

ENERGY MANAGEMENT APPLICATIONS

Telecommunications



Renewable Energy Generation



Data Centers/Computer Rooms



Transmission & Distribution



Electrical Utility Generation



Manufacturing Process Control



Medical Facilities/Laboratories



ENERGY MANAGEMENT APPLICATIONS

Area Control & Frequency Response Reserve – Balance generation and load without outside sources by accepting unwanted power during customer load drop and delivering additional power during customer load-rise.

Commodity Storage or "Load Leveling" – Store electricity produced by inexpensive base-loaded units during off-peak hours and discharge power during peak demand.

Customer Energy Management or "Peak Shaving" – Reduce utility supply fees by anticipating the occurrence and extent of peak-demand electricity consumption and supplementing the utility supply discharging during peak-demand periods.

Distribution Facility Deferral – Manage the unpredictability of forecasted but unrealized electricity demand by deferring the addition of new distribution facilities until they are truly needed.

Rapid Reserve – Utilities can avoid interruption of service to customers even if an electrical generating unit fails.

Renewable Energy Management – Deliver renewable energy when it's most needed, creating higher economic value by storing power for later supply to coincide with the utility's or the customer's demand peak. This includes the capability of storing energy from a source with variable supply to deliver constant, reliable power on demand.

Power Quality & Reliability – Prevent sags, spikes and power failures which can impact the availability of mission-critical systems that transmit, store or process information of any kind.

Transmission Facility Deferral – Manage the unpredictability of forecasted but unrealized electricity demand by deferring the addition of new lines and transformers until they are truly needed.

Transmission System Stability – Discharge to provide power, and charge to absorb power as system loading conditions change.

Transmission Voltage Regulation – Provide reactive power (VARs) to the utility system during PowerBlock discharge, charge, or inactivity. This augments existing capacitors or replaces existing capacitors that offset transmission line impedance differences at the generation-end and load locations.

POWERBLOCK® 150 SPECIFICATIONS

INPUT

Phases	3-phase
Nominal Continuous	100 KW
Voltage	415/480 ± 10%
Nominal Current	140 Amps RMS
Frequency Range	55/60 Hz ± 8%
Power Factor	Lead/Lag ± 0.95
Current Harmonics	<5%

OUTPUT

Phases	3-phase
Nominal Continuous Power	100 KW
Maximum Power (Inline)	150 KW, 10 seconds
Maximum Power (Grid Parallel)	300 KW, 10 seconds
Voltage	480/415 VAC RMS
Nominal Current	120 Amps RMS
Frequency	50 / 60 Hz
Power Factor	Lead/Lag ± 0.8
Maximum Continuous Power	100 KW
Harmonics (Voltage)	<5%

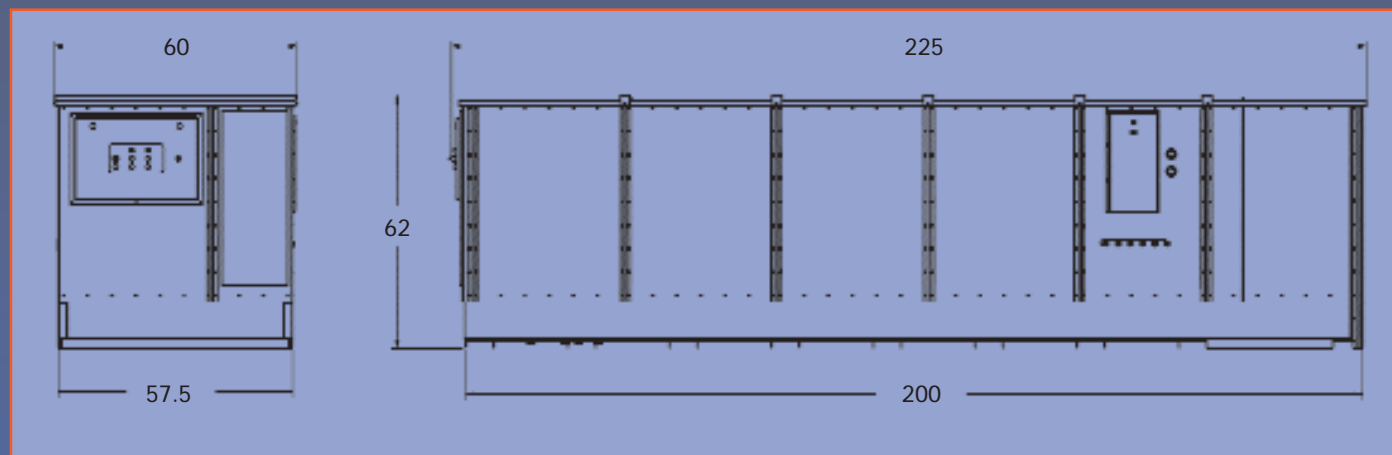
PHYSICAL

Maximum Height	62.04 in. (1575.75 cm)
Maximum Width	59.68 in. (1515.87 cm)
Maximum Depth	220.04 in. (5588.89 cm)

Weight	8,800 lbs. (4000 kg)
Enclosure	NEMA 4 (outdoor rated)

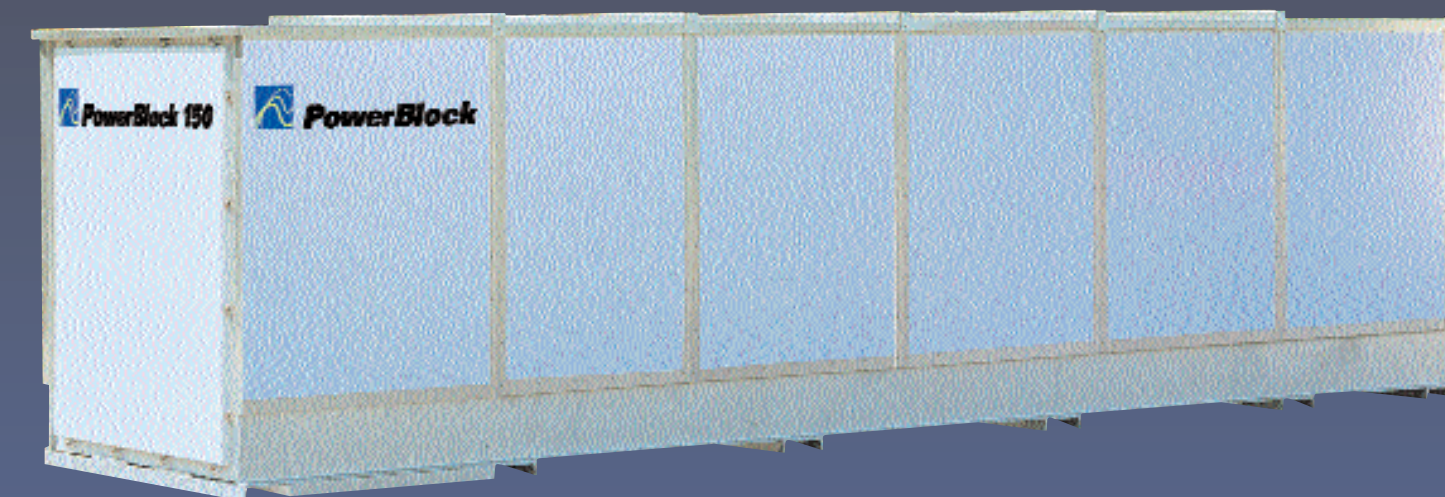
SAFETY

Underwriters Laboratories	UL 1778
Federal Communications Commission	Part 15 Class A
National Fire Protection Agency	NFPA 1 & 70



PremiumPower

PowerBlock® 150



PremiumPower

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Energizing the Present, Protecting the Future

Complete Energy Management

ENERGY ON DEMAND

Our world is growing more dependent on reliable power than ever before. Even the most basic functions of today's lifestyle – surfing the net, using your cell phone, filling a prescription or making a purchase with your credit card – are all made possible by invisible mission-critical infrastructure.

The improved quality of life that technology is meant to deliver depends first on highly available and reliable utility power. However the cost and quality of electric power has become variable and uncertain.



As the range of demands placed on the utility grid has expanded, energy generation, transmission and distribution companies are seeking new and innovative approaches to utility service management. Likewise, end-users of utility power need to ensure the availability and uptime of mission-critical infrastructure.

With these concerns in mind, Premium Power Corporation developed the PowerBlock – a complete energy management system solution providing compact energy storage, power quality and utility service management. Using Premium Power's patented Zinc-Flow® battery technology, PowerBlock provides fixed or portable energy management through a simple, flexible, easy to install design. PowerBlock – *Energizing the present, protecting the future.*

ADVANTAGES

Complete Solution: PowerBlock is the only low cost all-in-one mass energy storage, power quality assurance and utility service management solution. Easy to configure, specify and purchase.

Reliability: PowerBlock integrates component-level 2N internal redundancy along with the unlimited cycle compatibility of the Zinc-Flow system, making lead-acid and VRLA technologies obsolete for high-density energy applications.

Size: 1/10th the space requirement of conventional UPS products.

Modular & Scaleable: Up to 64 units can be combined to provide added power density, redundancy or 'pay-as-you-go' capital planning. Modular design enables configuration flexibility and safe transport, positioning and placement.

Point-of-Use Flexibility: For mass energy storage, PowerBlock can fully charge-discharge up to 4 times per day. It integrates well with all forms of power generation, including intermittent renewable energy sources. NEMA-rated environmental enclosure allows PowerBlock to be installed outside or inside. Ideal for remote sites and stand-alone placement.

Simple to Install: PowerBlock eliminates 48V bus bars and expensive interconnects. Unit arrives ready for turnkey installation and can be installed by a licensed electrician in under four hours.

Easy to Manage: Includes web-based remote management capability with access to over 800 monitoring and fault conditions. Integrates seamlessly with NMS and BMS platforms.

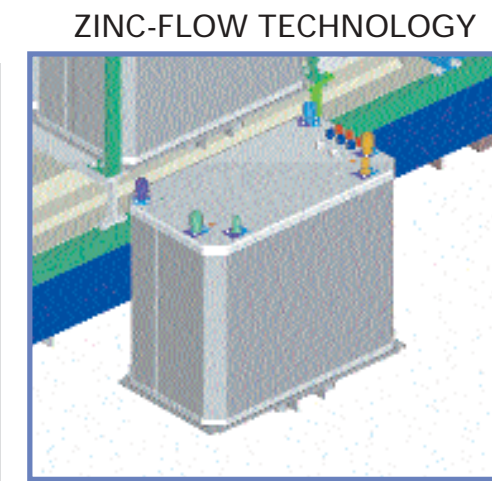
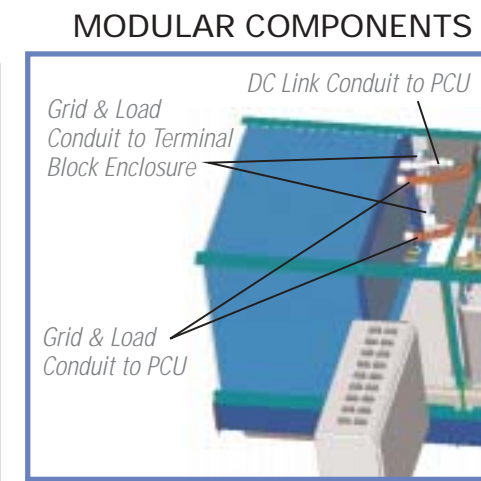
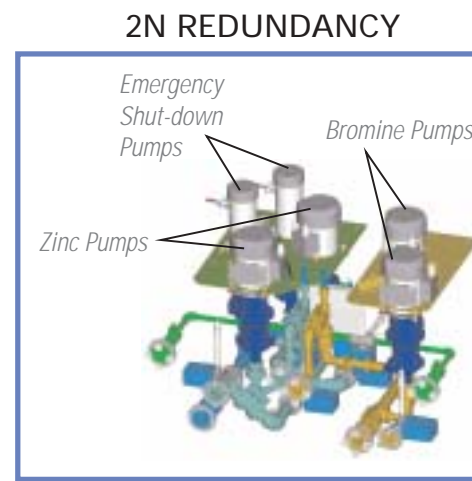
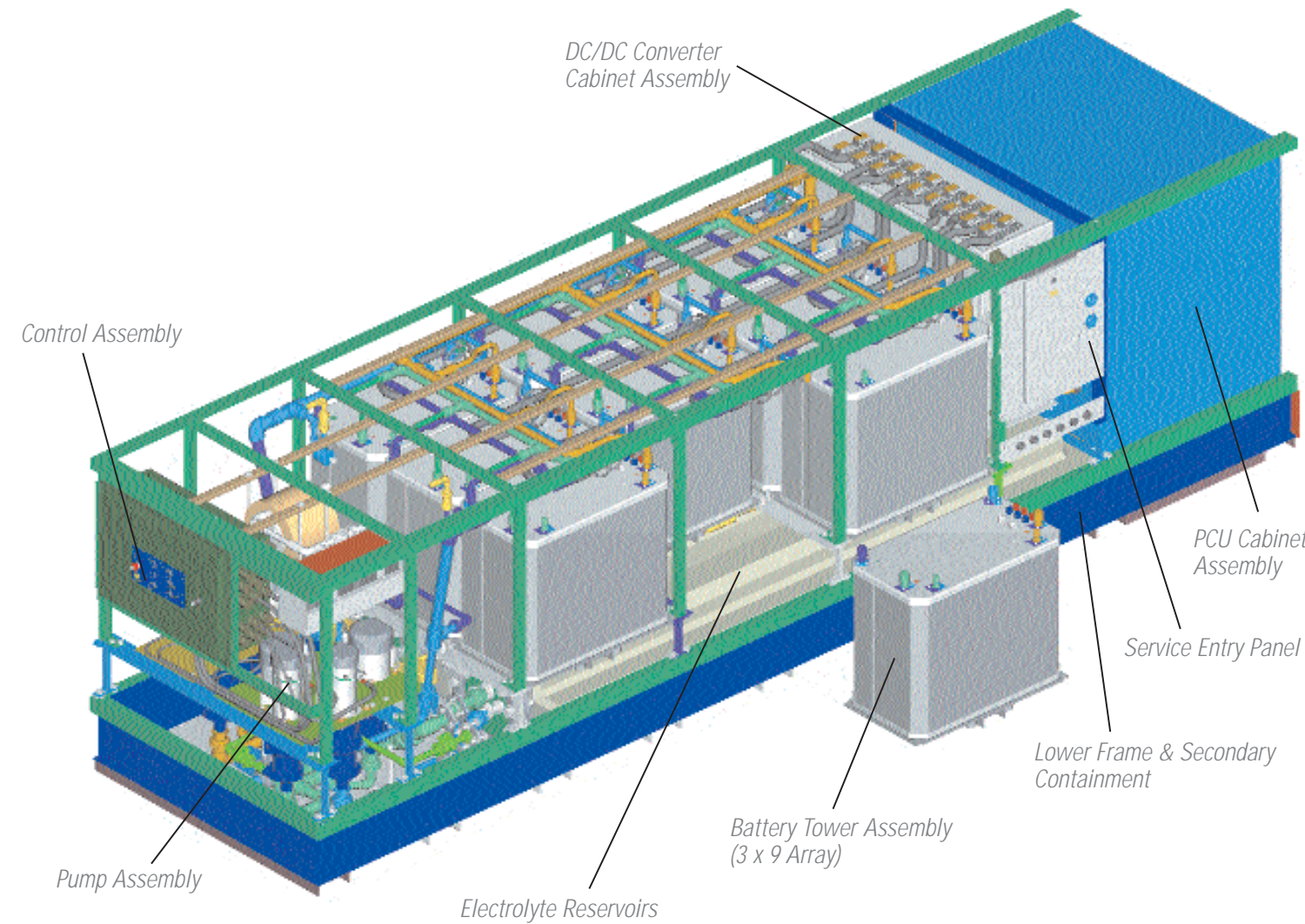
Reduce Total Cost of Ownership: Minimal required maintenance and 'off the shelf' parts reduce service costs. Zinc-Flow technology provides an order of magnitude improvement in operable life.

Environmentally Friendly: 100% disposable or recyclable. Unlike lead-acid batteries, system does not contain toxic metals or emit explosive hydrogen gas.

Low Cost: Total purchase and install cost is a fraction of equivalently sized lead-acid UPS and power storage systems.

RADICAL SIMPLICITY

PowerBlock integrates modular, scaleable redundant components with the very latest in storage technology for a solution which is highly flexible, simple and easy to install.



STREAM OF BENEFITS

ENERGY SERVICE CONDITION

	PowerBlock 150	Standby Engine Generator	Motor Generator Flywheel/Diesel	In-Line UPS	Motor Generator Electric/Electric	Advanced Lead-Acid Battery	Superconducting Magnetic Energy
Intermittent Power Quality Issues							
Voltage Spikes	█	█	█	█	█	█	█
Noise	█	█	█	█	█	█	█
Sags	█	█	█	█	█	█	█
Swells	█	█	█	█	█	█	█
Incessant Power Quality Issues							
Notches	█	█	█	█	█	█	█
Voltage Distortion	█	█	█	█	█	█	█
Undervoltage	█	█	█	█	█	█	█
Overvoltage	█	█	█	█	█	█	█
Frequency Variation	█	█	█	█	█	█	█
Power Assurance/Interruptions							
Momentary Interruption	█	█	█	█	█	█	█
10 Second Interruption	█	█	█	█	█	█	█
30 Seconds	█	█	█	█	█	█	█
10 Minutes	█	█	█	█	█	█	█
2 Hours	█	█	█	█	█	█	█
>2 Hours	█	█	█	█	█	█	█
Energy Service Management							
Peak Shaving	█	█	█	█	█	█	█
Comodity Storage	█	█	█	█	█	█	█
VAR Compensation	█	█	█	█	█	█	█
Environmental Assistance							
Generator Substitute	█	█	█	█	█	█	█

The Electric Power Research Institute estimates that power quality and related anomalies cost US commercial and industrial electric power users over \$100 billion annually. The PowerBlock energy management system is engineered to mitigate these power quality anomalies while providing a stream of tangible economic benefits to our clients.

Premium Power Corporation has enabled a solution to the full spectrum of utility service issues with a single, low cost system designed to provide energy on demand according to site specific requirements. Through the management of stored energy, a stream of economic benefits can be captured, while improving reliability and efficiency for a variety of applications.