DHC Resources Limited · Technical Brief 2026

Liquid Cooling for the Johor AI Corridor

A 2026 Supply & Selection Guide for Hyperscale Builds

Prepared for MEP leads, BIM managers and procurement teams delivering high-density AI capacity in Johor, Malaysia.

1. Executive summary

Johor has become one of the fastest-growing data centre markets in Southeast Asia. Two constraints now shape every thermal design in the state: a tropical climate, and a state-level restriction on water-based cooling that runs to mid-2027.

This brief covers:

- why air-side cooling struggles in Johor's climate, and what the PUE gap looks like;
- the 2025 water policy shift, and why WUE is now a permitting risk factor;
- a selection framework for CDUs and cold plates at 50–120 kW rack densities;
- modular BIM coordination and supply lead time from a Hong Kong hub.

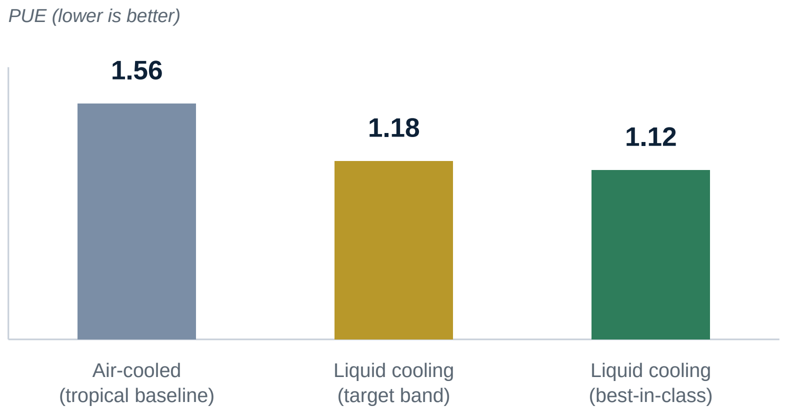
2. The Johor thermal reality

Johor's design conditions sit at the demanding end of any cooling specification. Air-side heat rejection is limited by elevated ambient temperature and humidity for most of the year, which compresses the hours available for free cooling and pushes mechanical plant to run harder.

Design parameter	Johor condition	Cooling implication
Ambient design temperature	Above 30 °C year-round	Reduced air-side free-cooling hours
Relative humidity	80%+ typical	Elevated wet-bulb; limited evaporative benefit
Rack density trajectory	50–120 kW per cabinet (AI/GPU class)	Air cooling reaches practical ceiling
Water availability (to mid-2027)	Restricted for water-based cooling	Drives selection of low-WUE architectures

2.1 PUE: air-cooled versus liquid-cooled

The two cooling approaches separate clearly in tropical conditions. Values below are industry reference ranges for the Johor/Malaysia market rather than measured results from a specific facility.



The gap is structural, not an equipment-efficiency problem: air-side systems in hot, humid climates spend more energy rejecting heat to ambient. Liquid cooling moves heat through a closed loop at higher temperature differential, which is why the achievable band is materially lower.

3. The 2025 policy shift: water becomes a constraint

In November 2025, Johor state signalled that data centre operators should hold off water-based cooling expansion for at least 18 months, effectively to mid-2027. Reporting at the time also indicated that Johor would no longer approve Tier 1 and Tier 2 data centres, which can consume up to 50 million litres of water per day.

Source	Date	Point of relevance to design
South China Morning Post	18 Nov 2025	Operators told to postpone water-based cooling expansion for at least 18 months
New Straits Times	26 Nov 2025	Tier 1 / Tier 2 approvals tightened; up to 50 million litres per day consumption cited
Mordor Intelligence	05 Mar 2026	Cap on water drives adoption of dry coolers or closed-loop liquid systems, at 25–35% higher installation cost

What this changes in practice

- **WUE becomes an approval consideration.** A design that depends on large volumes of make-up water carries schedule risk that a closed-loop design does not.
- **Closed-loop liquid cooling is aligned with the policy direction**, because the primary loop rejects heat without consuming process water.
- **Retrofit planning matters.** Where a water-based design cannot proceed, conversion pathways to closed-loop or dry-cooler heat rejection should be evaluated early.

4. Selection framework: CDU and cold plate

A liquid cooling deployment is specified across two components: the coolant distribution unit that conditions and circulates the loop, and the cold plate that transfers heat from the package. The table below sets out the dimensions that most often drive the decision.

4.1 Coolant distribution unit (CDU)

Dimension	Typical options	Selection question
Capacity	20 kW – 1 MW+	Sized to rack density × redundancy factor
Architecture	In-row / in-rack / row-level CDU	Greenfield layout versus retrofit constraints
Coolant	Water-glycol (e.g. PG25) / treated water	Loop temperature and freeze risk at site
Redundancy	N+1 pumps, dual power feed	Target SLA tier and maintenance window
Controls	Modbus / BACnet, BMS integration	Compatibility with existing DCIM
Filtration	Micron rating of filter loop	Matched to cold plate channel width

4.2 Cold plate

Dimension	Consideration
Thermal coverage	Per-socket TDP envelope for the AI/GPU class deployed (to 120 kW rack scale)

Dimension	Consideration
Material and finish	Copper, or copper with nickel plating for coolant compatibility
Hydraulics	Flow rate and pressure-drop budget against CDU pump curve
Connection	Drip-free quick disconnects; blind-mate options for service access
Manifold	Material, sealing method and serviceability for the rack layout

5. Modular BIM delivery

Cooling infrastructure is decided at design stage, not procurement stage. On a hyperscale build, pipe routing conflicts identified after MEP coordination sign-off translate directly into site rework. DHC supplies coordinated model content to bring the cooling scope into the MEP coordination cycle early.

- Revit and Navisworks families for CDU units, manifolds and cold plate assemblies;
- Pipe routing content for clash detection against structure and other MEP services;
- Layout support for row-level versus in-rack architecture decisions.

Model content is supplied for coordination purposes. Final construction documentation remains the responsibility of the appointed design engineer.

6. Supply and lead time

DHC Resources supplies from a Hong Kong hub, with delivery into Johor arranged to the project's own schedule and requirement. Transport mode — sea, air or multimodal — is selected per project, not fixed by us.

Supply route	Indicative lead time to Johor	Note
DHC Resources (Hong Kong hub)	6–8 weeks, DAP Johor Bahru	Includes selection and documentation support
International OEM brands (current market conditions)	18–24 weeks	Indicative market observation for comparison

Lead times are indicative and depend on specification, quantity and the certification package required for the project. They are confirmed per enquiry.

7. About DHC Resources

DHC Resources Limited is a Hong Kong-registered supplier of liquid cooling infrastructure and industrial spares. We supply CDU and cold-plate systems, rack power infrastructure (racks, smart PDUs, UPS) and industrial spares across hydraulics, pneumatics and cold chain, with selection support, certification documentation and modular BIM delivery. Our customer base covers data centre operators, EPC contractors and energy firms across Southeast Asia, the Middle East and Europe.

8. Next step

Technical enquiries and specifications	Website
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Note on figures: PUE values are industry reference ranges for the Malaysian market and lead times are indicative market observations. Project-specific performance and delivery schedules must be confirmed against a defined specification. Policy references are drawn from public reporting dated November 2025 – March 2026.