TECHNAVIOUS™
Blueprint to Benchmark for Data Centers

Caught in Design. Not in Production

Business Objective

A hyperscale operator with two upcoming sites in India had commenced facility implementation when a design peer review revealed critical gaps in cooling capacity and power distribution — gaps that, if uncorrected, would have resulted in a thermally unstable, under-cooled production environment.

BUSINESS NEED

Validate Cooling Capacity Against Full IT Load	• Identify and correct the failure to account for total cooling load not just IT capacity in the original design.
Eliminate Negative Airflow Across Data Hall Areas	• Detect and resolve airflow distribution failures identified during cooling design validation.
Optimise Electrical Distribution Architecture	• Reduce cable complexity and improve scalability by recommending the right power distribution approach.

SOLUTION & IMPACT

Cooling Capacity Corrected Before Construction	• Recalculation across 2 sites prevented commissioning of a thermally inadequate facility, avoiding costly rework.
Negative Airflow Eliminated Across Critical DC Areas	• Design corrections submitted before a single rack was powered on at either site.
Scalable Electrical Infrastructure Delivered	• Continuous bus bar replaced cable-heavy distribution, future hyperscale expansion enabled from day one.

Conclusion

Technavious caught a potentially catastrophic set of design flaws before a single rack was powered on. Through rigorous cooling design validation and electrical architecture review across two hyperscale sites, critical capacity shortfalls and airflow failures were corrected in design — saving the operator from costly rework and ensuring both facilities launched thermally stable, scalable, and ready for production.

Contact Us

www.technavious.com

Objectives

Validate Cooling Capacity Against Full IT Load

- Identify and correct the failure to account for total cooling load — not just IT capacity — in the original design.

Eliminate Negative Airflow Across Data Hall Areas

- Detect and resolve airflow distribution failures identified during cooling design validation.

Optimise Electrical Distribution Architecture

- Reduce cable complexity and improve scalability by recommending the right power distribution approach.

Solution

Cooling Design Validation

- Full recalculation of cooling requirements performed; original design found inadequate — IT capacity only had been considered
- CFD-equivalent cooling validation identified significant negative airflow in areas proximate to cooling units

Space & Architecture Recommendations

- Detailed report and design recommendations submitted covering DC space planning and architecture for optimised cooling efficiency
- Corrected cooling infrastructure capacity specified and validated

Electrical Distribution Optimisation

- Excessive cable-based power distribution identified as a scalability constraint
- Continuous bus bar recommended, reducing cable quantity and delivering an easily scalable electrical infrastructure

REQUIRED

Validate Cooling Capacity Against Full IT Load	• Identify and correct the failure to account for total cooling load not just IT capacity in the original design.
Eliminate Negative Airflow Across Data Hall Areas	• Detect and resolve airflow distribution failures identified during cooling design validation.
Optimise Electrical Distribution Architecture	• Reduce cable complexity and improve scalability by recommending the right power distribution approach.

OUTCOME

150% Density Increase. Zero Downtime.	• All 100 racks upgraded from 6 kVA to 15 kVA with N+1 redundancy maintained throughout.
CFD Validated. Zero Hot Spots.	• Thermal performance confirmed at new density level before full production handover.
Premium Rack Revenue Unlocked	• Facility repositioned to attract higher-value enterprise workloads at premium rack rates.