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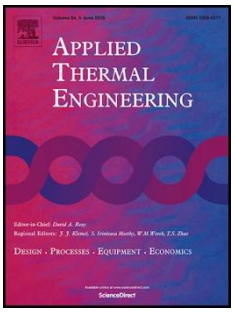

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Thermoacoustic heat pumping direction alteration by variation of magnitude and phase difference of opposing acoustic waves

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Highlights

- A dual speaker thermoacoustic heat pump was constructed
- The acoustic field was altered by varying the phase and magnitude of speaker output
- Change in acoustic field was shown to affect heat pumping in the regenerator
- Heat pumping direction along regenerator was seen to change and reverse
- The change of SWC and TWC significantly affected heat pumping

Abstract

Thermoacoustic refrigeration utilizes the temperature changes which occur due to pressure oscillations within a sound wave to transport heat from one point to another and achieve cooling. As such, it does not require complicated machinery nor hazardous or environmentally harmful refrigerants. By altering the acoustic field, it is possible to also alter the direction of heat pumping allowing a single device to be capable of functioning as a heater or cooler without addition of complicated machinery. We have constructed a thermoacoustic heat pump