عنوان مقاله:

Simulation of fouling effects on a two-stage axial turbine performance

محل انتشار:

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نویسندگان:

Hadi karrabi - *MAPNA Turbine Engineering and Manufacturing Company (TUGA)*

Ali Samaeenia - *School of Mechanical Engineering, Hakim Sabzevari University, Sabzevar, Iran*

Abolhassan Asgarshamsi - *Department of Mechanical Engineering, Golpayegan College of Engineering, Isfahan University of Technology, Golpayegan ۸۷۷۱۷-۶۷۴۹۸, Iran*

Mostafa Baghani - *School of Mechanical Engineering, College of Engineering, University of Tehran, Tehran, Iran*

خلاصه مقاله:

The axial turbine is one of the most important components of gas turbines in industrial and aerospace applications. As time passing the increasing of the roughness of the axial turbine blades is unavoidable. The aim of this paper is numerical investigation of the blades roughness effects on the flow field and performance of a two-stage axial gas turbine. In this research, the axial turbine is simulated three-dimensionally and the results are validated with experimental data. Then, the effects of blade roughness on flow field and performance of the turbine are investigated in five different pressure ratios. Also, in order to determine the role of stators and rotors roughness in decreasing the turbine efficiency, in a specific roughness, the first and second stators and then the corresponding rotors have been simulated separately. Numerical results show that the efficiency drop in the turbine stage is approximately equal to summation of efficiency drops when the roughness effect on the stator and rotor blades is applied, separately.

کلمات کلیدی:

The Axial Turbine, Fouling Effects, Roughness Effect, Stator and Rotor Blades