



BRENMILLER
THERMAL ENERGY STORAGE



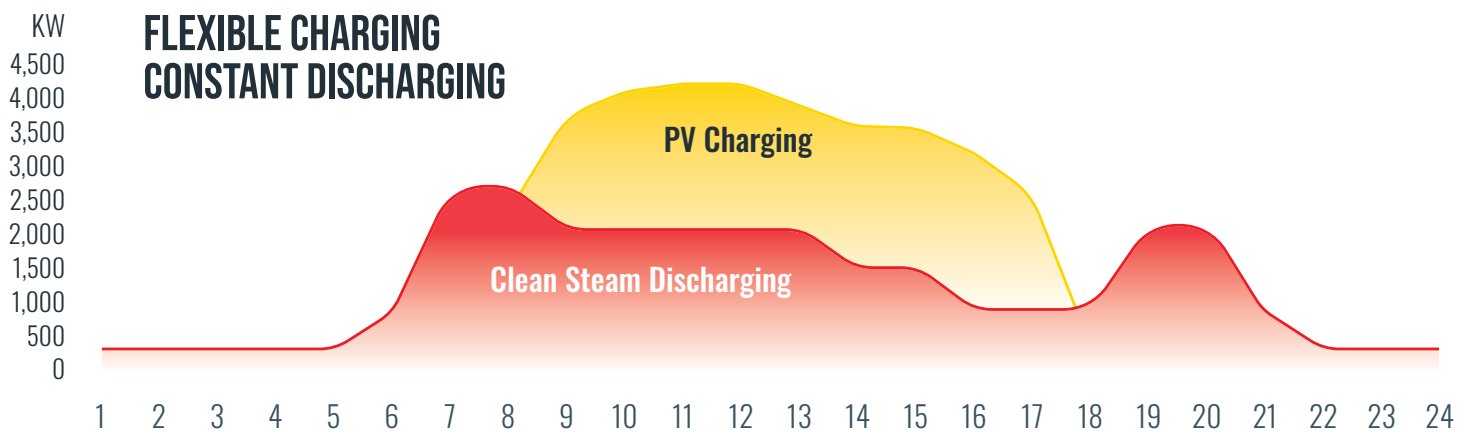
BGEN™ ZERO: THERMAL ENERGY STORAGE

Generating Electric Heat for Industrial Processes

DECARBONIZE HEAT USING THERMAL ENERGY STORAGE

BrennMiller's award-winning bGen™ ZERO is a cost-effective and scalable thermal energy storage (TES) system that eliminates the need for fossil fuel boilers at industrial plants. Leveraging earth-abundant, durable, and sustainable storage materials, the bGen™ ZERO sources low-cost electricity from renewable resources or the grid, heats it to temperatures of up to 650°C (1202°F), and stores it until it's ready to be dispatched as zero-emission steam, hot water or air. To maximize savings and ensure 24/7 operational reliability, BrennMiller's bGen™ ZERO offers industry-leading fast charging capabilities to capture ultra-low electricity rates or excess off-site renewable energy, while providing steady supply of heat, in terms of temperature and flow.

With a modular and compact design, the bGen™ ZERO is highly configurable for a range of process heat applications. And with the ability to charge and discharge simultaneously or independently on-site and on-demand, BrennMiller's bGen™ ZERO delivers unrivaled flexibility and a decisive competitive advantage.



SEAMLESS INTEGRATION

- 1** The bGen™ ZERO is made up of identical, repeatable, and insulated modules called bCubes™, each of which are prefabricated and embedded with internal charging, discharging and storage capabilities.
- 2** bCubes™ are assembled on-site to scale, and can act as a drop-in replacement for fossil fuel boilers or be added to existing systems for enhanced capacity.
- 3** A range of configurations and specifications are available to mitigate against potential size constraints and ensure the greatest level of operational flexibility.

OPERATIONS & MAINTENANCE

- No human operator required
- Proprietary control software allows for complete system automation
- Modules do not require preventive or periodic maintenance, minimal maintenance is required to maintain auxiliary systems



BRENMILLER'S STATE OF THE ART bGen™ GIGAFACTORY

Backed by the European Investment Bank, Brenmiller's state-of-the-art bGen™ ZERO gigafactory exemplifies our commitment to modern innovation, with strict adherence to rigorous Industry 4.0 standards. Equipped with cutting-edge technology and automated production lines, the gigafactory outputs 4 GWh of bGen™ TES modules annually.



Function	Parameter	A Typical Size for Industrial Applications	Technology Range
Charging	Electrical Charging Load	20 MWac	2MWac - 100MWac
	Electrical Heaters' Efficiency	98.8%	98.8%
Discharging	Steam Flow (continuous 24/7)	10MWth	1.6MWth - 80MWth
	Steam Temperature	188°C/370°F	100°C - 530°C / 212°F - 986°F
	Steam Pressure	11 Bara / 160 PSI	2 - 100 Bara / 29 - 1,450 PSI
Storage	Temperature	650°C / 1,202°F	650°C / 1,202°F
	Capacity	100MWh	10MWh – 500MWh
	Hourly Losses (%)	0.1%	0.1%
Other	Lifetime	30 years	30 years
	Dimensions [W x L x H]	8 x 15 x 12 (m) / 26 x 50 x 40 (ft)	
	Foundation Weight	16 ton/m ² / 1.5 ton/ft ²	10-35 ton/m ² / 0.93 - 3.25 ton/ft ²

SAFETY & STANDARDS

Function	Parameter
ISO 9001	Quality Management Systems
ISO 14001	Environmental Management Systems
ISO 45001:2018	Occupational Health and Safety Management Systems
CE: PED 2014/68/EU	Directives for CE Listed
ASME B31.1/EN 13480	Power Piping
Eurocode, US ASCE 7-98	Building and Foundations
UL	UL Listed

DIFFERENTIATORS/VALUE PROP

-  **Low-Cost** - Save on energy costs by taking advantage of off-peak electricity prices, utilizing excess renewable energy capacity, and leveraging embedded electric heaters for 97%+ electricity-to-heat conversion efficiency.
-  **Reliable** - Realize on-demand zero-emission heat while benefiting from flexible charging and discharging cycles and a 30+ year degradation-free lifespan.
-  **Carbon-Free** - Achieve complete electrification and net-zero operations with non-hazardous and earth-abundant materials, including crushed rocks.
-  **Scalable** - Our turnkey modules can be stacked on top one another to minimize the system's footprint and scaled up to your preferred size.



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ATTRACTIVE BUSINESS OFFERING

Brenmiller's bGen™ ZERO can be purchased directly, as a turnkey project, or deployed at zero upfront cost through a flexible Energy-as-a-Service model.

ABOUT BRENMILLER

If you're looking for a way to electrify heat, Brenmiller is the team to do it. Founded in 2012, Brenmiller's team has multiple decades of experience developing, manufacturing and deploying market-leading thermal energy technologies, partnering with multinational electric utilities in the process. Developed over the past 10+ years, Brenmiller's bGen™ technology has withstood rigorous testing in the harshest, most demanding energy market environments. Equipped to manufacture, ship and commission up to 4GWh of bGen™ modules annually, Brenmiller is ready to electrify your operations.

READY TO ELECTRIFY

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