

BUSINESS DECISION COMPARISON REPORT: DATA CENTER HVAC INFRASTRUCTURE
Prepared by Proposal Compare | ProposalCompare

BUSINESS DECISION

The data center developer is evaluating four competing mechanical engineering bids for a 2 MW mission-critical data center cooling installation. Key evaluation criteria include chiller technology (centrifugal vs magnetic vs indirect evaporative vs modular DX), redundancy architecture (N+1 vs 2N vs N+2), annualized PUE (Power Usage Effectiveness) impact, water consumption, upfront capital expenditure, and deployment timeline.

PROPOSAL COMPARISON MATRIX

FEATURE: Core Cooling Technology & Plant Topology

Bid A (Vertex Thermal) — (3) 300-Ton variable-speed centrifugal water-cooled chillers with open cooling towers (N+1).

Bid B (CryoCool) — (4) 200-Ton oil-free magnetic bearing centrifugal chillers with closed-circuit coolers (2N Redundancy).

Bid C (PolarAir) — Indirect Air-to-Air Heat Exchangers (IAHE) with evaporative boost (N+2 redundancy).

Bid D (Titan Industrial) — (20) 35-Ton perimeter precision CRAC units with remote glycol dry coolers (N+2).

SIGNIFICANCE: Bid B offers ultra-efficient oil-free magnetic technology with true 2N fault tolerance, whereas Bid C dramatically slashes water usage using air-to-air heat exchange.

FEATURE: Air Distribution & Containment Delivery

Bid A — (12) Chilled water CRAH units with EC fans and overhead return duct collars.

Bid B — (16) High-efficiency CRAH units with dual-path power feeds and ATS switching.

Bid C — Modular air handlers delivering directly to containment pods without raised floors.

Bid D — (20) Upflow precision CRAC units utilizing a pressurized raised floor plenum.

SIGNIFICANCE: Bids A and B utilize standard enterprise CRAHs, while Bid C eliminates raised floors entirely and Bid D uses a distributed perimeter CRAC layout.

FEATURE: Redundancy, Reliability & Water Impact

Bid A — N+1 redundancy; standard water consumption via open cooling towers.

Bid B — 2N concurrent fault tolerance (Tier III+ compliant); closed-circuit fluid coolers.

Bid C — N+2 redundancy; 85% water reduction via dry air-to-air heat exchange modes.

Bid D — N+2 modular redundancy; closed-loop glycol system (zero water consumption for heat rejection).

SIGNIFICANCE: Bids C and D excel in water conservation, while Bid B provides the highest level of electrical and mechanical redundancy for Tier III/IV SLAs.

FEATURE: Pricing, Timeline & Warranty

Bid A — \$1,450,000 | 24-week timeline | 1-year parts/labor, 5-year compressor warranty.

Bid B — \$1,890,000 | 28-week timeline | 3-year comprehensive warranty with preventative maintenance.

Bid C — \$1,320,000 | 20-week timeline | 2-year warranty with IoT remote diagnostics.

Bid D — \$1,280,000 | 18-week timeline | 1-year standard mechanical warranty.

SIGNIFICANCE: Bid D is the fastest and least expensive upfront, whereas Bid B represents the premium high-uptime institutional standard.

PRICE AND SCOPE ANALYSIS

- Lowest Cost: Bid D (\$1,280,000) utilizing modular perimeter CRACs and glycol dry coolers.

- Highest Spec / Most Resilient: Bid B (\$1,890,000) featuring magnetic bearing chillers and 2N redundancy.
- Most Sustainable / Water-Efficient: Bid C (\$1,320,000) utilizing indirect air-to-air heat exchangers.
- Balanced Baseline: Bid A (\$1,450,000) using traditional centrifugal chillers with N+1 redundancy.

IMPORTANT UNCERTAINTIES & OMISSIONS

- Seismic engineering calculations and ASCE 7-22 pipe bracing are explicitly detailed only in Bid B; others require confirmation.
- BMS BACnet IP gateway licensing costs and software point-mapping lists are missing from Bids A and D.
- Local water authority blowdown and discharge permits for cooling towers (Bids A and B) need environmental review.

QUESTIONS FOR THE VENDORS

1. (To Bid A & D) Can you provide an updated lifecycle PUE calculation based on ASHRAE 90.1 environmental conditions for our specific geographic region?
2. (To Bid B) Does the 2N magnetic chiller pricing include factory witness testing and certified AHRI performance curves prior to shipment?
3. (To Bid C) How does the Indirect Air-to-Air Heat Exchanger handle severe particulate pollution or dust storm events common to the region?

BOTTOM LINE

If the data center requires maximum Tier III+ uptime and institutional investor-grade resilience, Bid B is the superior choice despite its higher price tag. If water conservation and rapid deployment are paramount, Bid C provides an innovative, low-water footprint alternative. Bids A and D offer reliable traditional mechanical layouts at competitive price points.