Title (en)

RARE-GAS-BASED BERNOULLI HEAT PUMP AND METHOD

Title (de)

BERNOULLI-WÄRMEPUMPE AUF EDELGAS-BASIS UND VERFAHREN

Title (fr)

POMPE A CHALEUR DE BERNOULLI A GAZ RARE ET PROCEDE ASSOCIE

Publication

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Application

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Priority

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Abstract (en)

[origin: WO2007017741A2] Heat pumps move heat from a source to a warmer sink, with Bernoulli heat pumps accomplishing this movement by reducing the temperature in a portion of the generally- warmer heat-sink flow. Heat flows spontaneously from the generally cooler heat-source flow into the locally cold portion of the heat-sink flow, which is the neck of a Venturi. The temperature reduction results from the Bernoulli conversion of random gas-particle motion (temperature and pressure) into directed motion (flow). This invention is a Bernoulli heat pump in which the heat transfer into the Venturi neck exploits unusual thermodynamic transport properties of rare-gases. Rare gases, especially mixtures of them, possess unusually small Prandtl numbers and thereby facilitate the diffusion of random particle motion (heat) relative to the diffusion of directed particle motion (viscosity), viscous friction being responsible for most of the power consumed by a Bernoulli heat pump.

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