ZUTACORE®

Liquid Cooling for a Sustainable Data Industry

A direct-on-chip, waterless, dielectric liquid cooling solution. Delivers 10x more compute, 50% TCO reduction, 100% heat reuse, and reduces C02 emissions for a sustainable data center.

## Transforming the Data Industry to Zero Emissions

- Data industry sustainability has risen to the top for decision makers, calling for significant technology transitions to use less water, power and land.

- ZutaCore® is leading the transformation with a direct-on-chip, , waterless, dielectric liquid cooling solution that moves large amounts of heat off the processors and away from servers.

- A member of the Sustainable Digital Infrastructure Alliance, we support industry initiatives to enable a sustainable digital infrastructure by 2030.

- ZutaCore is a global company with its R&D center in Israel and offices in the US, Europe and Taiwan.

Data Centers Are Feeling the Heat

More powerful chips and greater computer density are creating more heat than ever and pushing air cooling to its limits.

> "With AI and other high-performance computing applications, the proportion of higher density racks in data centers is going up so unless we find a way to address these needs we will continue to miss growth areas. That's where liquid can come in."
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> **Suresh Pichai, Director, Equinix**
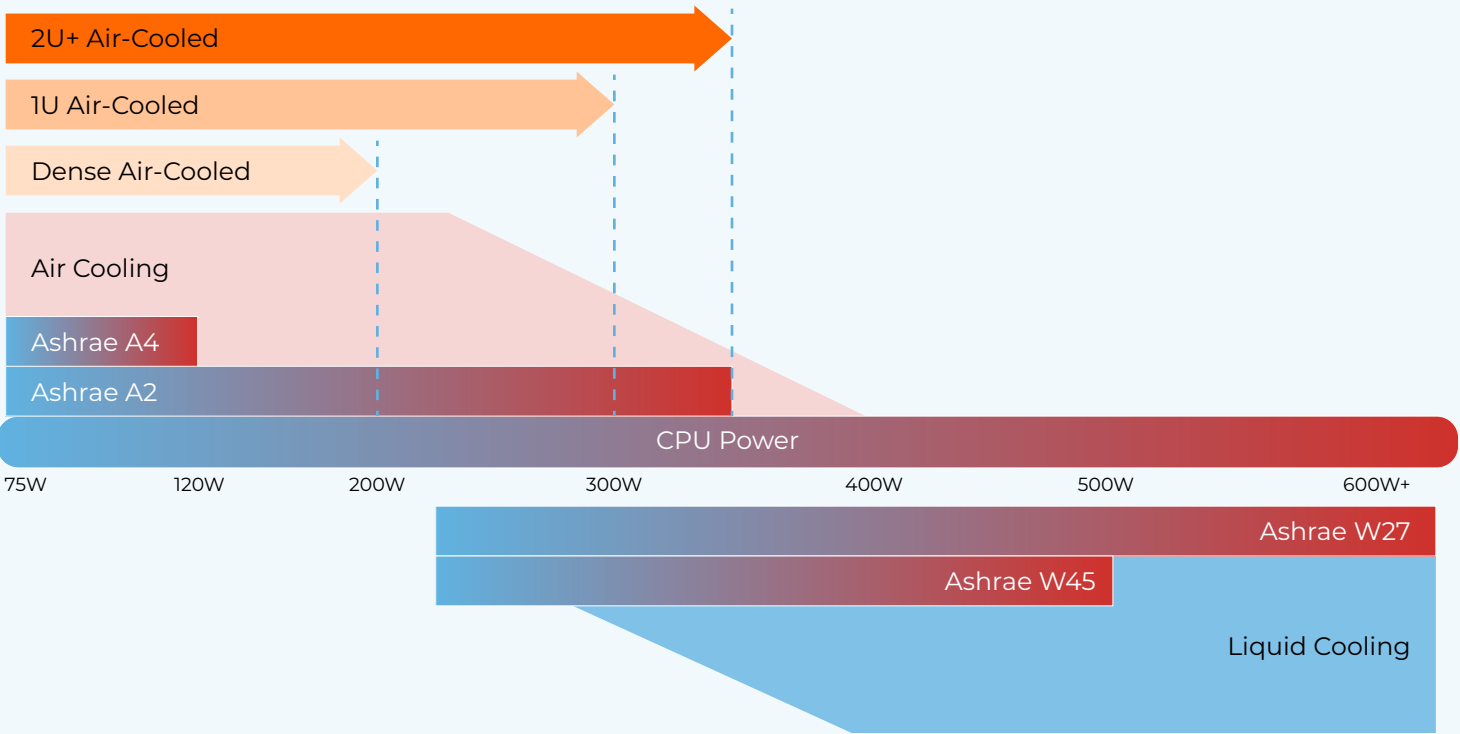
Performance- and sustainability-minded operators alike are turning to liquid cooling. Water has a much higher specific heat capacity (>600W) than air (<400W), making it a far better coolant than ambient air cooling.

Liquid cooling supports:

Smaller server sizes	Higher TDPs	Lower fan speed and noise
Higher ambient temperature	Lower overall power draws	Reduces CO2 emisions

But current liquid cooling solutions have proven to be unsafe, impractical and, ultimately, not future-proof as they use water as a coolant. A single drop of water in the wrong place can cause permanent damage to processors and lead to corrosion if used over long periods of time.

The answer? Direct-on-chip, waterless, dielectric liquid cooling. Highly effective at managing heat loads, dielectric liquid cooling allows for light, compact design and higher density processors. It has no risk of damaging IT hardware and requires no monitoring or maintenance.

> "When implemented on Intel technologies, we found ZutaCore's HyperCool to be a reliable, scalable, and cost- effective liquid cooling technology, well suited for both brown- and greenfield projects."
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> **Earl Dodd, Global HPC Business Practice Leader at WWT**

ZutaCore HyperCool: Liquid Cooling, Without Water

ZutaCore® HyperCool® is an innovative direct-on-chip, waterless, dielectric liquid cooling solution that unlocks the power of sustainable cooling with on-demand, self-regulated cooling. It uses a direct-on-chip method, one of the most effective forms of cooling, to apply coolants directly to the chips in order to extract and disperse heat. No water is used in the system, so equipment is protected from corrosion and other water-related threats.

HyperCool is scalable and can be deployed in new or retrofitted data centers. It supports up to 100kW per rack of computing power when used with a 3U or 6U in-rack cooling distribution unit. The innovative design of HyperCool allows heat re-use in the data center producing the lowest PUE and highest efficiency in any climate.

HyperCool is a complete, closed-loop solution for cooling a server's heat-emitting components such as the CPU, GPU and FPGA.

The system includes:

· **HyperCool Dielectric Coldplate** - a direct-contact, self-regulated, pool-boiling based evaporator enabling networking and simultaneously cooling all chips, on-demand.

· **HyperCool Manifold** - a self-contained manifold that fits into standard and custom racks.

· **HyperCool Heat Rejection Unit (HRU)** - provides easy access and no refrigerant piping above or below racks.

· **HyperCool Software Defined Cooling (SDC)** - control and optimization software.

50% Less Energy, 4X the Processing Capacity

50% LESS ENERGY	4X PROCESSING CAPACITY	50% LESS SPACE	0% RISK OF MELTDOWN	50% CAPEX REDUCTION	>1000W CHIP COOLING

Commercial Benefits

✔ Eliminate hot spots in racks and the data center

✔ Fast and easy retrofits with zero disruption to the data center

✔ Cool increasingly dense CPUs, racks and data centers

✔ Enable the design of new, high-density processors, servers and racks

✔ Accelerate ubiquity of IoT, 5G, AI, edge, autonomous vehicles

Technical Benefits

✔ Cool processors greater than 1,000W and heat-flux greater than 90 W/cm^2

✔ Improve energy efficiency with partial PUE as low as a constant 1.02

✔ Direct contact, on-demand and self-regulated cooling

✔ Low-pressure system

✔ Reduced boiling incipient temperature and operation in higher ambient climate temperatures

"We've joined forces with ZutaCore for our first install into our production environment of their dielectric direct-on-chip (non-water) liquid-cooling technology. Their HyperCool solution is a simple, quick and easy way to scale to help us advance our climate neutral data center goal."

Zac Smith, Global Head of Edge Infrastructure Services at Equinix

Tested, Validated, and Approved by Industry Leaders

HyperCool was tested and validated in NTS Labs, CA in 2018. We've partnered with leaders across the ecosystem to achieve the highest levels of safety, reliability, and sustainability.

intel · AMD · POWERED BY DELL Technologies · Valeo

CPI CHATSWORTH PRODUCTS · World Wide Technology · EQUINIX · RITTAL

BOSTON Servers | Storage | Solutions · MACTRONICS.IT The Storage Expert Since 1970 · nextron Building Your Solutions · TSS Technical Support Solution

For more information please visit:
http://www.zutacore.com.