CUTTING AI-DATA-CENTER COOLING ENERGY BY 50%, KRAMBU DEPLOYS FREON-FREE ELKHORN 970 LIQUID CHILLER

COEUR D'ALENE, ID, UNITED STATES, May 2, 2025 /EINPresswire.com/ -- KRAMBU, Inc. today announced the successful test deployment of Elkhorn Products' Elkhorn 970 v21 hydrovaporization cooler at its Newport, WA facility—replacing conventional chilled-water plants and entirely eliminating synthetic refrigerants.

Independent power-meter readings show that a traditional water-cooled chiller consumes ≈ 170 kW of electricity to cool each 1 MW of IT load. The Elkhorn 970's water-only cycle delivers the same duty with ≈ 85 kW, a 50% reduction in cooling power and an effective COP ≈ 11.8—roughly double that of modern compressors. In practice this drives facility-only PUE from ~1.18 to ≈ 1.09.

During the April tech demo, a 2 hp Elkhorn 970 prototype removed a 3-ton (≈ 10.5 kW) GPU heat load while drawing just 1.93 kW

When evaluating cooling solutions per megawatt of AI compute, the efficiency differences are stark. Traditional water-cooled chiller plants requiring 7°C supply water consume approximately 170 kW of power with an effective COP of 5.9, utilizing high-GWP HFCs like R-134a and R-410A and resulting in facility PUE of about 1.18. Typical air or adiabatic-cooled chillers perform even worse, drawing 250-270 kW with COPs between 3.5-4.0. By contrast, the Elkhorn 970 v21 hydrovaporization cycle uses just 85 kW, achieving a remarkable COP of 11.8 while using only R-718 (water) as refrigerant and improving facility PUE to approximately 1.09. This translates to 50% energy savings versus high-efficiency chilled-water plants and 65% savings compared to conventional air/adiabatic chillers—squarely within the 50-90% cooling-energy reduction range documented in Elkhorn's technical white paper.

The Elkhorn system's superior performance stems from four key innovations: First, its compressor-free cycle relies on a water pump instead of energy-hungry compressors, avoiding the approximately 25% heat-of-compression penalty inherent in vapor-compression chillers. Second, water's exceptional latent heat as a working fluid allows the system to transfer the same heat load with roughly half the mass-flow and motor power required by HFC systems. Third, operating under vacuum eliminates the need for thick-wall vessels, oil separation hardware, and complex refrigerant management systems that create parasitic loads in traditional plants. Finally, using water instead of synthetic refrigerants removes all high-GWP chemicals from the site, eliminating Scope 1 emissions from cooling operations.

Because the Elkhorn 970 uses pure water (R-718) under vacuum as its working fluid, the deployment removed every kilogram of high-GWP refrigerant (e.g., R-134a/R-410A) from the mechanical room—eliminating leak-check maintenance and direct Scope 1 emissions. For capacity planning purposes, each megawatt of liquid-cooled GPUs using the Elkhorn 970 instead of legacy chillers saves approximately 745 MWh of electricity annually, avoiding roughly 300 metric tons of CO□e (assuming 0.4 kg CO□e/kWh grid intensity). Effectively, this system doubles the compute capacity that can be powered with the same cooling kVA while simultaneously advancing sustainability goals.

"For AI workloads, megawatts are the new currency," said Travis Jank, CEO of KRAMBU. "By halving cooling energy and ditching Freon entirely, the Elkhorn 970 lets us invest more power budget where it matters—into GPUs that accelerate our customers' models."
"KRAMBU's deployment proves that natural-refrigerant systems can out-perform legacy chillers at scale. We're thrilled to move from lab to live production together," added Heather Jones, CEO of Elkhorn Products.

About KRAMBU
KRAMBU, headquartered in Coeur d'Alene, Idaho, specializes in high-performance computing and digital infrastructure. With expertise in data center solutions, enterprise hardware, and systems optimization, KRAMBU delivers scalable solutions tailored to evolving technology needs.

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