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Effect of Surface Quality of 3D Printed Impeller on the Performance of a Centrifugal Compressor

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Abstract : Additive manufacturing is referred to as a method for fabrication of parts with a mechanism of layer by layer. Suitable economic efficiency and the ability to fabrication complex parts have made this method the focus of studies and industry. In recent years many studies focused on the fabrication of impellers, which is referred to as a key component of turbomachinery, through this technique. This study considers the important effect of the final surface quality of the impeller on the performance of the system, investigates the fabricated printed rotors through the fused deposition modeling with different process parameters. In this regard, the surface of each impeller was analyzed through the 3D scanner. The results show the vital role of surface quality on the final performance of the centrifugal compressor.

Keywords : additive manufacturing, impeller, centrifugal compressor, performance
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