Department : **Mechanical**

Year : **2012-2013**

Group No: **1**

Guided By

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Project Title

DESIGN AND ANALYSIS OF CENTRIFUGAL PUMP

Abstract:

Centrifugal pump performances are tested using water and viscous oil as working fluids whose kinematic viscosities are 1 and 48 mm2/s, respectively; The main purpose of the presented research has been to determine the flow characteristic of the pump by means of CFD methods. To this end the commercial CFD code, ANSYS, CFX 11, has been used. The effects of the viscosity on the performance and flow pattern within the impeller are established based on the experimental results. The predicted overall efficiency curve of the pump was found to agree very well with the corresponding experimental data. The flow patterns near the impeller outlet are little affected by the viscosity of the fluids, but those near the impeller inlet are greatly affected by the viscosity. There is a wide wake near the blade suction side of the centrifugal pump impeller. The performance of centrifugal pumps drops sharply during the pumping of viscous fluids. Changing some geometric characteristics of the impeller in these types of pumps improve their performance. The obtained flow characteristic will be compared with the experimental investigations.

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