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Paper Title:	CFD Analysis on Vortex Tube for Medical Refrigeration System
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#### Abstract

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The healthcare management system is an integral part of healthcare facilities' success in terms of energy conservation and environmental sustainability. One consideration is the correct design, installation and maintenance of refrigeration system in maintaining precise temperature for sensitive materials like vaccines. The growing need for medical refrigeration systems and their alternatives makes it possible to provide constituents with high-quality services. This study aims to optimize the vortex tube to achieve the temperature needed for a medical refrigeration system. The air standard cycle, a closed system, is the basis of the design because it provides better efficiency. The CFD analysis using ANSYS Fluent determines the vortex tube's performance, mass, and energy measurements at the tube exits. Pressure at 2.75 bar is applied to six nozzles of a vortex tube that produced a temperature of 275.25K at the cold exit, which is within the needed temperature condition for a medical refrigeration system. The performance of the vortex tube in medical refrigeration systems can be directly impacted by adjusting the dimensions of the cone valve and the inlet pressure.

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