ZUTACORE®

Zero Water. Lower Emissions. Full Performance. 100% Heat Reuse Ready

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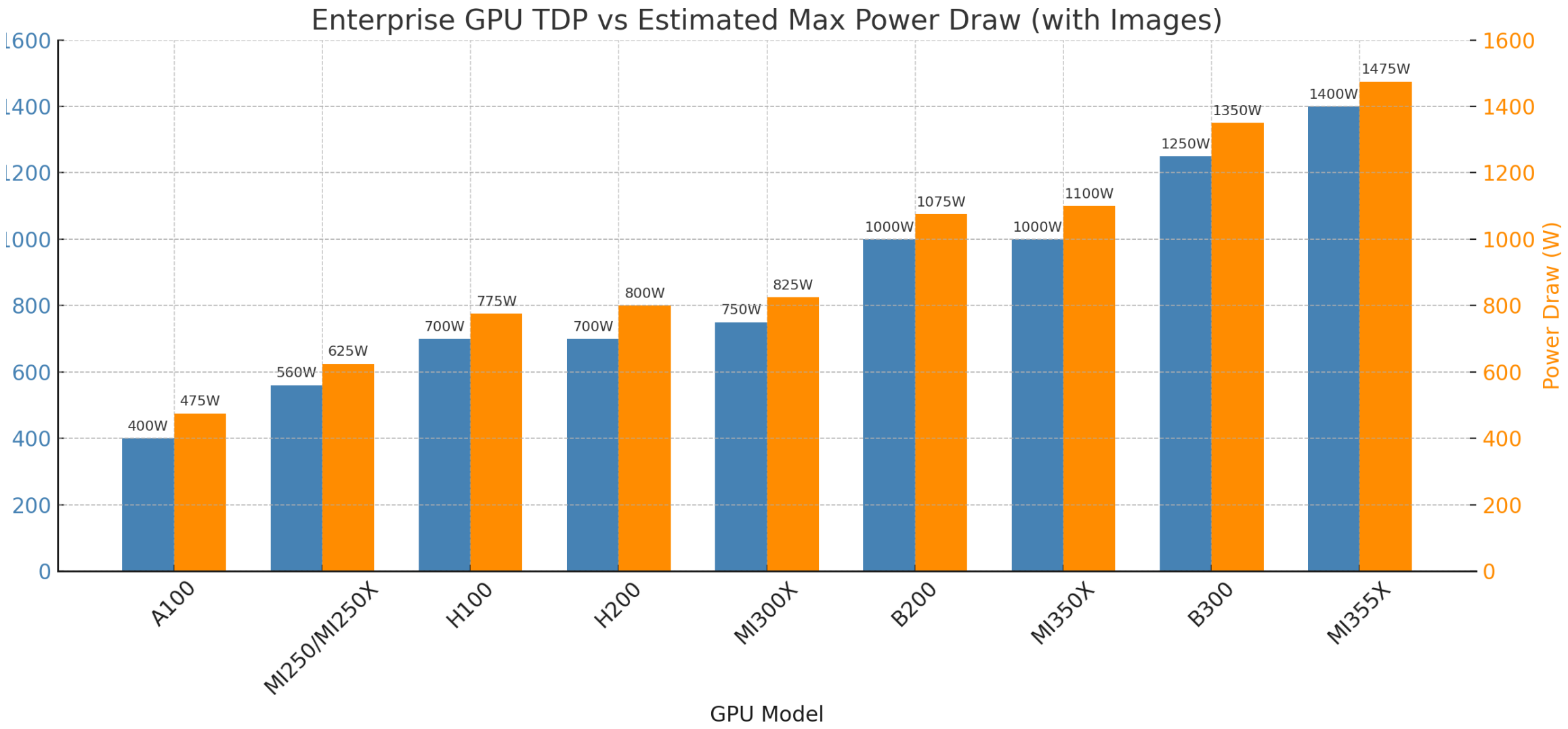
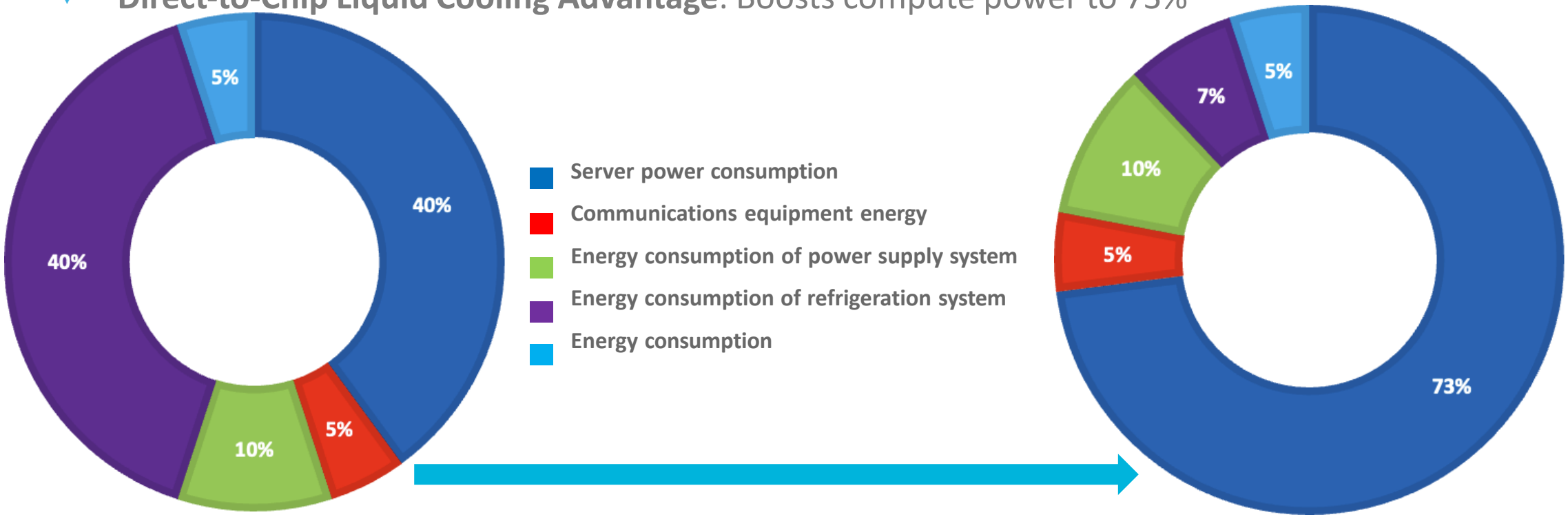
GPU Heat & Power Consumption



Data Center Cooling Must Change

- **Cooling = Energy Drain**
- **~40% of energy wasted** on cooling & ventilation
- **Air Cooling Inefficiency:** 1W compute → +1W cooling
- **Direct-to-Chip Liquid Cooling Advantage**: Boosts compute power to 73%



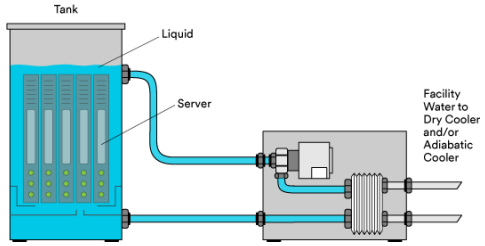
When moving to direct-to-chip liquid cooling, computing moves from 40% to 73%

Source: https://www.mdpi.com/2071-1050/9/4/664

Direct-on-Chip Liquid Cooling methods

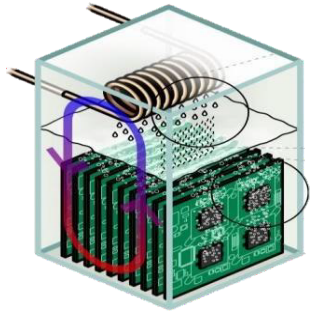
Safety & ease of use

(Oil) Immersion



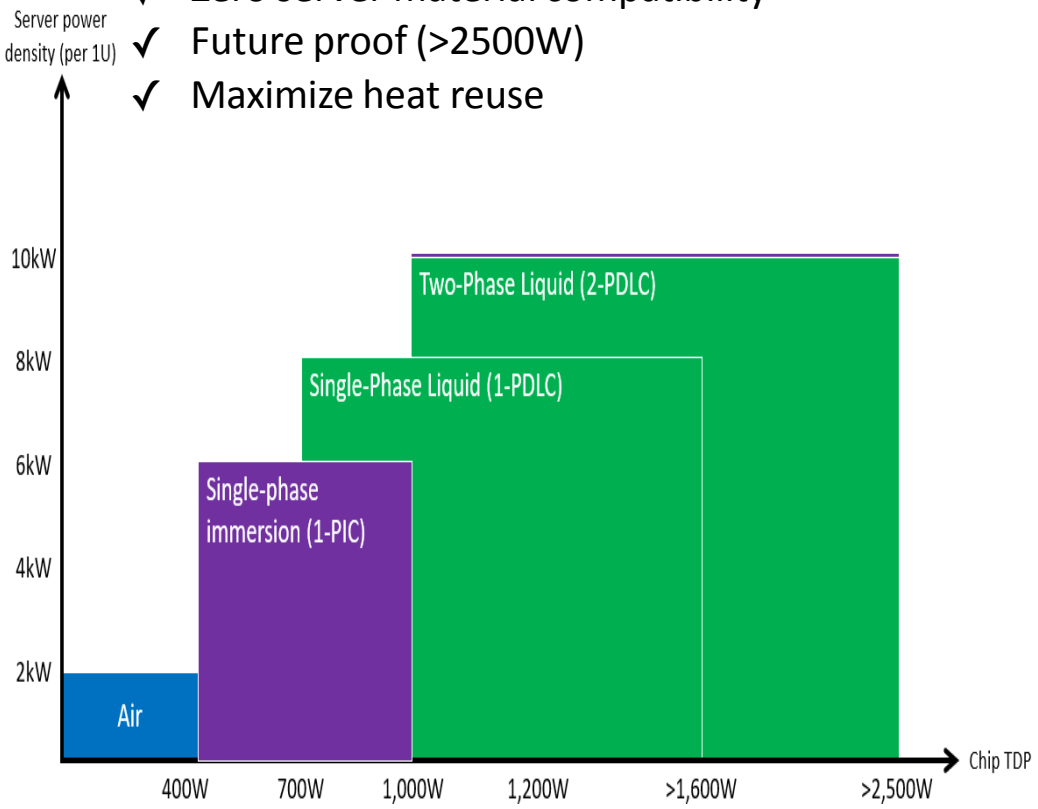
Water Cold Plate

Two Phase Immersion



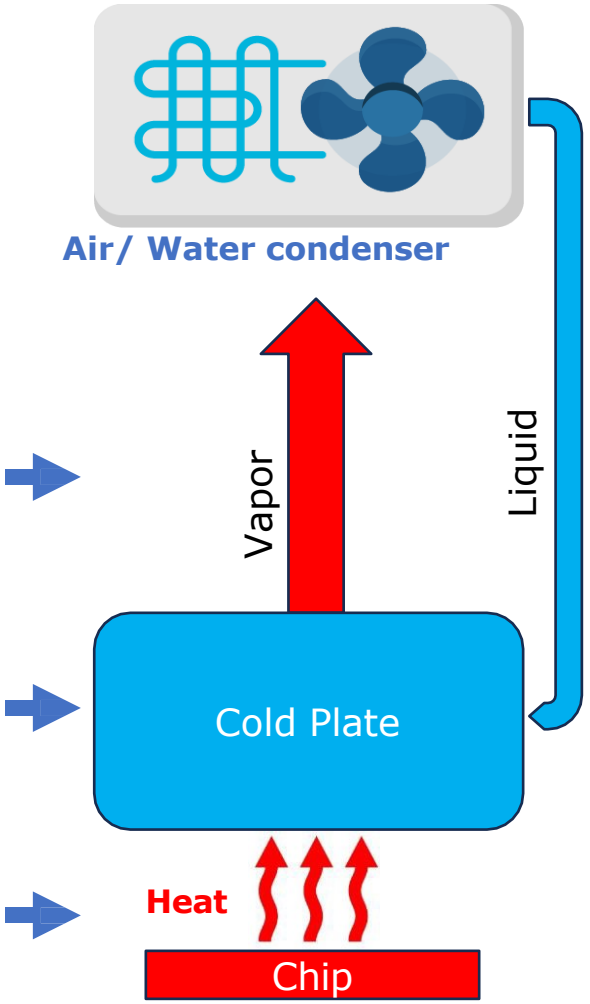
Two phase cold plate

- ✓ **IT safe** Dielectric (waterless)
- ✓ No data center changes
- ✓ Zero server material compatibility
- ✓ Future proof (>2500W)
- ✓ Maximize heat reuse



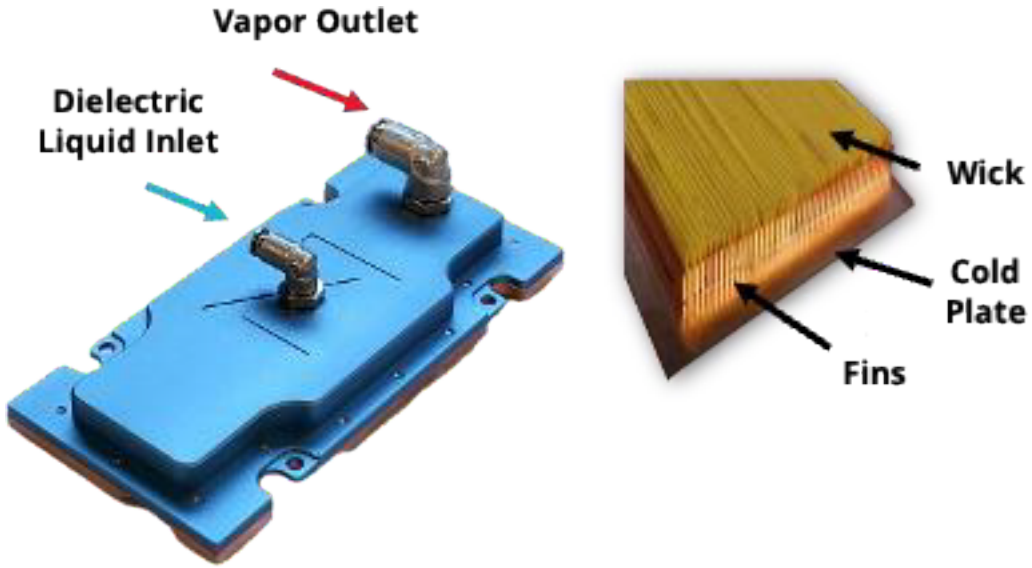
Two phase DLC – Cool by Boiling

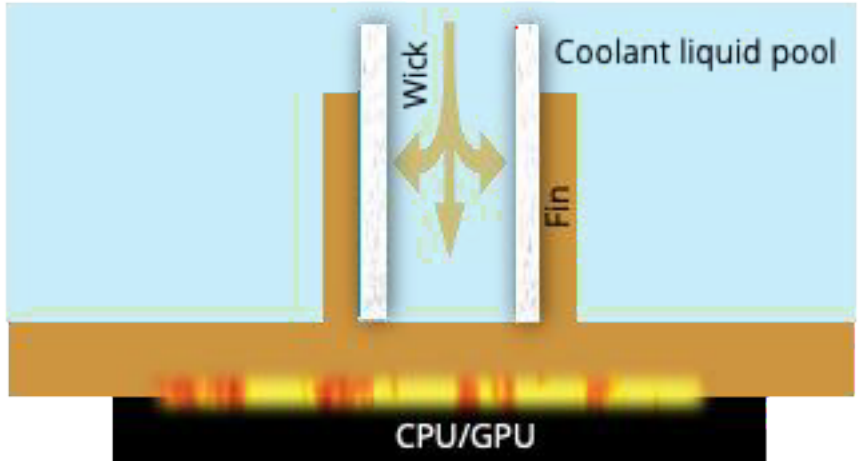
- Fluid boils and turn into vapor
- **Maintaining constant temperature**
- Regardless of intensity of heat source



Waterless POOL Boiling

- **Direct-to-chip, two-phase cooling** — heat turns liquid to vapor on the chip for maximum efficiency
- **Absorbs extreme thermal loads** — far beyond single-phase systems
- **Self-regulating & zero-latency** — keeps chips at safe, stable temperatures under any workload
- **AI-ready resilience** — handles rapid power swings without thermal shocks
- **Longer silicon lifespan** — uniform cooling reduces stress and extends hardware life
- **Dramatically cuts energy use** — outperforming legacy air and single-phase cooling





HyperCool® - End-to-End, Two-Phase Cooling Built for AI

Two-Phase Cold Plates

- Manages heat dissipation
- 2500+ Watts of TDP
- Cuts power usage by 82%
- PUE of ~1.04

Heat Rejection in-rack CDU

- 120kW in rack cooling
- Self-contained, fully autonomous with sensors, pumps and multi-leak detection
- No data downtime

Two-phase Sidecar

- 240kW cooling capacity
- 80% less pumping power than single-phase
- 0.3 liters of heat transfer fluid per minute per kW*
- 20-40% higher heat exchange efficiency

Manifold

- Integrates seamlessly with standard and custom racks
- Up to 42 servers for left and right installation

Software Defined Cooling

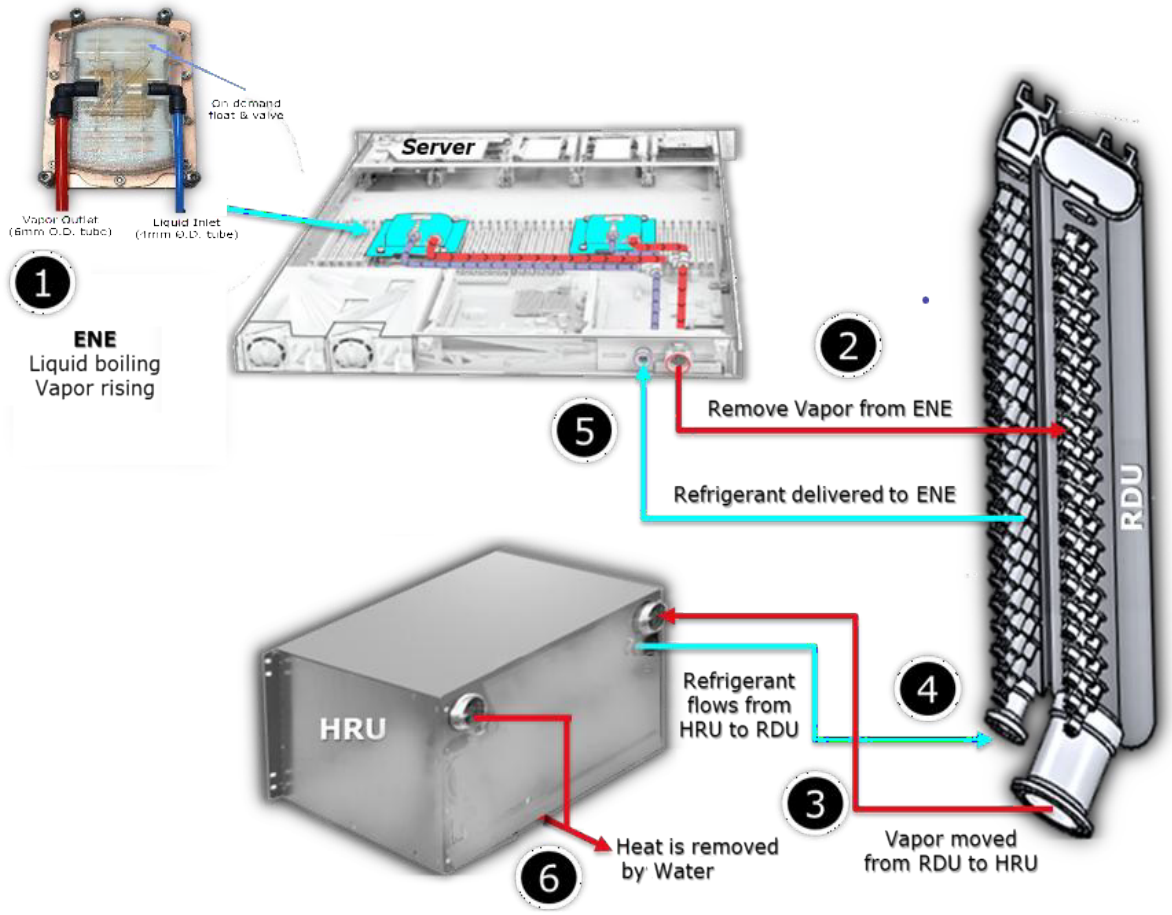
- Automates resource provisioning and management
- Server performance data and analytics

*Compared to 1.5 liters per minute per kW for single-phase

Two phase direct on chip system components

A direct on chip cooling system consists of:

- Dielectric Cold Plate, based on pool boiling evaporator (DCP)
- Heat Rejection Unit (CDU) functioning as a condenser
- Manifold for refrigerant distribution and vapor collection



End Of Row CDU – 1.2MW
High level specifications

Heat rejection

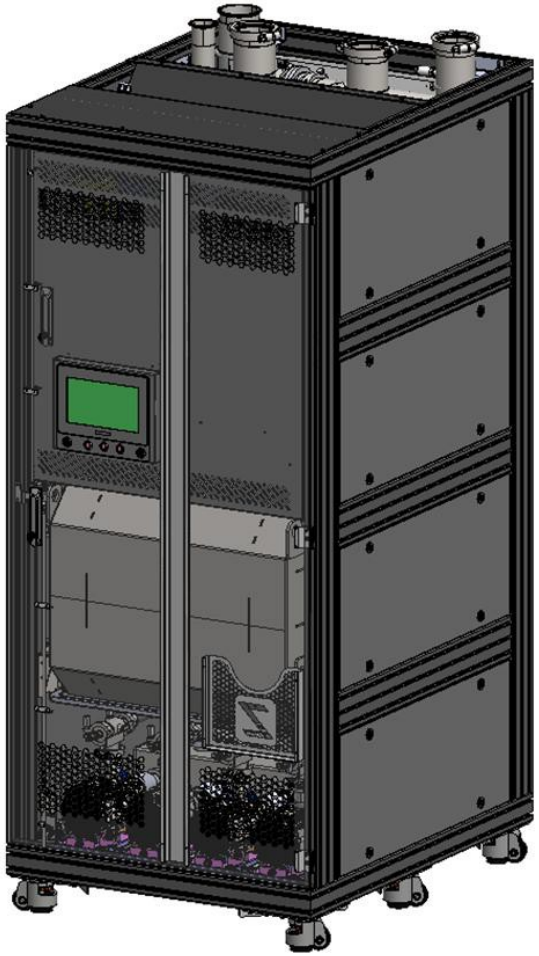
- Heat rejection capacity- from 50KW - 1.2MW
- Water inlet temperature- 25°C – 30°C
- Maximum water pressure drop< 1 [bar]
- Facility water loop (4”, ANSI150, PN 10)

Power and mechanical specs

- Power - 480Vac/3PH/60Hz, 400Vac/3PH/50Hz
- Dimensions- 950X2300X1200mm (WxHxD)
- Weight – Empty ~1100kg, full ~1700kg
- Power consumption: <5kW (estimated)

Redundancy

- Pumps, power supply - N+1, support hot swap
- System level – 2N/N+1



Proven Partnerships Across the Data Center Ecosystem

Chip Manufacturers

intel NVIDIA

tsmc AMD

Two-phase pool-boiling cold plates

- NVIDIA HGX™ H200
- NVIDIA HGX™ B200
- AMD Instinct™ Mi325X
- AMD Instinct™ Mi355X

Server OEMs/ODMs

ASRock Rack ASUS

COMPAL DELL

ingrasys Netweb TECHNOLOGIES

PEGATRON wiwynn

Factory-warranted with **ZutaCore™ inside:**

- AsRockRack® NVIDIA HGX™ H200
- **Compal** AMD Instinct™ MI325X GPUs and the upcoming MI355X
- **Compal** 4-Node Dual Processor

Data Center & Energy Ecosystem

BOSTON Servers | Storage | Solutions A DIVISION OF SOURCECODE

Carrier

CHATSWORTH PRODUCTS

INTERNATIONAL COMPUTER CONCEPTS

MITSUBISHI HEAVY INDUSTRIES

Munters

PARK PLACE TECHNOLOGIES

STÄUBLI

UNICOM Engineering, Inc. A Division of UNICOM Global

World Wide Technology

Key Customers

EQUINIX

neevcloud

Oregon State University

SoftBank

WWU MÜNSTER

IN SUPREMÆ DIGNITATIS 1343

Market-Proven Technology Driving the Future of Cooling

YOTTA

Yotta discovered its **need for an efficient cooling solution** beyond the air cooling they were used to

Yotta considered air cooling and single-phase cooling as a solution first but quickly realized they **did not have the air movement for proper installation**

ZutaCore provides an impressive solution with simple installation and no leak risk

Oregon State University

Oregon State University research labs had **run out of power and space** in their server room

The research department looked into various liquid cooling solutions but found benefit to ZutaCore as it was the **only retrofit technology with low risk**

ZutaCore technology resulted in a 20% performance lift with providing a sustainable outcome

Munters

Munters and ZutaCore have developed a strategic partnership to tackle the challenges of **managing heat more efficiently and sustainably**

Their partnership integrates Munters' SyCool systems with ZutaCore's Hypercool technology to deliver an **unmatched end-to-end solution**

ZutaCore and Munters are supporting an ecosystem that goes from dirt to tokes

Key Takeaways – 2-Phase Pool Boiling

Waterless Cooling
No risk of leaks damaging IT equipment. Uses a non-conductive, dielectric fluid to transfer heat safely and directly from the chip.

Handles Extreme Power Densities
Cools processors exceeding **2800W**, supporting AI/HPC systems and enabling rack densities over **100kW**.

Massive Cooling Energy Reduction
Cuts cooling energy use by **up to 80%**, delivering PUE as low as **1.03** — ideal for reducing OPEX and energy waste.

Heat Reuse Ready
Captures high-grade heat, with potential for **up to 100% reuse** via district heating or hot water systems — supports circular energy models.

Flexible Deployment
Compatible with both **air-cooled (HRU-A)** and **water-cooled (HRU-W)** systems. Easily integrates into existing or new data centres without major redesign.

Server-Agnostic & Pre-Integrated
Works with all major server platforms and is available **pre-installed and warrantied** from OEMs like **ASRock Rack** and **Compal**.

Closed-Loop, Low Maintenance A fully self-contained system that doesn't require top-ups or facility water loops. Easy to maintain and service with minimal moving parts.

ESG & Sustainability Focused
Zero water usage, significantly reduced emissions, and supports dense computing with a smaller carbon and grid footprint — aligned with net-zero goals.

Warranty & Support Assured
Backed by trusted third-party partners. Delivering end-to-end reliability, seamless deployment, and guaranteed service coverage for peace of mind.

Thank You!

www.zutacore.com Subscribe to Zutacore's Blog and follow us on social media

Transforming Data Centers into AI-Ready Powerhouses

Cools AI

- Breaks through thermal limits
- Cools 2,500+W AI silicon
- 10°C inlet advantage

Eliminates Water in data center cooling

Cuts Energy Costs up to 82% vs. air

Boosts Performance

- Scalable by design
- Increases compute density to 240kW per rack

Zutacore's HyperCool® Approach

- ✓ Direct-to-chip, two-phase, on-demand cooling
- ✓ Waterless Dielectric coolant (non-conductive, non-corrosive)
- ✓ Liquid turns into vapor = 10X more efficient cooling
- ✓ Each Cold Plate is connected in parallel and self-regulated
- ✓ Closed-loop system