

IMPROVEMENT IN THE DESIGN OF A RADIAL TYPE VERTICAL SUBMERSIBLE OPEN WELL PUMP IMPELLER USING CFD

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Abstract

The usual practice of the Pump manufacturers in the small scale sector is to reverse engineer an existing design of an Impeller. Initially it seems an easy task to copy the overall dimensions of an impeller. But, it is a risk in copying the vane profile of existing impeller as it can have serious implications on the performance of the pump. This paper presents the improvements done in the vane profile for some candidate industry's Vertical Submersible Open well pump using one of the published design procedures available and known to the Industry. The improved Impeller model is then analyzed using turbo machinery geometry modeling and flow simulation system. The purpose of the analysis is to verify the performance at duty point or BEP (Best Efficiency Point). The paper also discusses the step by step procedure of both modeling for CFD as well as the entire CFD Process using a commercial CFD Software.

Keywords: Impeller, Vertical Submersible Open Well pump, turbomachinery geometry modeling, flow simulation, duty point, BEP, CFD

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