Opteon™

Next Generation Data Center Cooling: **Unlocking Efficiency, Enablement, and Savings**

Case study data:

Advanced cooling technologies in data centers can generate up to[1]

17% lower energy consumption[2]

16% reductions in capital expenditure[2]

88% reduction in facility-related operational costs[2]

40% lower Total Cost of Ownership[2]

In a world driven by AI and high-performance computing, data centers face increasing challenges in cooling demands from **next-generation processing chips and operational efficiency.**

Syska Hennessy Group · liquid stack · Chemours™

Industry leaders in data center cooling have collaborated on a new **Total Cost of Ownership (TCO) tool** to evaluate next-generation cooling technologies that have shown promise in addressing industry challenges.

These advanced cooling technologies significantly **lower energy and water usage,** optimizing cost and space across diverse climates.

The TCO tool uses a foundation of established data, ensuring transparency and reliability in every calculation.

A joint study applied data center design best practice for cooling systems **including individual design requirements by technology.**

Two-Phase Immersion Cooling (2-PIC)	Single-Phase Immersion Cooling (1-PIC)	Direct-to-Chip (DTC)
Fluid Coolers	Fluid Coolers	Fluid Coolers
Chillers	Chillers	Chillers
Facility Water Pumps	Facility Water Pumps	Facility Water Pumps
	Tech. Fluid Pumps	Tech. Fluid Pumps
Immersion Tanks	Immersion Tanks	Computer Room Air Handler
		Server Fans

The **TCO tool was used to analyze impacts on energy, water, and costs** to assess efficiency in a range of climates.

In the US location study results 2-PIC demonstrate a lower:

- **Power Usage Effectiveness (PUE)** Up to around **12%** lower energy consumption
- **CAPEX** Reductions of up to **16%** in capital expenditure
- **OPEX 74%** in facility-related operational costs

Two-Phase Immersion Cooling emerges clearly as the optimal solution, **offering unrivaled energy efficiency plus power, water usage effectiveness and the lowest total cost of ownership across global climates.**[2]

Learn about optimizing Data Center efficiency

Access the full report and explore how these insights can drive your operations toward efficiency and sustainability.

Opteon™ 2P50 a Developmental Dielectric Fluid*

by Chemours

*Pending regulatory approval

A breakthrough high-performing fluid for Two-Phase Immersion Cooling

Nearly eliminates cooling-related water consumption.[2]

Reduces cooling energy use by more than **90%**[3]

Reduces data center physical footprint by nearly **60%**[3]

[1] When compared to single phase immersion and single phase direct to chip.

[2] Analysis results in 4 global locations; US, UAE, Denmark and Singapore from the study *Comparison of Server Liquid-Cooling Technologies, Syska Hennessy Group, Inc. March 2024*

[3] Compared to traditional air-cooling technologies.

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