ZUTACORE®

OMNITHERM™ TECHNOLOGY

Two-Phase Matrix Flow Boiling™

Pool boiling stability. Flow boiling scalability.
Engineered beyond both.
Inside every OmniTherm™ cold plate.

THINNER ▾ LIGHTER ▾ READY FOR THE NEXT CHIP ▴

11.6mm	300g	0L	75+
COLD PLATE THICKNESS	HYBRID COPPER-ALUMINUM BUILD	WATER IN THE SERVER	DEPLOYMENTS ON THE SAME INFRASTRUCTURE

Chips Are Outgrowing the Cold Plate

Artificial intelligence silicon is becoming hotter, multi-chiplet packages with several temperature limits on one die. Air and single-phase cooling are reaching their limits. Two-Phase Matrix Flow Boiling™ brings together the two proven ways to boil heat away, and goes further than either.

Pool Boiling STABILITY

ZutaCore's foundation, running in commercial high-performance computing for most of a decade. A self-regulating bath boils at the heat source, with low flow and no water.

Channel Flow Boiling SCALABILITY

Pumped liquid boils as it travels through channels in the cold plate, carrying heat away from larger surfaces.

Matrix Flow Boiling BOTH

The strengths of each, plus a region-by-region response for packages with several temperature limits on one die.

Shipping today inside every OmniTherm™ cold plate, the next-generation cold plate within the ZutaCore® HyperCool® solution.

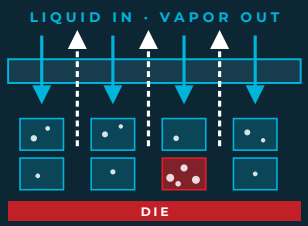
HOW IT WORKS

Liquid down. Vapor up.

01 Feed from above
A distribution manifold delivers liquid onto the die at many points.

02 Vent straight up
Vapor leaves on its own direct path, with no long channels.

03 Boil in a matrix
Many small, independent boiling regions cover the die.



Hot spots boil harder automatically.
No hot-spot map. No active flow control.

Why the Matrix Matters

ZUTACORE

01

Multi-Kilowatt Packages

Liquid reaches the whole die and vapor leaves as it forms, keeping the surface in efficient nucleate boiling at high heat flux.

02

Moving Hot Spots

Each region controls its own boiling. When a hot spot moves, that region boils harder, with no prediction needed.

03

One Fluid Temperature

Fluid stays at a single temperature across the package, set by loop pressure. A flow path of only a few millimeters keeps pumping energy low.

The Outcomes That Matter

Full Performance, No Throttling

Boiling at one set temperature keeps components steady as workloads swing, for sustained throughput and a better return on hardware.

Highest-Density Compute

A boiling stack under 5mm fits single-slot accelerator cards, one-rack-unit servers and underside-of-board parts, in any orientation.

Waterless in the Server by Design

A sealed, dielectric heat transfer fluid at the chip keeps water away from the electronics and risk out of the server.

Low Flow, Lower Cooling Power

0.6–0.7 liters per minute per kilowatt, against 1.5–2.0 for single-phase. Smaller pipes, less pumping energy.

No Water Chemistry

No water treatment, biocides or corrosion inhibitors in the chip or secondary loop. Hybrid copper-aluminum with no galvanic corrosion risk.

Drops Into Proven Infrastructure

Same fluid, connections, racks and coolant distribution units as ZutaCore® HyperCool®, proven across 75+ deployments.

SHIPPING TODAY

OmniTherm™ for NVIDIA RTX PRO™ 6000 Blackwell Server Edition

600W	11.6mm
ACCELERATOR POWER	DUAL-SLOT THICKNESS

First deployments underway. Single-slot version to follow, with more OmniTherm™ cold plates in development.

BUILT FOR THE CHIPS COMING NEXT

TODAY
OmniTherm™ cold plates attach to the package.

NEXT
Boiling regions built into the chip package.

THEN
Cooling at the die, designed with silicon roadmaps.

Next and Then are part of a development program open to semiconductor, packaging and server partners.

Cool Every Region. Throttle None. Scale Sooner.

TALK TO AN ENGINEER · ZUTACORE.COM

ZutaCore · 950 Tower Lane, Suite #120, Foster City, CA 94404 · info@zutacore.com