

## **Design Optimizations of Vortex Tube to Ensure Higher Temperature Difference for Cooling and Heating**

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### **Abstract**

A cooling system is significant for both human and machine. There are two types of system used for refrigeration purpose – Vapor Compression and Vapor Absorption. But, vortex tube is an unorthodox type of cooling system. We do not use this commonly for cooling purpose. Though, it has various benefits over the orthodox cooling systems. To build a counter flow vortex tube this project was attempted. The performance of counter flow vortex tube was determined to be experimented on this project. To measure the performance an experimental setup has been considered. To increase the performance of vortex tube, we changed different types of geometrical parameters like – Diameter of cold end and hot end pipe, Vortex angle, Tube length, Ratio of tube length over diameter. We also changed the working parameters at inlet like as temperature and pressure to observe difference of performance and to predict some of the experimental data. By increasing the performance i.e. both heating and cooling effect can be used.

### **Keywords**

Vortex Tube, Design Optimization, Cooling System.