

عنوان مقاله:

Centrifugal Compressor Diffuser Optimization by the Means of DoE Methods and RSM

محل انتشار:

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خلاصه مقاله:

Centrifugal compressors are broadly implemented in many industries because of their ability to handle low and moderate mass flow rates to obtain high pressure ratios. Design and optimization of compressor components i.e. impeller and vane-less diffuser are considered by many researchers as they play an important role in compressor performance. In this research the vane-less diffuser part of a turbocharger compressor is optimized using design of experiment (DOE) technique and response surface methodology (RSM). Two different scenarios are considered to change diffuser geometry. In the first one, the diffuser discharge width is maintained constant and the inlet section is changed by varying three parameters. The second strategy also changes the discharge section width. Diffuser performance is evaluated through compressor efficiency and pressure ratio and also diffuser pressure recovery and total pressure loss coefficients. The results show that compressor efficiency and pressure ratio increase by 2.4% and 2.9% respectively.

کلمات کلیدی:

Diffuser- Design of Experiment- Meridional Plane- Centrifugal Compressor

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