



Computational Fluid Dynamics Study of the Ranque-Hilsch Vortex Tube

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Condition: New. Publisher/Verlag: Scholar's Press | The Complete CFD Study of the Secrets of the Vortex Tube and The 3D Modeling For Future Investigations and Enhancements | The vortex tube is a simple device with no mechanical operation and no moving parts which by injecting compressed air at room temperature circumferentially into the tube at high velocity this simple device separates the inlet compressed air into outward radial high temperature vortex and inner low temperature one. Temperature separation occurs along the tube from the inner vortex to the outer vortex Vortex tubes are used in applications as cooling cutting tools (lathes and mills) during operation &, electronic component cooling. It has advantages as it is maintenance free, reliable and compact A CFD study and analysis of the RHVT is presented in this book. The performance of the RHVT in this study is investigated at different cold orifice diameter to tube diameter ratios A 3D analysis of the air flow inside the RHVT is carried out to have a better visualization of the air inside the tube and to investigate some of its properties as the inner and outer vortex and the stagnation point. The 3D study showed that two vortices...



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