Experimental results for a novel rotary active magnetic regenerator

Active magnetic regenerator (AMR) refrigerators represent an alternative to vapor compression technology and have great potential in realizing cooling devices with high efficiency, which are highly desirable for a broad range of applications. The technology relies on the magnetocaloric effect in a solid refrigerant rather than the temperature change that occurs when a gas is compressed/expanded. This paper presents the general considerations for the design and construction of a high frequency rotary AMR device. Experimental results are presented at various cooling powers for a range of operating conditions near room temperature. The device exhibited a no-load temperature span of over 25 K and can absorb a 100 W cooling load at a 20.5 K temperature span.

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