager, spoke with Ivan Bublik, Design Engineer and FloWizard user in the R&D Department at MMA.

AB: Can you tell me about MMA?

IB: MMA is a well-known trademark for thermostatic radiator valves used for indoor climate control. Together with Irish Myson Heating Controls, MMA makes Business Unit Controls as part of Finish Rettig Group. MMA is based in Markaryd in Southern Sweden. Established in the 1950s, the company has 120 employees who develop, manufacture, and market a wide range of radiator fittings, heating, cooling, and balancing valves.

AB: What were your expectations of FloWizard?

IB: Our main expectations were to obtain reliable results that would match experimental measurements from our testing laboratory. We expected to reduce the number of prototypes and shorten development time as well. FloWizard met all of our expectations. We compared FloWizard's predictions with results we measured in our experimental tests, and they compared very well. In fact, an important reason to acquire FloWizard was the robust solver, which contains reliable physical models for turbulent flow and heat transfer. FloWizard's ability to work directly from our existing CAD models and monitor essential flow parameters for them helped us reduce prototyping and development time.

AB: How often do you use FloWizard?

IB: My background is in CAD, mainly using Pro/E. Neither MMA nor I were involved in CFD prior to acquiring FloWizard. Getting started with FloWizard was easy, and I use FloWizard daily right now. I also make extensive use of FloWizard's scripting ability to perform repetitive and parametric calculations. Our FloWizard license began about six months ago, and over that time, we have done thousands of simulations.

AB: How does FloWizard fit into your workflow?

IB: We use FloWizard for new product development and for applying existing products to new applications. My work includes the design and testing of thermostatic sensors and mixing and cooling valves, and performing technical computations. To design our systems, we have worked with CAD and experimental testing. FloWizard provides us the opportunity to obtain the necessary flow and pressure drop characteristics of our prototypes much faster than we could before.

We use FloWizard in combination with experimental testing. We perform pressure drop tests both for prototypes and serial manufactured valves. The testing liquid is usually water at room temperature, which is easy. There is a growing demand, however, for cooling systems that use a variety of viscous media at very low temperatures. We need information about how our valves operate in such conditions, but experimental testing is very difficult for that. FloWizard gives us the ability to predict how the flow is altered when we use low temperature viscous liquids. It allows us to analyze real-life situations for which we cannot perform tests.

AB: Do you share FloWizard results with your customers?

IB: Yes indeed, we do. Our customers use databases made from laboratory tests and the FloWizard results for sizing the valves. We have several cases where those combined results directly benefited us to give necessary support to our customers. For example, in a recent project we had to obtain the flow through each individual valve in a series, for a variety of cone positions, pressure drops, and cooling liquids. FloWizard allowed us to analyze this complicated system quickly and efficiently. Using FloWizard saved us both significant cost and time. ■