



Ranque-Hilsch tube (Vortex tube)

DESCRIPTION OF VORTEX TUBES

The Ranque-Hilsch tube, in the industrial sector better known as “Vortex tube”, is a device that splits a compressed-air flow in 2 separate streams: one of cold air, and one of hot air.

The core of the system is the vortex chamber, which is connected to 2 opposed tubes, one of which features a valve. When the compressed air is injected tangentially in the chamber, this causes the rotary movement of air towards one of the exits. This vortex moves rotating at high speed and brushing against the inner side of the tube, increasing in temperature; the valve placed at the hot air outlet enables some of it to be exhausted. The remaining part goes back, creating a low pressure vortex moving towards the other exit and giving away heat to the first vortex. So, this flow is much colder.

The ΔT generated is inversely proportional to the volume of the flow. The differences in temperature are considerable and can reach -40°C for the cold flow and 60°C for the hot flow.

In the industrial field the Vortex tubes have been employed for a long time and have found a variety of applications in which they offer a major added value. They have great cooling performances, are very easy to install and have instant operation, have no moving part and therefore are maintenance-free. Plus, they do not require electric power, so they are suitable for dangerous environments and humid areas.

If the application enables their use, they are price-worthier than electric coolers. Our coolers SERIES VR and VRX, beside the excellent performances in comparison to the other products in the market, were designed to be easily customised according to customers' demands.