

TITLE: *COMSOL Multiphysics' Utility in a Medical Device Company: Research and Development*

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ABSTRACT:

MEDRAD designs, manufactures, and sells medical devices for use in diagnostic and therapeutic imaging procedures. The primary product line consists of parenteral drug delivery systems that administer drugs into a patient's vascular system under high driving pressure and high flow rates. This talk will highlight, through several case studies, COMSOL Multiphysics' utility as a design tool, system analysis tool, and an aid in applied research throughout MEDRAD's product development cycle (the integrated-Product Development Process™), from applied research to product validation. Specific examples shall include the analysis of a shielding design to prevent spurious interference to and from an MRI scanner and a multi-physics simulation (Navier-Stokes/Advection Diffusion) of water-soluble contrast medium propagation through the peripheral vasculature. Insights gained from the analysis of contrast medium propagation is leading to enhancements of the control system enabling personalized drug delivery regimens.