PERFORMANCE EVALUATION AND FLUID FLOW ANALYSIS IN LOW FLOW STAGES OF INDUSTRIAL CENTRIFUGAL COMPRESSOR (TP056)

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ABSTRACT

A comparative study of the flow field and performance of centrifugal compressor stages is presented for low volume flows and high-pressure applications. Two different impeller designs and stage configurations are considered and modeled using commercial CFD codes. Internal stage designs are evaluated by qualitative and quantitative flow analysis with the goal being to obtain more efficient stages. The resulting improved configurations are implemented into one of Dresser-Rand compressors. Computational and experimental results are discussed and conclusions are made regarding the existing model as well as future improvements both in modeling and design concept.