

Infinity Turbine Introduces Data Center Cooling Using Supercritical CO2 Power Generation and Magnetic Refrigeration

Infinity Turbine Introduces Revolutionary Data Center Cooling System Combining Supercritical CO2 Power Generation from Waste Heat and Magnetic Refrigeration

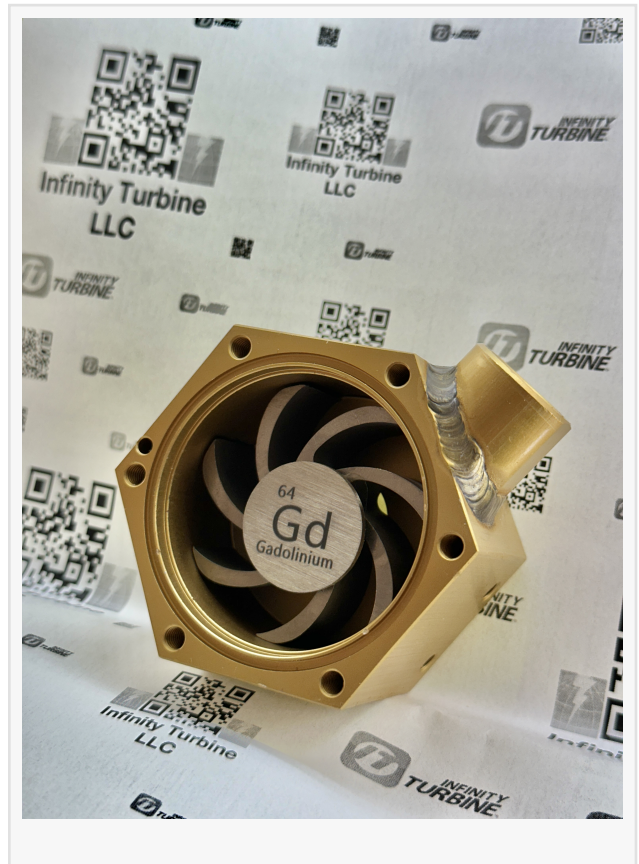
MADISON, WI, UNITED STATES, September 18, 2024 /EINPresswire.com/ -- [Infinity Turbine](https://www.infinityturbine.com/), a leader in advanced energy solutions, announces the launch of its groundbreaking Cluster Mesh Power Generation System integrated with magnetic refrigeration technology for data center cooling. This cutting-edge solution is designed to enhance energy efficiency, reduce environmental impact, and scale to meet the cooling demands of modern data centers.

With data centers consuming vast amounts of energy and generating significant waste heat, the industry faces a critical need for more efficient and sustainable cooling methods. Infinity Turbine's latest innovation leverages supercritical CO2 (sCO2) power generation to convert waste heat into usable power while employing magnetic refrigeration to provide high-efficiency cooling without harmful refrigerants. The result is a transformative system that turns waste heat into an asset, dramatically improving energy efficiency.

Revolutionary Technology for the Future of Data Centers

Infinity Turbine's Cluster Mesh Power Generation System is built on a modular network of [supercritical CO2 turbines](#) that capture and convert waste heat from data centers into electricity. This system allows for flexible, scalable energy recovery, ensuring optimal performance even in environments with variable heat loads.

To address the cooling needs of data centers, Infinity Turbine has integrated magnetic refrigeration—an eco-friendly technology that eliminates harmful chemical refrigerants and



instead uses the magnetocaloric effect. In this system, gadolinium is alternately heated and cooled by applying and removing a magnetic field, creating an efficient, non-compressive cooling cycle.

The system is controlled and synchronized using an innovative magnetic gearbox, which adjusts the speed of the turbine's spinning magnets to match the frequency needed for optimal cooling. This allows the cooling system to dynamically adjust to the data center's heat load, providing efficient, real-time cooling based on demand.

How It Works

1. **Supercritical CO2 Power Generation:** The waste heat from the data center's servers and IT infrastructure is captured and used to drive supercritical CO2 turbines. These turbines convert the heat into mechanical energy, which is then turned into electricity, reducing the overall energy consumption of the data center.
2. **Magnetic Refrigeration:** Simultaneously, the magnetic refrigeration system, powered by the spinning magnets of the turbines, provides highly efficient cooling. The system leverages the magnetocaloric properties of gadolinium, which heats up when exposed to a magnetic field and cools down when the field is removed. This continuous cycle creates an environmentally friendly cooling process without the need for harmful chemical refrigerants.
3. **Magnetic Gearbox for Frequency Adjustment:** The magnetic gearbox adjusts the rotational speed of the turbine's magnets to synchronize with the optimal Hertz (frequency) needed for cooling. This allows the system to dynamically tune itself to varying temperature demands and heat loads, ensuring maximum cooling efficiency at all times.

Key Benefits

- **Enhanced Energy Efficiency:** By utilizing waste heat to generate power and drive the cooling process, the system significantly improves energy efficiency, reducing the overall energy footprint of the data center.
- **Environmentally Friendly:** The magnetic refrigeration system eliminates the need for harmful refrigerants like CFCs and HFCs, making it a green alternative for cooling. Additionally, the use of supercritical CO2 as the working fluid is both sustainable and efficient.



- **Scalability:** The Cluster Mesh Power Generation System is modular and scalable, allowing it to adapt to the needs of any size data center, from small-scale facilities to large hyperscale operations.
- **Real-Time Optimization:** The magnetic gearbox enables real-time frequency adjustment, allowing the system to respond to fluctuating heat loads and cooling demands, ensuring peak performance under all conditions.
- **Quiet and Reliable Operation:** Unlike traditional cooling systems that rely on noisy compressors, the magnetic refrigeration system operates quietly, making it ideal for noise-sensitive environments such as data centers.

A Vision for the Future of Data Centers

Infinity Turbine's innovative system represents a new frontier in data center cooling, where waste heat is transformed from a problem into an opportunity. By combining power generation and magnetic refrigeration, Infinity Turbine is paving the way for more sustainable, efficient, and scalable data center solutions.

As data centers continue to grow in size and importance, the demand for energy-efficient cooling will only increase. Infinity Turbine's cutting-edge solution is positioned to meet this need by offering a scalable, eco-friendly approach to data center cooling and power generation.

About Infinity Turbine

Infinity Turbine is a global leader in innovative energy solutions, specializing in waste heat recovery and power generation technologies. Our mission is to create sustainable energy systems that reduce environmental impact while improving operational efficiency. With a focus on supercritical CO2 technology and magnetic refrigeration, Infinity Turbine is dedicated to driving the future of energy-efficient technologies for industries around the world.

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