

A Sliding Mesh Technique and Compressibility Correction Effects of Two-Equation Turbulence Models for a Pintle-Perturbed Flow Analysis

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Abstract : Numerical simulations have been performed for assessment of compressibility correction of two-equation turbulence models suitable for large scale separation flows perturbed by pintle strokes. In order to take into account pintle movement, a sliding mesh method was applied. The chamber pressure, mass flow rate, and thrust have been analyzed, and the response lag and sensitivity at the chamber and nozzle were estimated for a movable pintle. The nozzle performance for pintle reciprocating as its insertion and extraction processes, were analyzed to better understand the dynamic performance of the pintle nozzle.

Keywords : pintle, sliding mesh, turbulent model, compressibility correction

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