

COMPARISON BETWEEN 4 BLADE, 6 BLADE AND 20 BLADE IMPELLER BY USING CFD ANALYSIS OF A RESPIRATOR

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ABSTRACT

An impeller design for a respirator is addressed in several textbooks and research articles. According to practiced methods, the overall dimensions and properties of an impeller can be determined using computational fluid dynamics (CFD) and thermodynamic relations. Designing impeller for a respirator is important for fluid flow analysis. The impeller meridional profile is an important detail as a significant influence on the performance. Four, Six blade impellers are commonly used in the industries presently. In this study; I have proposed 20 blade impeller, in order to increase the outlet flow velocity and cutting down the cost. Also, Comparison between these impellers is made in respect of other aspects like material, outlet velocity, fluid discharge, and efficiency. The material used for 4, 6 blade impellers is steel and the material used for 20 blade impeller is Acrylonitrile butadiene styrene (ABS) which is used to reduce noise and cutting down the cost of the impeller.

KEYWORDS: *Computational Fluid Dynamics (CFD); 4 Blade Impeller; 6 Blade Impeller, 20 Blade Impeller, Respirator*

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