

EFFECT OF VALVE OPENING ON THE PERFORMANCE OF VORTEX TUBE

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Abstract

The vortex tube is a simple mechanical device without moving parts operating as a refrigerating machine. High-pressure air supplied to the vortex tube is separated into low pressure hot and cold air. The exact mechanism of this separation of air into hot and cold is not known today. Most of the investigators have studied the various operating characteristics of vortex tube based on the cold air fraction. Vortex tube of different geometrical configurations gives optimum performance at different cold fractions. Performance of vortex tube independent of cold fraction is investigated in this paper by simple throttle valve opening variation. An interesting relationship between valve opening, cold fraction and optimum performance of vortex tubes of different geometrical configurations under constant thermo-physical conditions is represented in this paper.