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Experimental Study on Temperature Splitting of a Counter-Flow Ranque-Hilsch Vortex Tube

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Abstract : An experiment al investigation is made to determine the effects of the nozzle dimensions and the inlet pressure on the heating and cooling performance of the counter flow Ranque–Hilsch vortex tube when air used as a working fluid. The all results were taking under inlet pressures were adjusted from 200 kPa to 600 kPa with 100 kPa increments. The conventional tangential generator with number of nuzzle of 6 was used and inner diameter of 7.5 mm. During the experiments, a vortex tube is used with an L/D ratio varied from 10 to 30. Finally, it is observed that the effect of the nuzzle aspect ratio on the energy separation changes according to the value of L/D.

Keywords : Ranque-Hilsch, vortex tube, aspect ratio, energy separation
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