NOSTROMO

ACCELERATE POWER. INCREASE CAPACITY. IMPROVE EFFICIENCY.

*Thermal Energy Storage for **Flexibility**, **Efficiency** and **Reliability***

Whether you're increasing IT capacity under firm power envelopes, accelerating grid connections by making loads flexible, or increasing thermal supply temperatures by controlling heat spikes, IceBrick delivers maximum ROI and the fastest deployment for every extra kW.



5-15%

UNLOCKED CAPACITY

Net-new IT capacity on same power envelope.

15-20%

PEAK-PUE OPTIMIZATION

Improve midday cooling efficiency by nighttime charging and reducing load on chiller plant.

25%

LOAD FLEXIBILITY

Curtailing cooling loads during grid peak events.

SECTOR	SOLUTION	MADE IN
DATA CENTER	ICEBRICK® THERMAL STORAGE	UNITED STATES

EXECUTIVE OVERVIEW

One System. Broad Impact.

IceBrick® is a single system that delivers compounding economic value across the entire data center's life cycle, from greenfield developments through optimizing active, power-constrained operations.

01 THERMAL STABILITY

Manage Heat Spikes Driven by AI workloads

AI workload spikes cause rapid return-water temperature surges. Chillers take minutes to respond, while IceBrick reacts in seconds to maintain stable supply temperatures, eliminating the need to overcool as a safety margin.

ICEBRICK AT THE CDU LEVEL

Safely increase cooling supply temperatures

AI workloads and high-density GPUs generate rapid thermal spikes that create heat waves at the chiller plant. Although supply temperatures up to 45°C (113°F) are allowable, operators often lower them to 25°C (77°F) as a safety margin. Installed at the CDU inlet, IceBrick absorbs these thermal spikes, enabling higher supply temperatures. Every degree increase unlocks additional power for IT workloads.

02 SPEED-TO-POWER

Accelerate grid interconnections

Projected development delays due to utilities interconnection backlogs range 3-7 years. Flexible loads (that can curtail at peak events) are often fast-tracked. IceBrick can make up to 25% of a data center's total peak power draw (mechanical cooling workload) fully curtailable, with zero impact on compute.

CASE STUDY · 100 MW SITE

Roadmap from 50 to 100 MW

IceBrick® converts 90% of its output into added compute, by not only providing energy already in the form cooling (no need for additional power for cooling) but also making the chiller plant more efficient for its entire duty (by reducing the cooling workload). For example, a 10 MW-equivalent IceBrick system can unlock 9 MW of net-new IT capacity

03 UPGRADE EXISTING POWER ENVELOPE

Cutting cooling demand through hottest hours of the year

During peak ambient temperatures chillers are the least efficient. By charging through the colder nights and discharging through the hottest hours, IceBrick creates a new power ceiling for a data center. Unlocking stranded IT capacity.

ECONOMICS · 100 MW SITE

Twice the MW benefit of batteries

Batteries must power both compute and cooling while also offsetting chiller efficiency losses due to the increased IT workload, leaving only 50% of their output available to power new compute capacity, compared to roughly 90% for IceBrick. In a 100 MW data center, a 14 MW battery system (40% larger than the IceBrick system) adds about 7 MW of compute capacity. IceBrick delivers nearly 2× more compute capacity per unit of storage and has about 2× the service life (22–25 years vs. 10–12 years), resulting in a 40–46% lower levelized cost per added kW of compute capacity.

04 COOLING EFFICIENCY BOOST

Maximize Compute Capacity on the Same Power Envelope

Data center sellable compute capacity is limited by "design day" conditions. By discharging stored energy through the hottest summer hours and lowering the chiller's operating load and reducing chiller lift the remaining cooling efficiency can improve up to 20%. The resulting power savings become available for additional IT workloads.

CASE STUDY · 100 MW SITE

+2 MW net-new IT

IceBrick® converts 90% of its output into added compute, by not only providing energy already in the form of cooling (no need for additional power for cooling) but also making the chiller plant more efficient for its entire duty (by reducing the cooling workload). For example, a 10 MW-remaining mechanical cooling (chillers) IceBrick system can unlock 2 MW of net-new IT capacity.

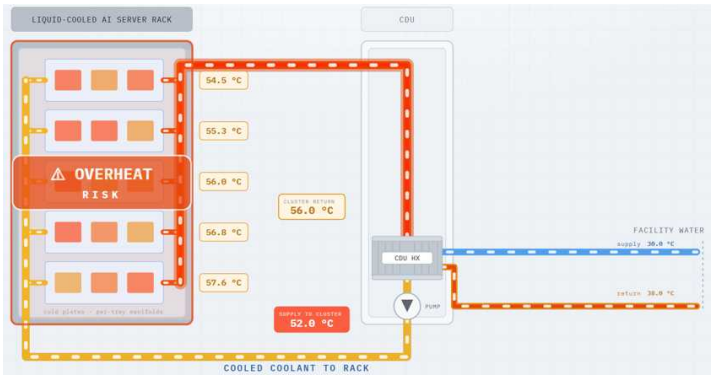
THERMAL STABILITY

Optimize Supply Temperatures.

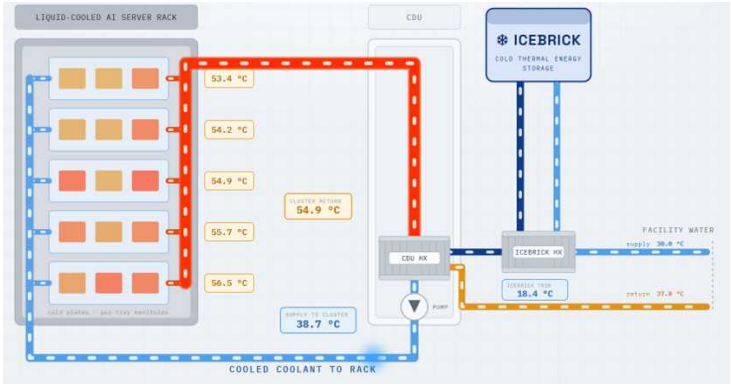
Mitigate AI-driven thermal spikes in seconds to maintain stable supply temperatures.

FAST RESPONSE TO HEAT SPIKES: ICEBRICK AT THE CDU LEVEL (RIGHT IMAGE)

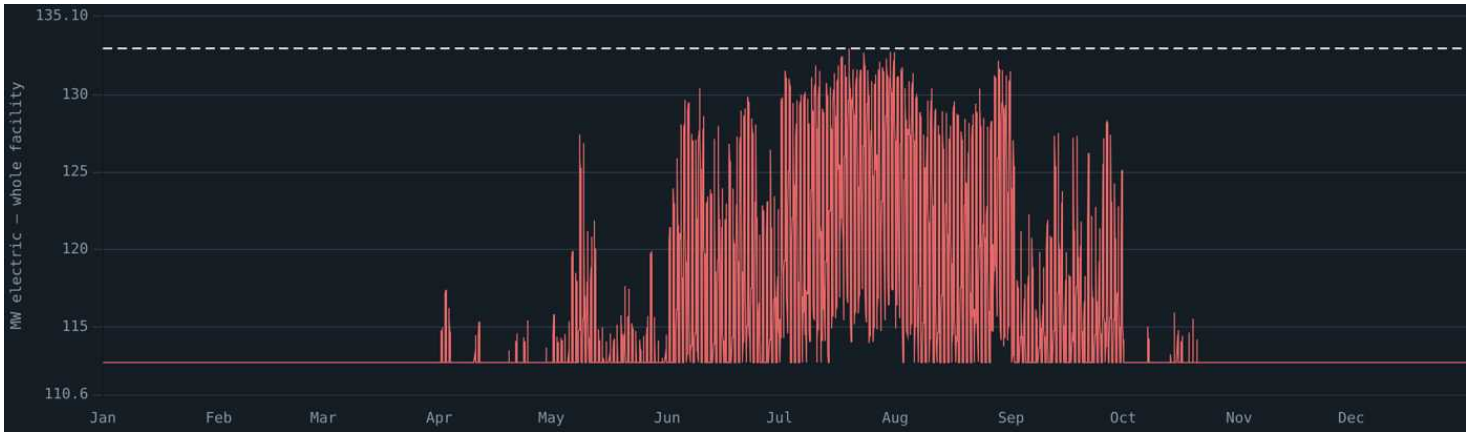
Without IceBrick®



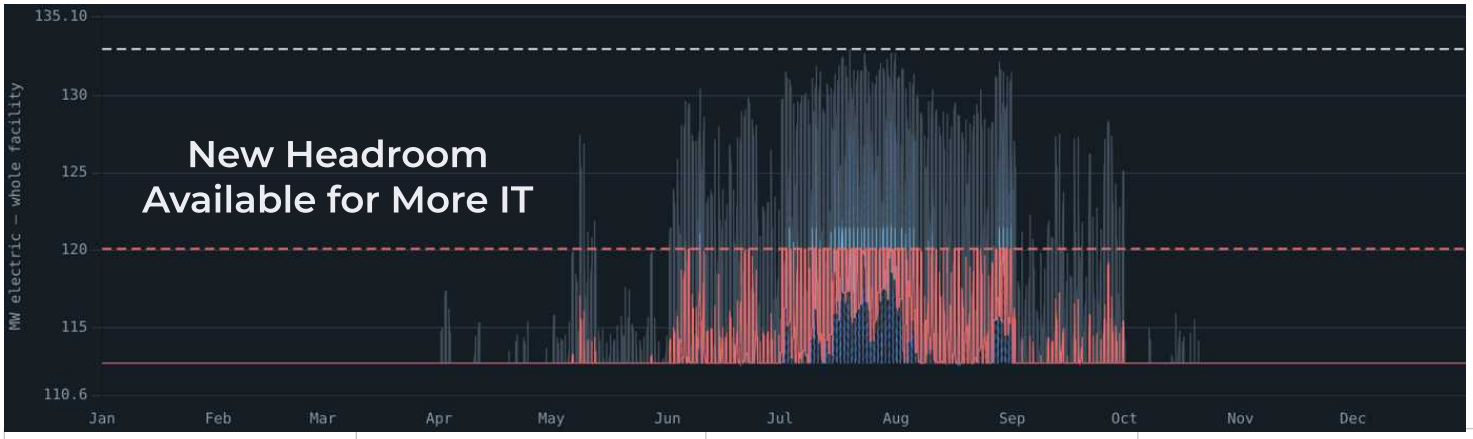
With IceBrick®



WITHOUT ICEBRICK FACILITY DEMAND · FWS 26.0 °C · PEAK 133.02 MW



WITH ICEBRICK FACILITY DEMAND · FWS 31.0 °C GUARANTEED · PEAK 120.09 MW



WHITE: DASHED LINE

OLD POWER CEILING - 133.02 MW

RED: DASHED CEILING

120.09 MW - THE NEW ANNUAL PEAK

BLUE: ICE BATTERY WORKING

DARK BLUE AT NIGHT - CHARGING ADDED WHILE POWER IS COLD AND CHEAP; LIGHT BLUE BY DAY - DISCHARGE TAKING LOAD OFF THE PEAK.

–12.92 MW AT THE METER

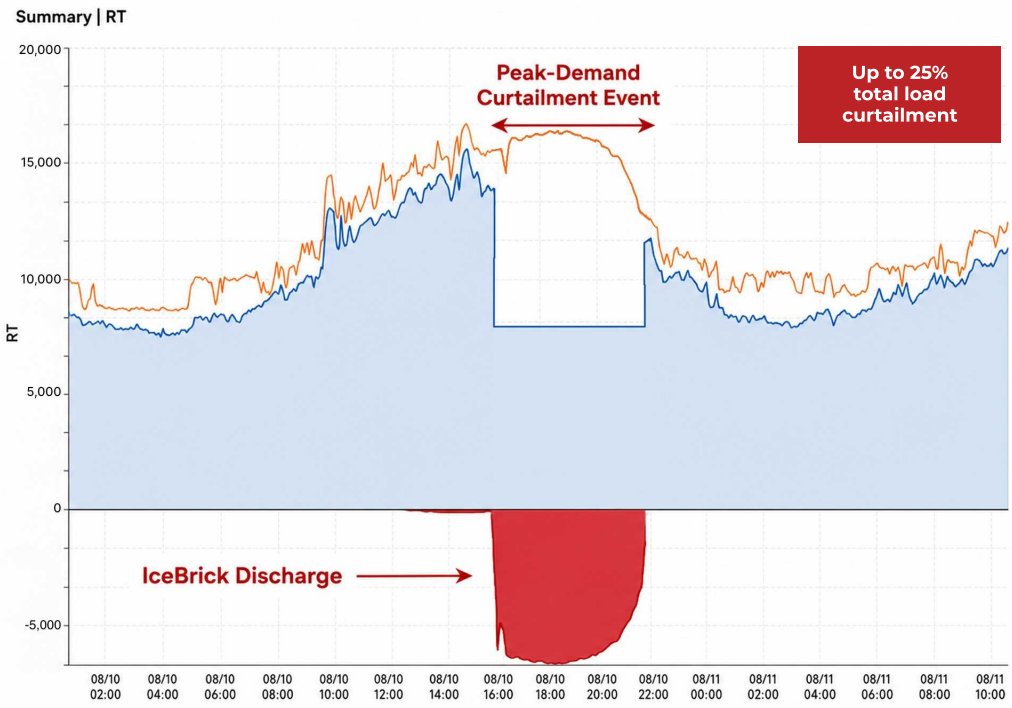
RELEASED HEADROOM = +10.76 MW OF NEW IT BEHIND THE SAME GRID CONNECTION.

LOAD FLEXIBILITY

Peak-Demand Curtailment Event & Load Flexibility Matrix

To accelerate grid connection, utilities demand reliable load flexibility (for the non-firm capacity component). The chart and matrix below illustrate peak time curtailment event, where cooling power loads are removed while the data centers cooling and compute workload remains uninterrupted.

FIGURE 2.2 — PEAK-DEMAND CURTAILMENT EVENT & LOAD FLEXIBILITY MATRIX



FLEXIBILITY METRIC	FLEXIBLE OPERATING MODE	RESULTS
Pre-Event 00:00 – 16:00	Total cooling load tracks the ambient temperature, peaking steadily and straining grid availability.	**Standard IT compute capacity remains fully active. IceBrick is approved as a standalone demand response (DR) resource with qualified capacity ("resource adequacy") for wholesale energy markets.**
Curtailment Event 16:00 – 20:00	Utility issues a critical shed request. IceBrick® responds automatically, discharging energy to lower electricity loads according to connection agreement commitments.	**The power consumption of chillers is reduced (wholly or partially, as required) while IceBrick supplies the necessary cooling to enable IT workload to continue interrupted.**
Post-Event Return 20:00 – NEXT DAY	Mechanical chiller power returns to nominal tracking levels as grid conditions settle.	**IceBrick will begin recharging as capacity becomes available again.**

TECHNOLOGY COMPARISON

IceBrick® vs. Lithium-ion BESS.

Battery Energy Storage Energy Systems (BESS) shifts electricity loads but the additional compute creates additional cooling loads, which increases load on the chiller plant and reduces its efficiency for its entire duty, meaning less power remaining for compute. IceBrick® by contrast delivers energy as cooling, and by that reduces cooling loads and improves the efficiency of the chiller plant for its remaining duty, therefore more power is available for compute, equal to 90% of the storage output.

FEATURE / CAPABILITY	ICEBRICK® THERMAL BATTERY	LITHIUM-ION BESS
IT Capacity Conversion Efficiency	**90%** Storage output converts directly to net-new IT compute capacity, including required cooling and efficiency gains.	**50%** Only half converts to usable capacity; the rest is used for cooling and to cover efficiency loss.
Added Cooling Capactity	**Yes**	**No**
Asset Lifespan & Performance Loss	**22–25+ yr** Useful Life. Virtually zero degradation (0.05% per year).	**10-12 yr** Useful Life. Rapid degradation **(~2.00% per year)**requires repowering to maintain capacity.
Fire Safety & Permitting	**100% Safe** Uses water/ice, simple, and rapid permitting.	**Fire Risk** Involving significant regulation and insurance.
Supply Chain Security	**100% USA Made**	**Varies** May be susceptible to importation risks (tariffs, shipping etc.), depends on source.

TECHNICAL SPECIFICATIONS

Seamless Integration. Available As-a-Service.

IceBrick® integrates seamlessly into existing infrastructure without any “white space” involvement or any downtime. The physical modules connect directly to standard commercial chilled-water circulation loops (while it operates).

Direct Hydronic Integration

Ties directly into existing chilled-water loop through custom heat exchangers.

Available As-a-Service, Zero Capex

The IceBrick can be installed and operated as-a-service with zero capex and full O&M (operation and maintenance) coverage, for a single, monthly service fee, which is a fraction of the MW value of unlocked capacity or cost of new developments.

Zero-Downtime Resilience

Functions natively as an highly reliable, automated or on-demand **2N or N+1** backup cooling reservoir against power disruptions or chiller failure.

Warranty & Protection

Backed by a comprehensive **10-year manufacturer** warranty, with extended 12-to-20-year long-term service agreements available to ensure long-term performance.

CALCULATE YOUR CAPACITY GAINS

Ready to unlock stranded capacity?

Evaluate your facility's thermal profile and calculate exact ROI projections - or schedule a technical site assessment with a Nostromo engineer.

IT CAPACITY CALCULATOR →

SCHEDULE ASSESSMENT →

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