

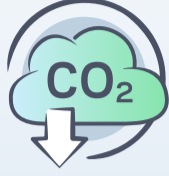
A New Standard for Data Center Energy Efficiency

Two-Phase Immersion Cooling Using Opteon™ 2P50 Developmental Fluid*

Two-phase immersion cooling (2-PIC) technology, when combined with new low GWP fluid, has the potential to be the most sustainable data center cooling solution.¹



Lowest energy consumption



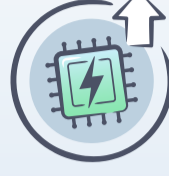
Lowest CO₂ equivalent emissions



Lowest water usage



Lower cost of ownership than air-cooled systems²



Best cooling capability for ever-increasing TDP

A GROWING CHALLENGE

Worldwide, data centers consume:

~300 
terawatt-hours (TWh) of electricity³

While producing nearly: **1%**

of energy-related carbon emissions⁴

The global data infrastructure market is projected to grow at a CAGR of

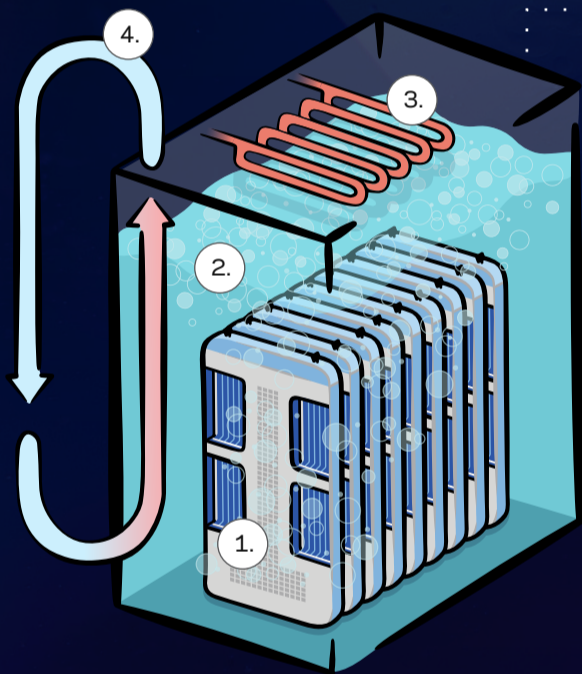
12%

through 2030⁵



THE SOLUTION

How 2-PIC works



1 Electronic equipment is placed inside a sealed tank filled with Opteon™ dielectric fluid.

2 The heat from the electronic equipment causes the fluid (thanks to its ideal boiling point) to boil.

3 Vapor rises and condenses back to a liquid when it makes contact with the condenser coils.

4 The fluid returns to the pool.

Benefits vs. Conventional Air/Water Cooling



Negligible water usage

Reduces water consumption by 99%.



Longer hardware life

Doubles the lifespan of IT equipment vs. air cooling.



Lower energy usage

Boosts data center energy efficiency by as much as 40%.

Reduces the energy consumption of the cooling system by up to 90%.



Improved system reliability

Fewer mechanical components (fittings, added filters, pumps, etc.) versus other cooling technologies, including cold plate and single-phase immersion systems. Also reduces physical footprint by up to 60%.



Higher power density

Can increase potential power density by a factor of 10 while keeping overall temperatures lower.

Two-phase immersion cooling using dielectric fluids is critical technology for:

Advancing next-generation computing speeds

Competing cooling technologies simply lack the necessary heat-transfer capabilities required to enable high-powered computing and ever-faster processing speeds.

Realizing circularity

Two-phase immersion cooling fluids can operate with minimal leaks and enable the reprocessing/reuse of existing fluid—reducing environmental impacts and maximizing circularity.

Achieving climate goals

Realizing the aims of the EU Green New Deal, REPowerEU, and green data center initiatives requires a move away from competing cooling technologies, which consume far too much energy and water.

Attaining industry growth targets

Two-phase immersion cooling technology dramatically reduces the square footage, cooling infrastructure, and water required to operate a data center, reducing operating expenses and maximizing capital investments.

¹ "Two-Phase vs. Single-Phase Immersion Cooling Fluids: Deconstructing Myths with Science," LiquidStack in association with Chemours, liquidstack.com, May 2022, pg. 2.

² Ibid., pg. 16.

³ "Data Centres & Data Transmission Networks," IEA, <https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks>.

⁴ Ibid.

⁵ "Global Data Center Infrastructure Market Size, Share to Grow \$120B by 2030," Spherical Insights, <https://www.globenewswire.com/en/news-release/2023/02/14/2607416/0/en/Global-Data-Center-Infrastructure-Market-Size-Share-To-Grow-120-Billion-By-2030-CAGR-12.html>.

(*) pending regulatory approval

The information set forth herein is furnished free of charge and based on technical data that Chemours believes to be reliable. Chemours makes no warranties, express or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents or patent applications.

©2024 The Chemours Company FC, LLC. Opteon™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company.

