

Analysis of a CO₂ Two-Phase Ejector Performances with Taguchi and Anova Optimization

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Abstract : The ejector, a central element within the CO₂ transcritical ejection refrigeration system, holds significant importance in enhancing refrigeration capacity and minimizing compressor power usage. This study's objective is to introduce a technique for enhancing the effectiveness of the CO₂ transcritical two-phase ejector, utilizing Taguchi and ANOVA analysis. The investigation delves into the impact of geometric parameters, secondary flow temperature, and primary flow pressure on the efficiency of the ejector. Results indicate that employing a combination of Taguchi and ANOVA offers increased reliability and superior performance when optimizing the design of the CO₂ two-phase ejector.

Keywords : ejector, supersonic, Taguchi, ANOVA, optimization

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