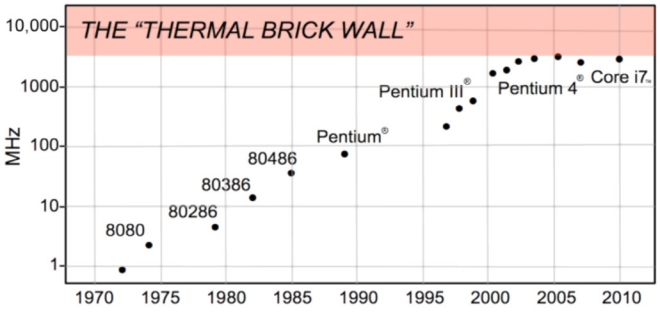
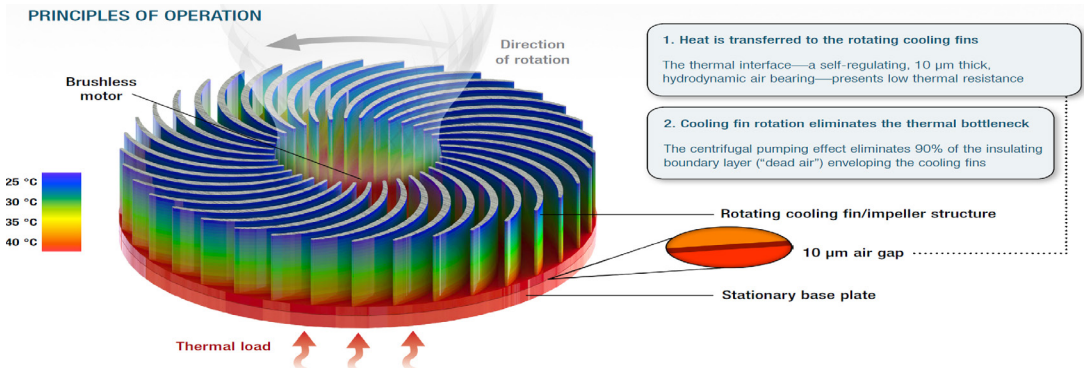
THE SANDIA COOLER

US Pat. No.: 8,228,675; 9,261,100; 8,988,881; 9,207,023; 5,368,560
Technology Readiness Level: 4
Key elements demonstated in laboratory environment

In a conventional CPU cooler, the heat transfer bottleneck is the boundary layer of "dead air" that clings to the cooling fins. This insulating layer is largely unaffected by the impinging airflow generated by the fan. The radically different approach described herein overcomes this thermal bottleneck, generating a several-fold improvement in cooling performance in a device that is smaller, quieter, and immune to clogging by dust.



In this new device architecture, heat is efficiently transferred from a stationary base plate to a rotating (ccw) structure that combines the functionality of cooling fins with a centrifugal impeller. Dead air enveloping the cooling fins is subjected to a powerful centrifugal pumping effect, providing a 10x reduction in boundary layer thickness at a speed of a few thousand rpm. Additionally, high-speed rotation completely eliminates the problem of heat exchanger fouling. The "direct drive advantage," in which relative motion between the cooling fins and ambient air is created by rotating the heat exchanger, provides a drastic improvement in aerodynamic efficiency. This translates to an extremely quiet operation. The above benefits have been quantified on a proof-of-concept prototype.



TECHNICAL BENEFITS

- Dramatic increase in cooling performance without resorting to exotic methods
- 10x smaller than current state-of-the-art CPU coolers
- Exceptionally quiet operation
- Immune to dust fouling
- Simple, rugged, and cost-competitive design
- Provides increased energy efficiency

INDUSTRIES & APPLICATIONS

- Laptops
- High performance "gaming" PCs
- Home video game boxes
- Various other electronic devices

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