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First-Pass CFD Analyses: Part 2

Designers reap the benefits of CFD insight early in the design process.

by Pamela J. Waterman | Published November 1, 2008

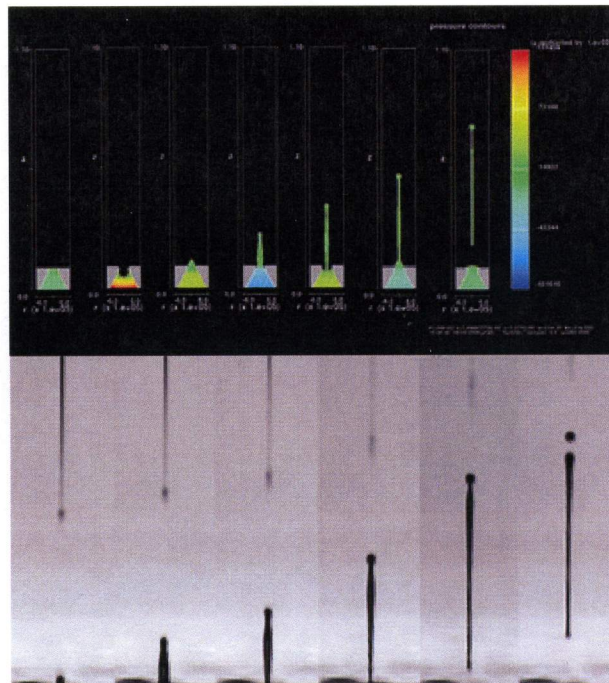
In [Part 1](#) of this series *DE* asked several users of computational fluid dynamics (CFD) software about their product challenges and solutions. Their common need was to create better designs in less time; their different approaches reflected how various CFD packages now play a role in the earliest stages of product design.

In Part 2 we spotlight three more examples of first-pass CFD, examining why it was particularly effective, how it fit into the general design process, and where there's room for improvement.

Color Flow Over the Years

Predicting flow characteristics drop by drop is a major concern of designers at Océ Technologies BV. Headquartered in the Netherlands, this company started out in 1877 creating edible yellow food-coloring to give pale winter margarine the hue of summer butter. The founder's inventor-grandson turned his attention to ammonia-free copying of technical drawings ("ohne componente" or "without components" became O.C.) and thus transitioned the company to compete in the emerging reprographics industry. Now Océ applies ink to paper, meeting the challenging demands of monochrome and color printing in the digital world. The company uses CFD software to check critical processes and identify new concepts for inkjet printhead development.

Herman Wijshoff, an analytical R&D engineer in the computational physics group at Océ, says he and other staff have used Flow3D from Flow Science since 1999 to investigate various characteristics of drop formation, particularly to guide them when evaluating new technologies.



These images show simulated and measured ink-drop formation in an Océ Technologies inkjet printhead. Flow3D software simulated the effects of a drop's tail formation for various designs. The tail can break up and adversely affect print quality. (Images courtesy of Flow Science)

