

عنوان مقاله:

Presenting Three Design Methods for Axial Compressor Blade via Optimization

محل انتشار:

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خلاصه مقاله:

Improving the efficiency of compressors has been one of the most important goals of researchers over the years. In this paper, three different methods are presented for parameterization and blade optimization of axial flow compressor. All methods consist of flow analysis tool, optimization algorithms, and parametric geometry generation tool, that are different in each approach. Objective function is defined based on the aerodynamic performance of blade in the acceptable incidence angles range. A DCA blade is used as the initial guess for all methods. The performance of optimized blades and the initial blade are compared for evaluating the capability of various methods that a good agreement has been achieved. The results show that the value of performance improvement in each method depends on the number and type of the chosen parameters. All three methods have improved blade performance at the design incidence angle. However, only the first method shows significant performance improvement in off-design conditions.

کلمات کلیدی:

Parametric geometry, loss coefficient, optimization algorithm, multi-point objective function

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