



TECHNOLOGY

Novel designs improving the performance of a compressive thermoelastic cooling system

OVERVIEW

Background

While compressive thermoelastic cooling is a new cooling technology that is not readily available on the market yet, a compressive thermoelastic cooling prototype is under development. Thermoelastic cooling is entirely based on applying stress to solid alloys. When a shape memory alloy such as nitinol is compressed with uniaxial force, latent heat is released providing heating. The reverse, unloading, provides cooling.

Innovative Technology

Researchers at the University of Maryland developed several improvements to the compressive thermoelastic cooling prototype under development. The original design is improved by reducing the residual liquid volume) inside the nitinol tubes, increasing nitinol tubes surface to volume ratio to transfer heat with greater efficiency and reducing heat transfer between the metal parts (loading head and tube holder) and liquid.

APPLICATIONS

All air-conditioning/heat pumping applications

ADVANTAGES

Improved cooling efficiency

Solid state based cooling

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Additional Information

INSTITUTION

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EXTERNAL RESOURCES

PS-2014-182