



ADVANCED ENERGY PLATFORM: FOR SOVEREIGN RESILIENCE

Solution Brief

Mission-Ready Energy Solutions Where Failure Is Not an Option



The mandate for critical energy infrastructure from U.S. defense installations to major utility grids is absolute resilience coupled with guaranteed energy sovereignty. Legacy energy solutions fail this mandate by relying on non-sovereign supply chains, enduring high operational expenditures, and presenting catastrophic thermal risks inherent to chemical batteries. Blue Ocean provides a strategic corrective: the Advanced Energy Platform, delivering integrated, turnkey energy solutions where Failure Is Not an Option. Our comprehensive offerings center on non-chemical, solid-state storage and intelligent management systems, explicitly removing Foreign Entity of Concern (FEOC) risk and thermal hazards.

Blue Ocean's core capability is transforming multi-decade operational risk into a predictable, strategic advantage. Our solutions feature an unmatched 30+ year lifespan and achieve over 500,000 cycles with negligible degradation, eliminating the need for costly battery replacement and dramatically lowering the Total Cost of Ownership (TCO). By integrating proprietary electrostatic storage technology with nanosecond-response management controls, we deliver immediate Black Start Capability and grid stabilization services, ensuring continuous operations for the Department of Defense, Utilities, and Critical Facilities.



MISSION & VISION

Our commitment is anchored in a defined Mission-Ready Mindset, operating with the urgency and discipline of the missions we support.

Mission: To pioneer sovereign and future-ready energy solutions that anchor the Tip of the Spear (Guam and the Commonwealth of the Northern Mariana Islands) and extend across the broader Indo-Pacific, with impact that reaches globally. We strengthen U.S. defense, empower utilities to enhance grid stability and security, and safeguard critical facilities with next-generation, mission-ready resilience, all through U.S.-aligned energy technologies that protect our Nation for generations to come.

Vision: Shaping the future of energy solutions from the Tip of the Spear to Indo-Pacific and outward, advancing next-generation technologies that set the standard for resilience and readiness, powering defense, utilities, and critical facilities wherever failure is not an option.





ADVANCED ENERGY PLATFORM

ONE TECHNOLOGY – INFINITE SOLUTIONS



The Blue Ocean Advanced Energy Platform is a suite of modular, interconnected, non-chemical *Electrostatic Energy Storage* solutions designed to function as a self-contained microgrid. This technology is defined by Safety, Performance, Resilience, and Stewardship.

The platform delivers solutions through three functional component categories:

	FUNCTIONAL ROLE	KEY TECHNICAL FEATURE
ELECTROSTATIC STORAGE	The non-chemical, solid-state core delivering energy capacity and intrinsic safety.	Non-Chemical, Solid-State, 99.1% RTE, 100% DOD, up to 419 kWh per cabinet.
ADVANCED MANAGEMENT	The intelligence layer orchestrating power flow, grid stability, and cybersecurity.	Nanosecond Response, Integrated EMS/SCADA, Cybersecure protocols (VPN, VLANs), Modbus TCP/IEC 61850.
TURNKEY SYSTEMS	The modular framework for deployment, integration, and full lifecycle execution.	Modular & Scalable Design (50 kWh to MWh), Onboard Infrastructure (Inverters, Controllers), Turnkey Deployment.





APEX POWER SOLUTION

Resilient Energy Platform for Utility, Industrial, and Defense Scale.

The **ORCA Electrostatic Energy Storage Solution** represents a major leap forward in large capacity energy storage. Designed from the ground up for safety, performance, resilience, and eco-friendliness, this solid-state, non-chemical solution delivers unmatched reliability and operational efficiency across a range of use cases, from grid stabilization to renewable energy integration. Compared to lithium-ion battery energy storage systems (BESS), the ORCA ESS offers a fundamentally superior value proposition that includes longer lifespan, greater cycling capability, minimal maintenance, and full recyclability.



APPLICATION

- **Grid Stabilization**
 - Smooths voltage/frequency fluctuations
- **Renewable Energy Integration**
 - Mitigates solar/wind intermittency, enables nighttime dispatch
- **Curtailement Elimination**
 - Stores surplus generation for later use
- **Flexible Ramping**
 - Assists with rapid load changes
- **Peak Shaving & Load Shifting**
 - Reduces peak demand charges
- **Frequency Regulation**
 - Maintains system balance
- **Long-Term Resilience**
 - Critical for disaster recovery and microgrids



- Efficient & Resilient**
99.1% RTE / 100% Depth of Discharge / Black-Start Capable / Hot Swappable Energy Modules / No Supply Chain Risk & Foreign Intelligence Entities-Free
- 100% Safe**
Non-Lithium / Non-Chemical / No Heat or Sound Signature
- Long Product Life**
>500,000 cycles / Zero or Negligible Degradation of 30-45 Year Expected Life
- Best Industry Warranty**
20 years by Munich RE, Global Leader in Insuring Energy Storage Technology
- Advanced Energy Management**
8 Energy Inputs / Dual Operation (bidirectional energy flow)
- 100% Sustainable**
75% Biodegradable / 100% Recyclable / No Rare-Earth Material / Zero Carbon Emissions
- Self-contained Microgrid-in-a-box**
Solid-state Electrostatic Long-Duration Energy Storage / Onboard Infrastructure (Inverters/Overcurrent Protection)
- Modular & Scalable Design**
100kWh to 100+MWh of Long-duration Energy Storage

SKID SOLUTION

The Skid is a modular ESS comprised of ORCA energy storage units, a monitoring system and an advanced Energy Management System (EMS). Up to twelve (12) 419-kWh ORCA units are able to be connected in a 40' ISO container.

The system is based on cutting-edge supercapacitor-based technology: an advanced hybrid graphene, electrostatic long duration energy storage (ELDES) solution in a solid-state form factor. This chemistry and makeup allows for ultimate resilience in extreme temperatures (-30°C to 60°C; -22°F to 140°F) without supplemental heating or cooling, the ability to cycle 4x per day for over 500,000 cell life cycles, DC round trip efficiency of 99.1% with near zero degradation and no thermal runaway or risk of explosion.

Additionally, modules are 100% recyclable, 75% biodegradable, and do not contain any hazardous materials, leading to a clean and sustainable life cycle from start to finish. The Skid delivers the most advanced energy storage in a modern, space-efficient profile to allow utility-scale energy needs to be met with ease.

RACK/SKID – CONFIGURATION (1 EA)



CRITICAL FACILITY & COMMUNICATIONS BACKUP



The **Falcon** energy solution delivers compact, high-efficiency, solid-state electrostatic energy storage for UPS applications, engineered to replace traditional VRLA and lithium-based systems in Data Centers, Cell Sites, and Network Operations Centers where uptime and safety are mission-critical. With instantaneous response, silent operation, and virtually zero maintenance, it provides reliable, indoor-ready backup power that keeps vital systems online without risk or interruption.



APPLICATIONS

- **Data Centers & Server Rooms:** Uninterrupted backup for mission-critical digital systems
- **Telecommunications & Cell Towers:** Maintains signal integrity during grid instability
- **Network Operations Centers:** Protects monitoring and communication networks from power loss
- **Computer Labs & IT Facilities:** Provides clean, stable DC power for sensitive electronics
- **Command Centers:** Ensures vital communications and control systems stay online
- **Financial & Corporate IT Systems:** Prevents downtime in transaction-critical operations

BENEFITS

- **Long Life:** 500,000 cycles / 30+ years lifespan / 20 years warranty
- **No Thermal Runaway:** No Heat / No Fire or Explosion Risk / No Cooling System Needed
- **99.1% Efficiency:** Maximum energy utilization and minimal loss across every cycle
- **Instantaneous Response:** Nanosecond response time to grid events for seamless continuity
- **Small Footprint:** Maximizes energy density while minimizing floor space
- **Hot Swappable Modules:** Continuous operation with zero downtime during maintenance or upgrades
- **Silent Operation:** Zero noise signature for indoor and sensitive environments

REMOTE MISSIONS & OFF-GRID OPERATIONS

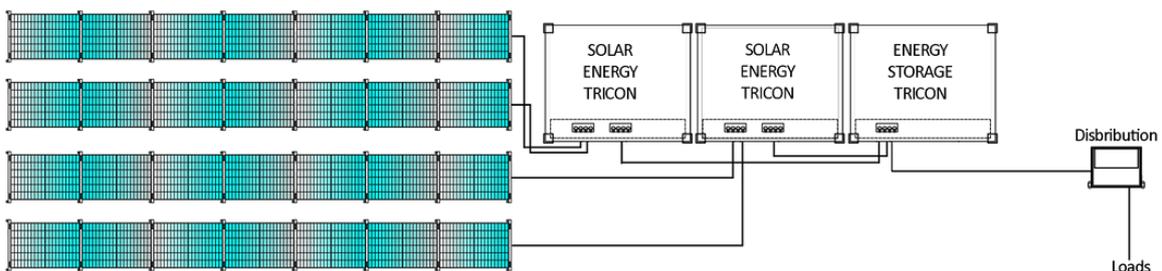


The **PowerBadger Tricon Suite** is a mobile, fuel-free system housed in three Tricon containers that delivers 24/7 off-grid power for *remote military missions* and *disaster relief operations* anywhere in the world. Combining solar arrays for daytime energy and non-lithium long-duration energy storage for nighttime use, housed in rugged military-grade Tricon containers, enabling fully autonomous energy where grid or supply access is unavailable.



The BADGER is the only FIEs and FEOC-free power generation system in the world that can be airlifted without specific safety measures, rapidly deployed on the ground, and operate day and night without ever needing fuel resupply.

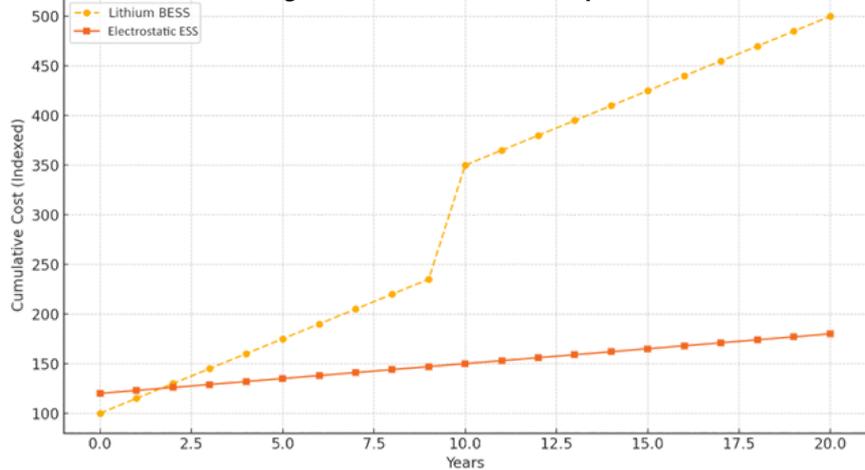
- **System Core:** Fully integrated, modular energy system combining solar generation and non-lithium long-duration energy storage (LDES). No heat or sound signature for reduced detection risk.
- **Deployment:** Packaged in ruggedized Tricon containers, making it airlift-ready for rapid deployment by a small 2-4 person crew with a setup time of <4 hours.
- **Operation:** Delivers continuous off-grid power; operates silently with zero heat signature for stealth.
- **Logistics & Safety:** Enables zero fuel logistics (minimizing risk to personnel) and is inherently safe as it's non-lithium (eliminating fire/explosion risks and is 100% recyclable.)
- **Technical Specs:** 100kW Non-Lithium LDES with over 500,000 lifecycles.
- **Supply Chain:** Made in the USA with a secure supply chain (no components from China or Russia).
- **Availability:** Mission-Ready with a less than 6-month delivery path via direct government purchase.



ELECTROSTATIC ESS VS. LITHIUM BESS

The line graph shows the total cost of ownership over a 20-year project life. While the ORCA ESS has a slightly higher up-front cost, it remains significantly more cost-effective over time due to minimal O&M and no replacement needs – unlike lithium BESS, which incurs higher annual maintenance and battery replacement.

Lifecycle Cost Comparison:



	Attributes	Electrostatic Energy Storage System	Lithium Battery Energy Storage System	Electrostatic ESS Advantage
SAFETY	Risk-Free Engineering	Yes. Non-chemical / No fire or explosion risk / Zero Sound Signature (0 dB)	No. Chemical reaction / High risk of fire / Noise from Cooling System (65 to 85 dB)	Safe & Completely Quiet Operation
PERFORMANCE	Warranty	20 year performance with No End of Life degradation	Up to 10 years with Limited Capacity Warranty	Maximum Value
	No. of Cycles	>500,000 cycles (100% cycle drain = 1 cycle)	7,000 cycles (max) 80% to 90% cycle drain = 1 cycle	Long Product Life
	Expected Life	30-45 years	5-6 years	Long life / no future replacement unit needed
	Depth of Discharge	100%	80%	No Limit
	Roundtrip Efficiency	99.1%	88-92%	Minimal Energy Loss
	Parasitic Load	No	Yes (up to 20% energy capacity), BESS cooling system	No cooling system(s) needed / No System Oversizing Required
	Dual-Mode Operation	Yes	No	Bidirectional Power Flow, Charge/Discharge Simultaneously
	Response Time	Nanoseconds	Milliseconds	1 million times faster response to threats than lithium BESS
	Space Efficiency	Can be installed Back-to-Back and Stackable	Requires Spacing between each Unit for Safety / Not Stackable	Maximize Energy in Limited Space, Lower Site Development Costs, Faster and More Flexible Deployment
Cost Effective	No Unit Replacement Required / Negligible Degradation / Minimal O&M Over Project Lifetime, No BoP	High Degradation Rate / Unit Replacement Required Twice Over 20-Year Project Lifetime. BoP Required	Low Levelized Cost Of Energy	
RESILIENCY	Supply Chain Risks & Vulnerabilities	Graphene Synthetically-Manufactured ESS Material / No China, Russia, North Korea, Iran Supply Chain	Foreign Entity of Concern (FEOC) risk (disqualified from Federal Tax Benefits). Traceable supply chain lithium battery cells and components to China	No Foreign Entity of Concern (FEOC) risk. No Cybersecurity or Supply Chain Threats.
	Hot Swappable Modules	Yes	No	Operation Flexibility / Reduced Downtime / Minimal Disruption
	Black Start Capability	Yes	No	Autonomous recovery from blackouts
	Installation	Indoor installation without special considerations or risks	Indoor Installation NOT Recommended. Requires special considerations, Outdoor recommended	Safe for Indoor Installation
	Exposure to Extreme Temperature	-22° F to 140° F	32° F to 122° F	Any Environment
	Airlift-Ready	Yes, without Special Considerations or Risks	Not Recommended. Requires Special Considerations	Can be air transported without Special Considerations or Risks
On-Island Tech Support	Blue Ocean H2 Indo-Pacific Partner	Uncertain	Service / Maintenance / Trouble-Calls	
ECO-FRIENDLY	Environmentally Friendly	No Rare Earth Materials, 75% Biodegradable / 100% Recyclable	Unclean Production / No Recycling Centers on Guam / Loud Operation	No disposal issue after useful life

TURNKEY SYSTEMS

THE DEPLOYMENT FRAMEWORK

Our framework defines the procedural and physical architecture for rapid, customized, and assured deployment of the complete solution.

SERVICES & OFFERINGS

Blue Ocean provides turnkey solutions that extend through the entire asset lifecycle, ensuring the successful design, deployment, and operation of resilient energy systems. We sell a tailored solution, not just hardware.

- **DoD Microgrids & Base Resilience:** Developing mission-ready power for hardening U.S. defense infrastructure in critical regions.
- **Utility Microgrids, Grid Stabilization & Renewable Firming:** Solutions for stabilizing grids under heavy renewable penetration, managing frequency and voltage support, and mitigating intermittency.
- **Critical Facility Backup:** Ensuring absolute Continuity of Operations for essential facilities such as hospitals, airports, data centers, and telecommunications nodes.
- **Renewable Energy Integration:** Providing long-duration storage for reliable, financeable solar projects for Independent Power Producers (IPPs).

The modular integration and deployment architecture provides a custom ESMS solution.

Delivery Model: The solution is modularly engineered to function as a self-contained "Microgrid-in-a-box".

Scalability: The design is Modular and Scalable from the minimum unit up to 100 MWh deployments.

Integration Components: Includes Onboard Infrastructure such as inverters and controllers. Utilizes WSTECH 2500 kW Power Conversion Systems (PCS) for high-power conversion.

Deployment Assurance (Joint Performance Verification): The deployment process concludes with a mandatory verification procedure to confirm functional readiness. Verification confirms high-level operational modes: Islanded Operation and Grid-following Mode. The process is complete upon provision of Training & Handover and Warranty Documentation.

Sovereignty Guarantee: The entire system is certified FEOC-free and aligns with U.S. defense procurement standards. Solutions are designed to be Airlift-Ready for rapid response and expeditionary deployment.



WHY BLUE OCEAN?

DIFFERENTIATING VALUE & STRATEGIC ALIGNMENT

Our platform's design fundamentally aligns energy technology with national security and long-term financial stewardship.

1. Sovereign Resilience: FEOC-Free Guarantee

We are a U.S.-aligned company committed to technology that protects our Nation and never empowers our adversaries. By adhering to a "no lithium" policy and ensuring a FEOC-free supply chain, our solutions deliver power that is geopolitically secure and cybersecure by design. The system is airlift-ready and built specifically for Indo-Pacific operations where resilience is non-negotiable.

2. Non-Negotiable Safety & Sustainability

- **Safety:** Electrostatic, non-chemical, non-lithium — no thermal runaway risk; no fire or explosion risk, eliminating the need for cooling and fire-suppression systems.
- **Stewardship:** 100% recyclable / No disposal issues at its end of life. No hazardous chemicals or rare earth materials.

3. Target Market Applications

Our customized solutions deliver essential functionality across critical sectors:

4. Marianas-Roots, Indo-Pacific Reach

On the ground, certified technicians and engineers are positioned close to our customers, ensuring fast response, regional deployment capability, and continuous operational readiness.

Department of Defense (DoD)

- **Need:** Mission-ready power is synonymous with national security. They require sovereign, U.S.-aligned technology with no FEOC risk.
- **Mandates:** The system must feature Black Start Capability, be cybersecure, and with zero fire risk. It is specifically built for Indo-Pacific operations where resilience is non-negotiable.

Utilities

- **Need:** Solutions for stabilizing grids under heavy renewable penetration and guaranteeing a safe, sustainable energy supply.
- **Value:** Our products offer a long lifecycle of 30+ years with zero costly replacement batteries, a critical advantage for utility CAPEX planning.

Critical Facilities & Renewable Integration

- **Need (Critical Facilities):** Absolute assurance of continuity of operations.
- **Need (Renewable Developers):** Reliable, long-duration storage to make solar projects financeable and dispatchable.



PARTNERSHIP & ENGAGEMENT

Blue Ocean views its customers as mission partners. We earn trust through transparency, performance, and relentless reliability. Our commitment extends beyond product delivery to mirroring the environment we work in, including a firm dedication to local workforce development in deployment regions. We collaborate with you to deliver solutions that embody Integrity, loyalty, and patriotism in every design decision.

CONTACT & NEXT STEPS

The Blue Ocean Advanced Energy Platform is the definitive investment in sovereign energy infrastructure. We mitigate risk, guarantee performance, and secure your power for generations. The next definitive step is to schedule an Engineering Requirements Assessment with our Chief Solutions Architect team. This engagement will model a custom Blue Ocean solution based on your precise technical requirements, quantify the verifiable 20 year total cost of ownership savings, and provide a definitive, risk-mitigated path to system deployment.



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