state of the art ***ENERGY SUPPLY***
enabling DISTRIBUTED & RENEWABLE GENERATION
with robust, resilient & reliable ENERGY STORAGE

SOLAR INC LTD
an Energy Storage company

Solar Power Storage Solutions .

Modular LFP HV Energy Storage

Solar PV, commercial, industrial and utility companies look for reliable, high quality, high efficiency, cost effective power and energy solutions. Solar Inc ltd is proud to introduce one of the first bi-directional, digitally controlled ultra high efficiency energy storage container, the

LFP 900V, 1,700A: 1.4MW - 1.26MWh

FEATURES & BENEFITS

- ***Ultra High (Optimized at 95%+) full turn-around system efficiency -*** Extensive use of DSP controls, managing a dynamically optimized electrical topology, that yields a flat efficiency curve between 800A to 1500A load while minimizing component count
- ***Leading power/energy density – 920W(825Wh)/ft³ -*** Reduced energy losses with an optimized topology enables a small footprint, creating both a lower capital investment and lower operating cost, compared to similar installations
- ***Cycle-life w. mI_t charging regime, increases battery lifespan by 15%*** - Our multi-mode intelligent charging algorithm combines energy conservation, SoC, SoH, Temp. and cycle life information to create an optimum V-I envelope for both charge and discharge curves
- ***Wide input voltage range 650V – 900V and self protection up to 1000V -*** Intermittent supply conditions are a norm in rugged applications. Our high reliability, multi-stage redundant protection is designed into all SPS products, to meet these challenging environments.
- ***Plug and Play compatibility with previous generations*** – flexibility and freedom at minimal cost
- ***Increased Solar PV energy extraction*** – Our unique architecture extracts more energy from the solar panels with the ***mI_t charging regime,*** by actively extending the PCS's MPPT, while it has already achieved full output. When DC:AC ratio is greater than 1.1 the internal DSP controls will dynamically optimize the ESS voltage to maintain the inverter at maximum output while also charging the batteries with the excess energy from the Solar PV panels, creating greater cashflow for our customers.

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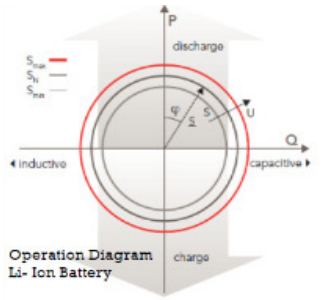
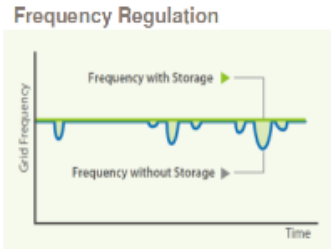
Storage Power Solutions Inc.

FEATURES & BENEFITS

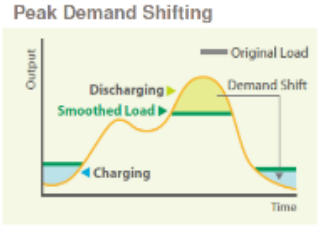


- ***1,500 MW/min. ramp rate, 4 quadrant operation***
  - Dynamic power input and output for voltage and frequency correction
  - Charge and discharge capability at any cosφ for power factor correction
  - Black start capability
  - Operates as a virtual rotating mass, to absorb high load transients

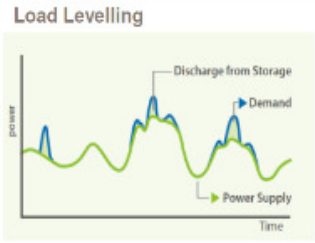
- ***Reactive Voltage and Frequency Control***
  - Dynamic reactive power (Q) input & output for voltage and frequency correction
  - Pure phase shift capability to adjust apparent power (S)
  - Active filtering of selected harmonics capability



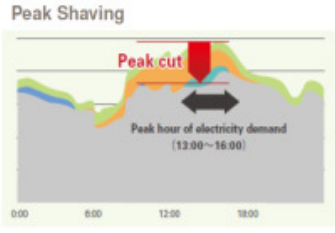
- ***On Grid ESS***
  - Provides grid services : intermittency mitigation, power quality improvements
  - Symmetric current injection capability
  - Provides 1 + 1 resilience and reliability capability



- ***Off Grid ESS***
  - Provides virtual rotating mass and dynamic voltage and frequency controls
  - Ability to handle asymmetric current and load conditions
  - Regulates to within ± 1% voltage and frequency of diesel gen-set
  - Supports peak shaving and load shifting functions



- ***Sustainability: Our carbon handprint offsets our carbon footprint***
  - Energy Conservation: no air conditioning and higher total system efficiency
  - RE-USE: at the end of its primary life as an ESS, it is repurposed for secondary back-up and load support for another 2000 cycles
  - RECYCLING: with no heavy metals present, 95% of the ESS is recycled by SPS
  - RECOVER: 5% non-recyclable electronics are recovered and re-used.
  - Carbon Sequestration: Every container's 2nd skin will absorb 40 – 80 metric Tons of CO_2 if used for a minimum 10 years – equivalent of planting 1000 – 2000 trees



VALUE CREATION by SPS: Carbon credits +

- ***Solar + Storage*** – increased efficiency, higher Solar Energy drawn from PV panels and cost certainty
- ***Micro-grids for C&I Buildings*** – Load levelling, transient suppression, peak shaving, power factor correction and 24/7 back-up support for OPEX savings and revenue generation
- ***Utility Ancillary Services*** – provides local voltage & frequency regulation, spinning / non-spinning and supplemental reserves, black start, load following / renewables support, load shifting and peak shaving services

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CONTAINER TECHNICAL SPECIFICATIONS

Description	Specification	Notes
Total Capacity	1,267 kWh (800V, 1700A)	Initial capacity, consult factory for each application
Output Voltage	650V – 900V	Adjustable
Output Power	1,400kW	Maximum discharge power
Turn-around efficiency	above 95.3%	Between 50 – 90% loading at 0.5C charge/discharge rate, using Sandia National Laboratories protocol
Output Connection	Qty. 5; 900V, 375A max.	Protection for each output: 1000V, 500A fuse
Operational Temperature Range: Charge Discharge	-20~60℃ -20~60℃	De-rating above 55℃ is controlled by thermal limits if triggered due to high discharge current
Storage Temperature Range	5 - 40℃	Self-discharge increases above 25℃ & SoC below 50%; recharge must be undertaken every 3 month
Humidity	0 – 95%	Non-condensing
Cooling	Thermal Management System	
Audible Noise	60dBA	Measured at full charge current, 25°C
Fire Suppression System	Benign Ionic Salt (Potassium Nitrate)	CO2, smoke and fire detection w. visual, audio and electronic warning, auto shut-off
Communications	Internal: GigaBit Ethernet External: as required by customer	Any customer protocol can be installed on the Windows based Industrial PC, to match customer network requirements
Security & Data Storage	Physical: 3 layers Cyber: Firewall + Encryption Data Storage: Full 10 years	Consult factory for full description of security measures Customizable to customer network requirements ExiNMS provides full suite of network management features. Consult factory
Scalability	12.7 MWh per building block	Consult factory. Each network node can handle 10 containers. Scalable to 10,000 nodes in a distributed architecture w. full remote & central controls/monitoring
Sustainability	Circular Life-Cycle Design	Re-use + recycle + recover = 100%
Shock & Vibration	IEC60068-2	Current design meets Zone I
Altitude	up to 2000m	Consult SPS above 2000m
Environmental Standards	RoHS 6/6, WEEE	Compliant
EMC – radiated and conducted	CISPR22 (EN55022) Class A	
Safety & Recycling	No heavy metals or dangerous gases; 100% recyclable	No special facilities required
CO_2 sequestration	60 – 75 CO_2 eTons	Per container, when proper 2nd skin installed and maintained for 10 years.
Grounding	30kA max. ground fault	Approved earth connection must be provided
Ingress Protection	IP56	Dual skin construction
Footing	Min. 6 required	Appropriate reinforced concrete footing required
Safety Certification	CE, cUL, UN component pending	Total System site certification required
Dimensions [L x W x H] (feet / m)	20' x 8' x 9.8' (6 x 2.4 x 2.9) 23' x 11' x 11' (6.9 x 3.3 x 3.3)	Container Container with 2nd skin
Max. Weight (lbs / kg)	55,000 (25,000)	Includes 5,500lbs (2,500kg) for container
Quality Standard	ISO/TS16949:2009	Process controls
Input / Output Power Connection	Qty. 5; IP68 2" Waterproof cable glands, 2x for +ve and 2x for -ve	Maximum 2" cable per gland
Input / Output Auxiliary Connection	Qty. 4; IP68 1" Waterproof cable glands	Communications, Aux power
Monitoring / Reporting / Alarms	Ah, V, I, T, SoC, DoD, SoH, No. of cycles, balancing, comm., CO2, smoke, fire, active modules, OVP, UVP, OTP, OCP, controller, power supply, cell & module status, traceability, service/maintenance reqs,	For every cell, module and container we monitor, control, report and handle warnings + alarms. Consult factory if the specific item is not listed

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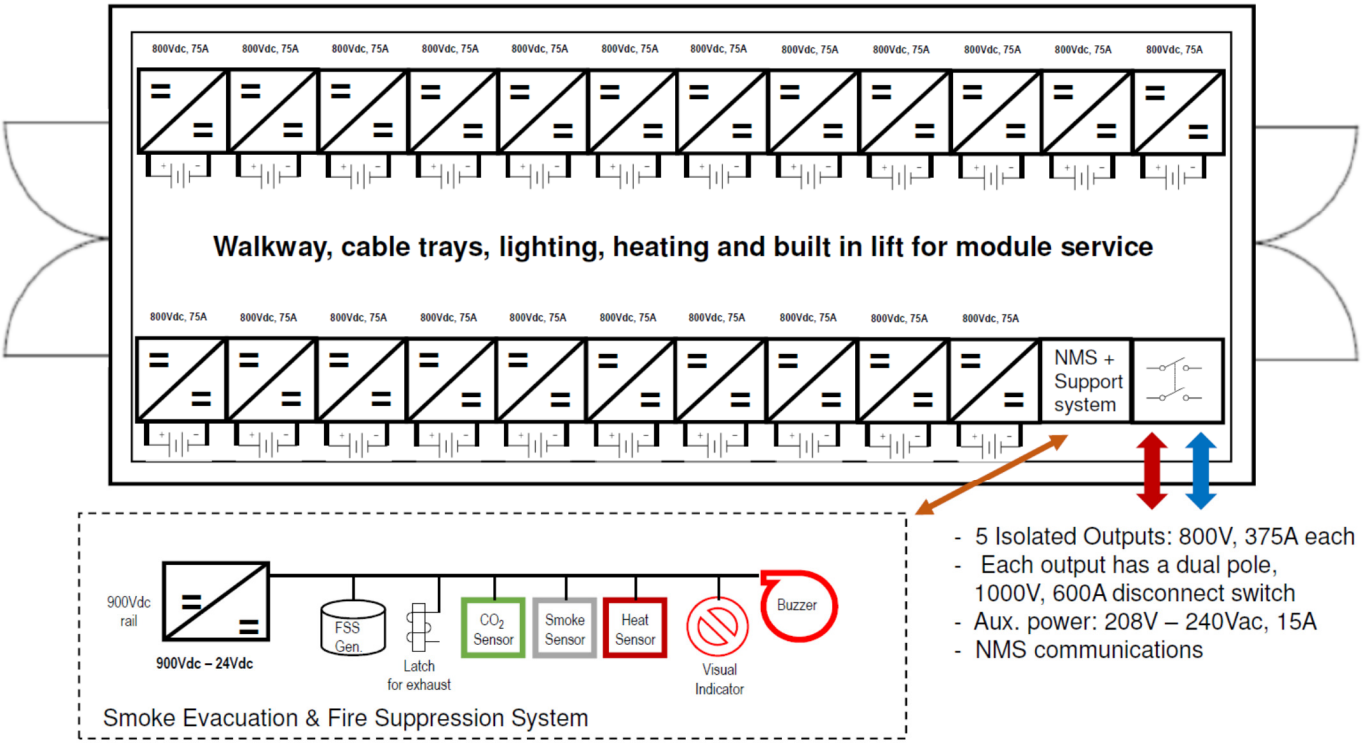
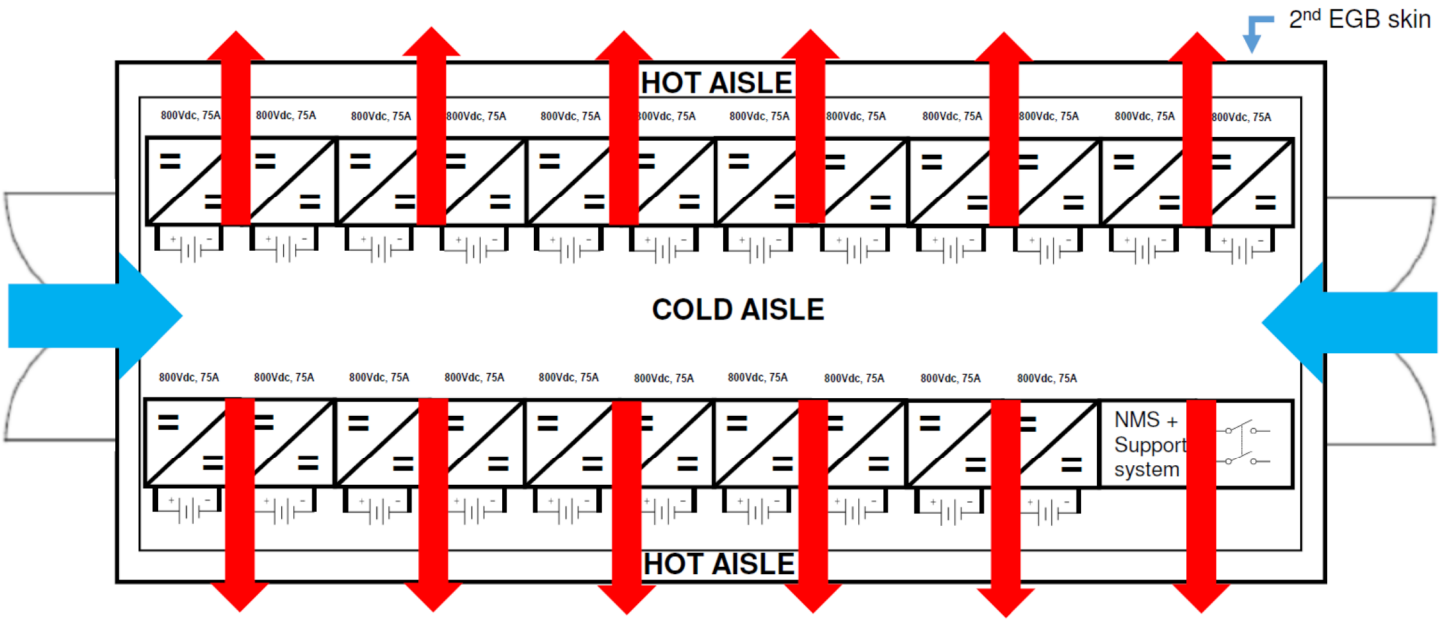
CONTAINER TECHNICAL SPECIFICATIONS

20' container layout:



- 5 Isolated Outputs: 800V, 375A each
- Each output has a dual pole, 1000V, 600A disconnect switch
- Aux. power: 208V – 240Vac, 15A
- NMS communications

20' container thermal management:



Note: Container must be 3.3ft or 1m above ground level to eliminate snow or water blockage of intake and exhaust area, plus debris from blocking the entry ways.

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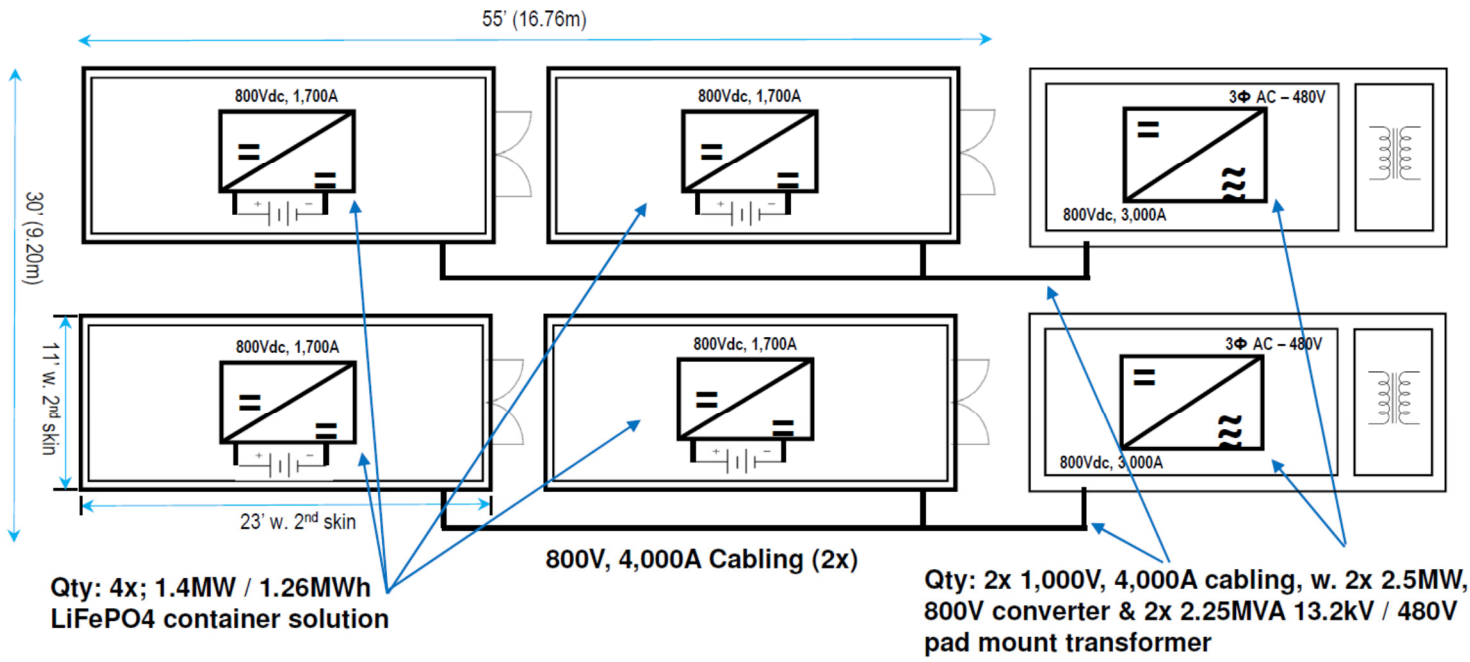
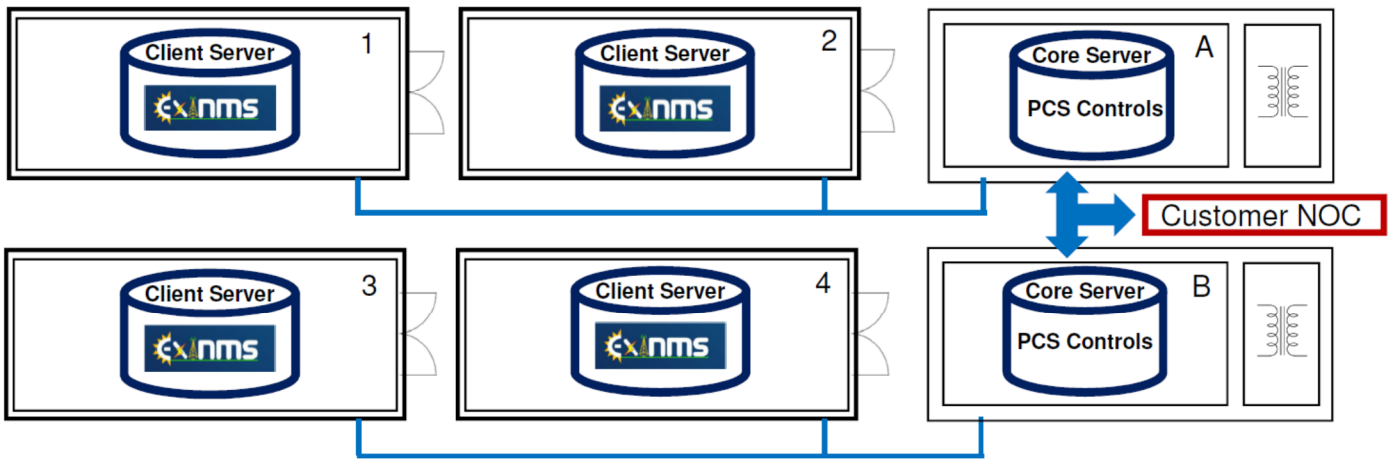
CONTAINER TECHNICAL SPECIFICATIONS

Typical 5MWh site layout:



- SPS Client Servers are designed to handle up to 10,000 nodes / modules each and are able to store full site information for 10 years+.
- They are meant to be operated in either core or client mode and are fully redundant.
- Client servers 1 & 2 / 3 & 4 will back-up each other and communicate to the PCS control center A & B respectively thru Ethernet or any other public or private protocol.
- Core servers A & B are expected to communicate with customer's Network Operating Center (NOC).



Typical 5MWh data communications & storage network

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