



Flow Field Analysis and Performance AssESSMENT inside a Vaned Diffuser of a Laboratory-Type Centrifugal Pump

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ABSTRACT

The paper refers to the analysis of flow fields inside a vaned diffuser and performance assessment of a laboratory-type centrifugal pump operating with air. The study deals with numerical simulation of the flow at design flow rate, with focus on velocity and pressure distributions across a diffuser passage. The aim is to highlight the flow structure how it leaves the impeller and evolves through the diffuser to understand the mechanism of pressure recovery. The performance assessment consists of evaluating diffuser effectiveness. The numerical results are compared to experimental measurements. The comparison showed similar profiles and close performance.

Keywords: Flow simulation; Centrifugal pump; Vaned Diffuser; Pressure Recovery; Diffuser Effectiveness