

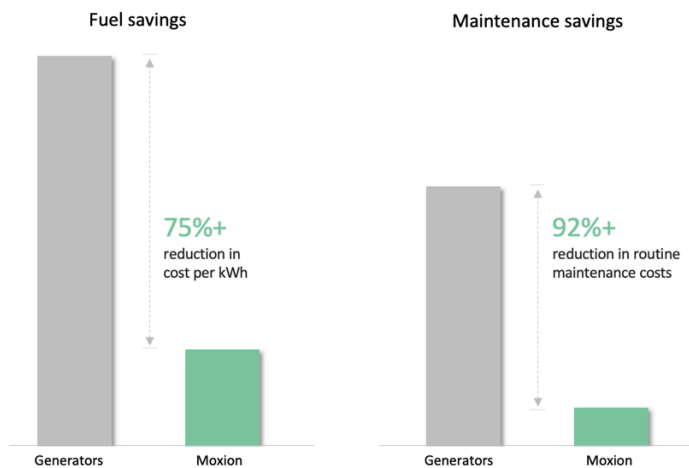
# Title: Advancing Military Energy Independence: Introducing Mobile Battery Energy Storage Systems (BESS)

## Abstract:

In today's dynamic operational environments, ensuring reliable and sustainable power sources is critical for military readiness. The introduction of Multi-functional Mobile Battery Energy Storage Systems (BESS) represents a groundbreaking solution to address energy vulnerabilities while enhancing operational efficiency. This white paper explores the capabilities, advantages, and potential applications of Mobile BESS in military settings, highlighting its role in reducing fuel consumption, enhancing reliability, and improving mission readiness.

## Introduction:

The military's reliance on traditional power generation methods, such as diesel generators, poses logistical challenges and environmental concerns. To address these issues, the concept of Mobile BESS emerges as a transformative solution, offering a versatile, sustainable, and cost-effective approach to power generation and storage. This white paper delves into the functionalities, benefits, and superiority of Mobile BESS over conventional power sources, emphasizing its potential to revolutionize military energy management.



## What is Mobile BESS?

Mobile BESS comprises software-defined hardware, featuring Lithium Iron Phosphate (LFP) battery modules managed by a silicon carbide (SiC) inverter. This innovative system is designed to power installation and operational energy requirements with zero audible signature, zero greenhouse gas emissions, and negligible thermal signature. Its modular design and advanced technology make it a highly adaptable and efficient energy storage solution for military applications.

## Capabilities and Applications:

Mobile BESS offers a range of capabilities and applications tailored to meet the diverse energy needs of military installations and operations:

- **Powering Expeditionary and Garrison Microgrids:** Mobile BESS can seamlessly integrate with microgrid systems, providing reliable and sustainable power to expeditionary and garrison environments. Its mobility and flexibility make it ideal for supporting temporary power needs in hybrid or standalone setups, ensuring uninterrupted operations in remote or austere locations.
- **Reducing Fuel Consumption and Maintenance Costs:** Compared to traditional diesel generators, Mobile BESS offers significant cost savings in fuel consumption and maintenance. Users can achieve up to a 76% reduction in fuel cost and a 92% reduction in maintenance cost, leading to substantial operational efficiencies and resource conservation.
- **Enhancing Logistics and Supply Chain Resilience:** The integration of Mobile BESS streamlines logistics and minimizes supply chain vulnerabilities associated with traditional fuel-dependent power systems. Its compact design and modular construction enable rapid deployment and reconfiguration, enhancing the overall agility and responsiveness of military operations.
- **Improving Tactical Operations:** In tactical settings, Mobile BESS provides troops with reliable and mobile energy storage solutions, enhancing safety and effectiveness during missions. Its agility, silent operation and reduced thermal signature minimize detection risks, increasing maneuverability, allowing for stealthy energy deployment in sensitive or hostile environments.

## Conclusion:

Mobile BESS represents a paradigm shift in military energy management, offering a sustainable, efficient, and versatile solution to power generation and storage challenges. By leveraging advanced technology and innovative design, Mobile BESS enhances operational reliability, reduces environmental impact, and improves mission readiness across diverse military applications. As the military continues to prioritize energy independence and sustainability, Mobile BESS emerges as a transformative asset in achieving these objectives and ensuring the success of future operations.

## Product Specifications

### Battery System

Battery Type	Li-ion
Nominal Energy Capacity	600 kWh
Usable Energy Capacity	530 kWh
Round Trip Efficiency	Up to 95% [typical 88% - 95%]
Number of cycles <sup>1</sup>	2200 cycles

### Power Conversion System

AC Power Output (@ PF 1.0)	480 V   3P   75 kW 208 V   3P   40 kW 240 V   1P   27 kW 120 V   1P   4.5 kW
Charging	<b>AC Charging:</b> 75 kW via Camlocks 19.2 kW via Level II EVSE (CCS)  <b>DC Charging:</b> 75 kW via Level III EVSE (CCS Connection)
Pass-through Capability	400 A in all voltage modes
Electrical Interfaces	2 x AC Cam-lock sets [Male & Female] 480 V   3P   90 A 208 V   3P   111 A 240 V   1P   111 A  2 x CS6369 Twist-lock receptacles 120 V / 240 V   Split Phase   50 A  2 x NEMA 520R GFCI outlets 120 V   1P   20 A  1 x NEMA 515R GFCI with integrated USB C & A outlets 120 V   1P   15 A
Operating Modes	Standalone Hybrid parallelling Microgrid
Response Time	<50 ms
Overload Capabilities	10 sec: 130%
Operating AC Frequencies	60 Hz

### User Interfaces

HMI	Sunlight Readable Touchscreen Power switch for OFF/ON
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	EStop
Communications	Sunspec, Modbus TCP, Cellular, Wifi, Ethernet, CAN Bus (SAE J193975)
Remote monitoring	MoxiOS web application, API access
<b>Transportation</b>	
Towing	Class V Pintle Hitch via trailer
Lifting	<b>Forklift [Skid/Skid+Trailer]:</b> Side-loaded fork pockets Front/Rear loaded fork pockets  <b>Overhead Lift [Skid/Skid+Trailer]:</b> 4 roof - mounted lift points
Cargo	Flat Deck Trailer [Road/Rail] ISO Intermodal Container [Road/Rail/Sea]
<b>Mechanical</b>	
Dimensions	Skid: 136.1" x 54.1" x 82" Skid + Trailer: 185" x 79.5" x 90"
Weight	Skid: 12,500 lbs Skid + Trailer: 13,500 lbs
Temperature Range	Operating: 10°C to 40°C (14°F to 104°F ) Storage: 25°C to 45°C (13°F to 113°F)
Noise Level	<40 dB from 25 ft
IP Rating	IP 55
<b>Regulatory &amp; Certifications</b>	
Codes, Standards, Regulatory	UN 38.3, UN 3480, UL 1973, UL 9540A, UL 1998, UL 2594, UL 991, UL 2580, NFPA 70/NEC, SAE J1798, SAE J2380, SAE 1455, IEC 60529, UL 1741