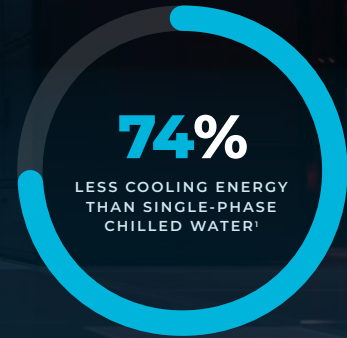


WATERLESS DATA CENTER COOLING

Zero Water. A Quarter of the Energy.



WUE = 0 FOR COOLING · TWO-PHASE · DIRECT-TO-CHIP

WUE 0

WATER USAGE FOR COOLING
NO FACILITY COOLING WATER

1.03

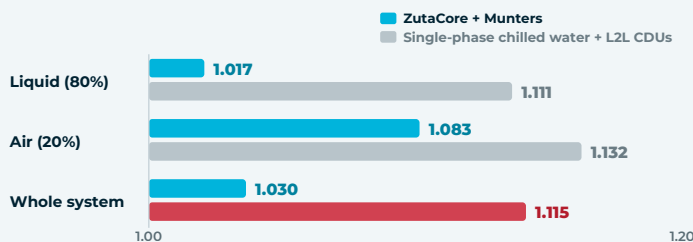
ANNUALIZED PPUE
VS 1.115 SINGLE-PHASE¹
~4×

LESS FLOW TO THE SERVER
VS SINGLE-PHASE PG25²
43.5°C

OUTDOOR AMBIENT WITH
COMPRESSORS OFF³

ANNUALIZED PPUE · DULLES, VA¹

80% of heat load cooled by liquid, 20% by air · hour by hour, full year



500 KW, SIDE BY SIDE²

ZutaCore two-phase vs single-phase PG25

Supply temperature

42.2 °C

30 °C

Flow to the servers

51 GPM

197 GPM

Pump head

15-20

65-70 PSID

WHAT IT MEANS ON SITE

No cooling water. Lower energy. Future-ready.



No facility cooling water

WUE = 0 for cooling. No CDU, no facility water loop, no treatment, dosing or flushing.

WUE = 0

No CDU



Lower energy

~74% less annual cooling energy than single-phase chilled water. Compressors off up to 43.5 °C.³

pPUE 1.03

¼ pump head



Future-ready deployment

Simpler infrastructure for high-density AI, with a path to faster, lower-risk deployment.

High-density AI

Faster to deploy

TEST SETUP

REFERENCE DESIGN

625 kW IT
80% liquid, 20% air

LOOP

One two-phase fluid
No CDU

HEAT REJECTION

500 kW
5 × 125 kW, N+1

ENERGY MODEL

Dulles, VA
hour by hour¹

BASELINE

Chilled water
L2L CDUs¹

Munters

PRESENTED AT ASHRAE 2026

¹ Munters and ZutaCore, ASHRAE 2026: annualized pPUE modelled hour by hour on Dulles, VA weather, 80% of heat load cooled by liquid / 20% by air, vs a best-in-class single-phase plant: air-cooled chiller with L2L CDUs at 1.5 L/min per kW. Modelled results; reference-design proof of concept planned for Q1 2027. WUE = 0 applies to the cooling architecture only. Figures vary with configuration and site. ² Munters 500 kW heat rejection comparison vs PG25. ³ Munters SyCool passive mode, no CDU: pPUE 1.055 at maximum ambient before compressors run.

Build Denser. Cool Waterless. Scale Sooner.

START THE CONVERSATION · [ZUTACORE.COM](https://zutacore.com)