Highly-efficient Air Cooling for High-Density Deployments

**Delta Cube** (Delta³) arrays capture and remove heat at its source, resulting in a hyper-scalable and ultra-efficient environment that dynamically adapts to IT loads. The Delta³ design improves infrastructure efficiency and enables customers to Expand on Demand, accommodating densities of up to 50 kW per rack. The cooling system is based on innovative technologies addressing three aspects of thermodynamics: heat absorption, heat transport and heat rejection.

**Heat Absorption**

The Delta³ removes heat at the source, utilizing anemometry to measure velocity between hot and cold aisle to enable a higher Delta-T. Hot air is drawn from the racks exhaust and channeled through our highly efficient microchannel coils.

- Exponentially greater heat absorption than traditional environments
- Absorbs Delta-Ts as high as 45°F
- Accommodates high, low and mixed rack power capacities
- Facilitates scale-up/scale-in-place
- Higher efficiencies: fan power is reduced to 1% of IT load versus 10% for a typical CRAH or CRAC unit

**Heat Transport**

The heat is transported from the Delta³ to Aligned’s chiller units via chilled water loop in dramatically smaller diameter pipes than traditional systems.

- Closed loop system eliminates use of added outside water
- Combined with a state-of-the-art waterless heat rejection system to create a sustainable, waterless solution

**Heat Rejection**

Our patented and award-winning data center cooling technology removes heat, rather than pushing cold air into the data hall.

The Delta³ array provides 350 kW of heat rejection in just four feet, compared to 38 feet of traditional CRAH units. It also offers industry-leading Power Usage Effectiveness (PUE).

**Delta³ Cooling System**

- Flexibility, adaptability and reliability at any load
- Efficiency in any climate with an industry-leading PUE
- High, mixed and variable rack densities of 1-50kW in the same row
- Increase density without reconfiguring infrastructure or stranding capacity
- Consume less space, electricity and 0 water for significant cost savings
- Easily integrates with DeltaFlow to accommodate AI/ML/HPC deployments

**Aligned 1MW Data Hall**
- 2,000 ft²
- 1 MW
- 10 Cabinets per row
- 50 kW per cabinet
- 2 Rows

**Legacy 1 MW Data Hall**
- 6,400 ft²
- 12 CRACs
- 1MW N+2
- 16 Cabinets per row
- ~6.25 kW per cabinet
- 16 rows
Advantages of Aligned’s Delta³ Cooling Technology

Reliability
We deconstructed the standard chiller plant and put the major components in the most efficient and reliable places, eliminating complexity in areas where most data centers fail.

- Delta³ requires minimal scheduled maintenance and is continually monitored with real-time data to provide our service department preventative maintenance alerts.

Hyper-Scalability
Our technology is incrementally scalable which allows you to deploy what you need, where and when you need it, and reconfigure as your needs change.

- Pre-fabricated components for easy, fast and efficient deployment.
- Scale vertically or horizontally and support 1-50kW per rack within the same row.

Responsiveness
IT loads can vary. Our technology quickly and easily responds, and optimizes in real-time.

- Delta³ Arrays are close-coupled with the racks, so the heat removal system instantly ramps up and down based on server demand.
- Variable fan speeds and pumps respond in real-time to changing loads, so your system is responsive to today’s and tomorrow’s needs.

Sustainability
Our cooling system delivers efficiency at any load, in any climate, and regardless of location to support your stewardship goals.

- The system utilizes less energy and 0 water.
- Reduces environmental impact and lowers your Total Cost of Ownership (TCO).

Aligned offers a standard delivery model that leverages our advanced supply chain methodology, Delta³ cooling system, and industry partners.