

عنوان مقاله:

Second Law Based Analysis of Fluid Flow in the Regenerator of Pulse Tube Refrigerators

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خلاصه مقاله:

As a necessary component, regenerator plays an important role in the refrigeration performance of the pulse tube refrigerator. The objective of this research is to investigate the flow characteristics in a porous regenerator of the pulse tube refrigerators, subjected to oscillating flow. The hydrodynamic and thermal behavior of the regenerator is investigated by considering porous media approach. The conservation equations are transformed by implementing the volumetric average scheme. Harmonic approximation technique is employed to derive an analytical solution. To investigate the system performance, second law analysis is performed in order to calculate the second law efficiency. The effect of geometry and operating key parameters on the regenerator performance are investigated as well. The developed model is able to predict the oscillating flow characteristics in the regenerator.

کلمات کلیدی:

Oscillatory Flow, Porous media, Entropy generation, Regenerator

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