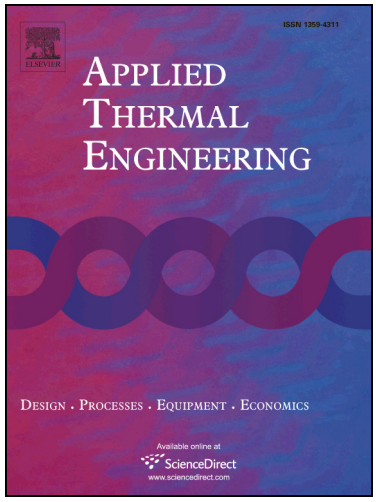

Research Paper

The Effects of Compressor Blade Roughness on the Steady State Performance of Micro-turbines

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The Effects of Compressor Blade Roughness on the Steady State Performance of Micro-turbines

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ABSTRACT

The aim of this work is to study the effects of the compressor blade roughness on the Off-Design performance of a microturbine. Compressor fouling is the most important factor of gas turbines performance deterioration and its main effect is compressor blade roughness growth. Hence understanding of microturbine behavior in case of blade roughness increment is an important step in gas turbine's health monitoring. In current study a model is presented to simulate Off-Design performance of a Microturbine. The model is validated against experimental data. Characteristic map of a radial compressor in clean state and three different surface roughness has been employed in mentioned Off-Design model to calculate Effects of roughness growth on microturbine performance and determine sensitive parameters. This simulation's results show blade roughness increment induces new condition which improves recuperator performance and micro

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