

عنوان مقاله:

Comparison of Flow Field Simulation of Liquid Ejector Pump using Standard K- ϵ and Embedded LES Turbulence Modelling Techniques

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خلاصه مقاله:

The flow field analysis of a liquid ejector pump is important for its design improvements, performance estimation and understanding of mixing and entrainment phenomenon. Ejector pumps, due to their simpler design and ease of maintenance are used in a variety of industrial applications. The subject pump, under consideration in this study, is used for transferring fuel from one fuel tank to another in a fighter aircraft. To study the underlying flow field characteristics of subject ejector pump, the fluid domain is simulated using Embedded LES turbulence modelling technique in Ansys Fluent ® environment. The flow field and performance parameters of subject pump are then compared with that of previously researched study of same pump wherein Standard K- ϵ RANS Turbulence Model was used. It is revealed that the results obtained using Embedded LES are much closer to experimental data than that of Standard K- ϵ . The limitations of RANS turbulence model for accurate simulation of complex flow field of subject pump are then identified, analyzed and discussed in details by studying the flow characteristics such as Reynolds shear stresses distribution, Potential Core estimation and turbulent viscosity modelling, obtained using both turbulent .models

کلمات کلیدی:

Ejector pump, Complex flow, Reynolds shear stresses, Potential core, Embedded LES

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