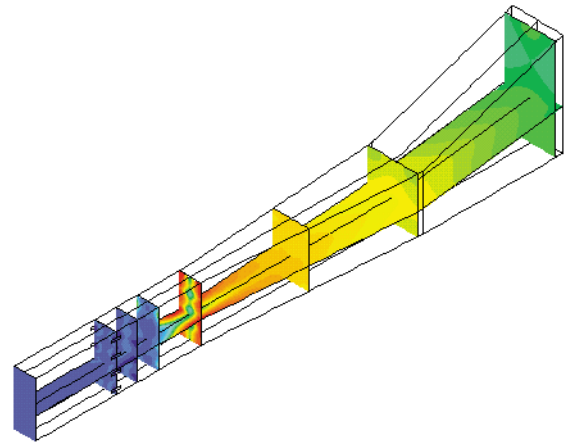


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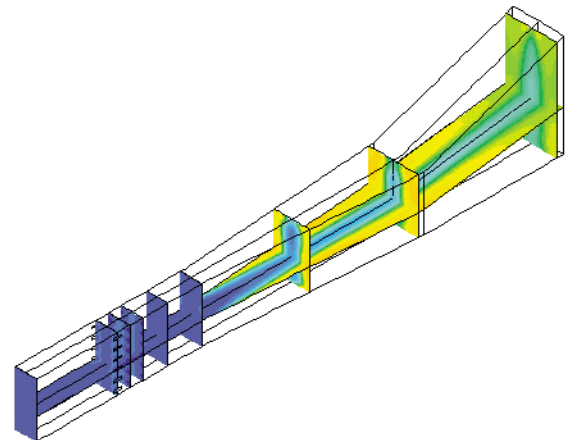
Design of Rockets and Ramjets

Courtesy of GenCorp Aerojet

Rocket engine designers at GenCorp Aerojet are using Fluent software to study combustion performance, combustion stability, thermal loads, and nozzle performance, and this presentation included a summary of several interesting CFD studies conducted to date. Results included FLUENT predictions characterizing secondary flows (longitudinal vortices) in gas generator piping, performance of round-to-square converging-diverging nozzles, plume flows of underexpanded jets, and ramjet/scramjet combustion. Aerojet scientists also confirmed through transient simulations and comparisons with exact analytical solutions that FLUENT can correctly predict the shape of the first tangential acoustic mode in a cylinder. The presentation showed results from FLUENT/UNS that were used to design new, innovative fuel injector elements for H₂ - O₂ combustion.



high injection velocity



low injection velocity

Effects of fuel injection velocity on temperature contours in a ramjet combustor