The Vortex Tube Effect - Short Introduction

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1 Welcome

Thank you for your interest. Listed below are the main facts about the vortex tube effect:

Facts:

Air is injected sideways in a tube; it gets very cold in the center and hot at periphery

This temperature separation is fully explained by the turbine equation of Euler. This temperature separation can be achieved in a straight moving duct without any air rotation. The vortex tube effect is a propulsion phenomenon. This vortex effect can be achieved without any “tube”. That is, it can exist as a standalone vortex without surrounding walls. A “vortex tube” can be of any size. A “vortex tube” can have only cold outlet and no hot outlet. Then it will output cold air and rotational work. The traditional vortex tube shown above is a rotorless turboexpander.

Vortex tubes are used for on-demand cooling of air. The images below show a typical commercially sold vortex tube.

The information contained in this site is based on the following research articles written by Jeliazko G Polihronov and collaborators:

Thermodynamics of Angular Propulsion, Physical Review Letters 109, 054504, 2012.

Vortex Tube Effect Without Walls, Canadian Journal of Physics, doi:10.1139/cjp-2014-0227 (2015).

Angular Propulsion - The Rotational Analog of Rocket Motion, Canadian Journal of Physics, doi:10.1139/cjp-2014-0297 (2014).

On the Thermodynamics of Angular Propulsion", Proceedings of the 10th International Conference on HEFAT, 14-16 July 2014, Orlando (2014).