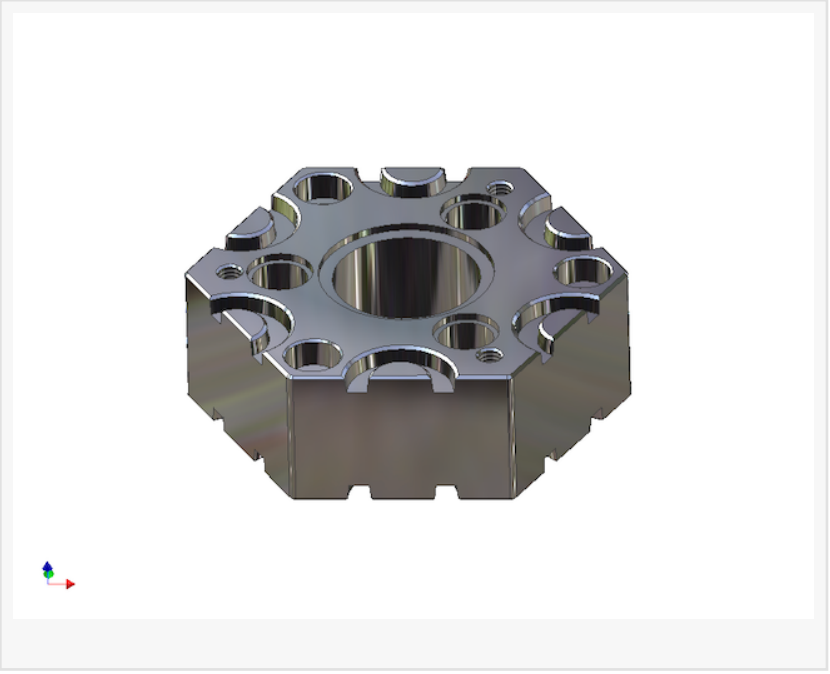
Infinity Turbine Introduces Micro-Size CO□ Chiller for Chipsets and Spot Cooling Featuring Multi-Fluidic Modular Blocks

Infinity Turbine Develops Micro-Sized CO□ Chiller-on-a-Chip for NVIDIA and other GPU Chipsets for Spot Cooling Features Patented Multi-Fluidic Modular Blocks



MADISON, WI, UNITED STATES, September 6, 2024 /EINPresswire.com/ -- Infinity Turbine announces a groundbreaking new cooling solution that addresses the growing need for high-efficiency, localized cooling in high-performance computing (HPC) environments, particularly for chipsets used in AI, cryptocurrency mining, and process cooling. This innovative micro-size chiller, designed for Nvidia GPUs and adaptable for any chipset, leverages CO□-based microfluidics and an Organic Rankine Cycle (ORC) to provide precision cooling while generating small amounts of electricity from the process. These modular blocks provide highly efficient, scalable cooling, using multi-fluidic channels in a low-profile design, offering unprecedented control over the cooling process while also recovering energy for added efficiency.

A Breakthrough in Chip Cooling

With the increasing demand for AI model training, blockchain processing, and other compute-intensive tasks, the heat produced by chipsets is a significant challenge. Traditional cooling solutions struggle to provide the highly localized, efficient cooling needed to maintain optimal performance and longevity. Infinity Turbine's micro-chiller directly addresses this issue by using CO□ as a working fluid in a closed-loop system that offers localized spot cooling directly at the chipset.

Patented Modular Block Technology for Scalable Chiller Design

At the heart of this new cooling system is Infinity Turbine's Modular Block, a patented, bolt-together device that enables the integration of multiple fluidic channels and processes within a single block. This modular design allows for the construction of scalable low-profile chiller installations, which can be customized and expanded to meet the specific cooling needs of individual chipsets.

Key Features of the Micro-Size CO□ Chiller

• CO□ as a Cooling Fluid: Utilizing supercritical CO□, the system provides highly efficient heat absorption. CO□ is environmentally friendly, with low global warming potential, making it ideal for sustainable cooling solutions.
• Cavitation Disc Technology: A rotating cavitation disc, powered by an electric motor, induces a phase change in liquid CO□, transitioning it to its supercritical state, which dramatically improves heat transfer efficiency.
• Organic Rankine Cycle: The system operates in a closed loop, mimicking the ORC, where supercritical CO□ expands and cools the chipset. After cooling, the gas is returned to a liquid state and the process repeats.
• Multi-Fluidic Channel Design: The block is designed to accommodate multiple fluidic processes simultaneously. This provides flexibility to use various working fluids, such as supercritical CO□, while maintaining precise control over heat dissipation.
• Scalable Bolt-Together Installation: The modular nature of the blocks allows for easy expansion or reconfiguration, enabling the chiller system to be scaled up or down depending on the size and heat load of the chipset.
• Low-Profile Design: The blocks are engineered to fit directly below chipsets, offering localized cooling without the bulk of traditional chiller systems. This is ideal for environments with limited

space, such as data centers or edge computing installations.

Advanced CO□-Based Cooling with Energy Recovery

One of the key innovations of Infinity Turbine's system is the ability to recover energy during the expansion phase of the CO□ cycle. As the supercritical CO□ expands, it generates cooling but also releases potential energy that can be harvested. Infinity Turbine has designed the system to include a small recovery turbine, which can generate electricity or drive the cavitation disc, reducing the overall energy consumption of the system.

This dual-use of the expansion phase makes the micro-chiller not only an effective cooling system but also a source of energy recovery, further reducing operational costs and improving overall system efficiency.

A Versatile Solution for High-Performance Computing and Process Cooling

While the system is specifically designed for cooling Nvidia chipsets used in AI and crypto mining, its adaptability makes it suitable for a range of applications:
• Spot Cooling for Process Applications: Beyond electronics, the micro-size chiller can be used for process cooling in other high-heat environments, where localized cooling is essential for maintaining performance.
• Scalable Across Chipsets: The system is not limited to Nvidia GPUs. It can be adapted for any chipset or high-heat electronic component, making it a versatile solution for various industries, from data centers to edge computing environments.
• High-Performance Computing: AI model training, machine learning algorithms, and crypto mining.
• Data Centers: Scalable cooling solutions for server racks and chipsets.
• Industrial Process Cooling: Localized cooling for high-heat processes in manufacturing and industrial settings.

The Future of Chip Cooling: Sustainable and Scalable

With the demand for high-performance computing continuing to rise, cooling solutions must evolve to meet these needs. Infinity Turbine's CO□-based micro-chiller offers a sustainable, efficient, and highly localized cooling solution that reduces energy consumption while improving performance. The additional capability of energy recovery during the cooling process represents a new frontier in efficient, integrated cooling systems.

Water Savings

By utilizing this type of cooling technology for the NVIDIA A100, it may be possible to achieve significant water savings compared to traditional water cooling methods. For instance, a single A100 GPU under full load requires approximately 288 liters of water per hour for optimal

cooling. That is 207,000 liters per month, and 2.5 million liters per year. In large-scale data centers operating 24/7, this efficient cooling approach reduces the environmental impact and optimizes water usage by thousands of cubic meters per year. Implementing such cooling systems can lower overall water consumption while maintaining peak performance, making it a sustainable solution for high-performance computing.

About Infinity Turbine

Infinity Turbine is a leader in sustainable energy solutions, specializing in innovative cooling technologies and energy recovery systems. By focusing on environmentally friendly refrigerants and scalable microfluidic systems, Infinity Turbine is transforming the way high-performance computing and process cooling applications manage their thermal needs.

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