C-2-C™ Energy Storage Solutions for Commercial & Industrial Applications

Behind-the-meter C-2-C™ energy storage brings a truly revolutionary cell-to-cabinet design that provides affordability & revenue stacking with up to a 20 year performance guarantee.

C-2-C™ provides 100% system uptime with its N+1 redundant PCS integrated powertrain with energy storage to de-risk your business while saving on facility expenses.
Energy Intensive facilities with critical loads face rising electricity prices, as well as increased risk of outages and grid disruption. In the past, typical solutions have included expensive combined-heat and power (CHP) systems or localized UPS. However, CHP systems are not able to improve power quality and have unacceptably long-switch over times.

Storage Power Solutions’ C-2-C™ energy storage system uses proprietary controls to enable a scalable 60 minute to 20-hour storage solution integrated with an N+1 redundant PCS. This flexibility allows commercial and industrial customers to reduce peak demand and energy charges.

In a nutshell, C-2-C™ provides 24/7 on-demand fast response power that is 100% available due to the system’s N+1 fault tolerant design and preventative maintenance program.

C-2-C™ is a 6th-generation integrated building block, incorporating 30 years of field experience with critical infrastructure design & deployment. C-2-C™ integrates a comprehensive redundant safety suite in every cabinet exceeding NFPA 855 standards.

C-2-C™ offers easy installation & plug & play capabilities. Installation and commissioning is simplified by packaging the cell-to-cabinet solution at SPS’ Canadian factory before shipping the system to site fully assembled and tested. This breakthrough approach ensures that the energy storage project comes in on time and on budget, while ensuring 100% availability for performance over the life of the asset.

- **IMPROVED POWER QUALITY**
  - Dynamic reactive power input & output for voltage and frequency correction.
  - Power factor correction through pure phase shift to adjust apparent power.
  - PCS galvanically isolates the AC input and DC bus from the customer load, eliminating all neutral line common-mode noise coupling.
  - 100 MW/min. ramp rate with 4 quadrant charge and discharge capability.

- **ENERGY SAVINGS**
  - Enables significant reductions in energy costs through peak demand reduction, energy arbitrage and ability to participate in utility demand response programs.
  - Each dual conversion UPS is able to perform 0–100% for Demand Response.
  - Each N+1 PCS is able to perform 0–100% Demand Response functions.
  - BESS round-trip efficiency from AC input to AC output is greater than 88.0%.

- **EASY INSTALLATION**
  - Easy Installation & Plug & Play.
  - Energy Storage integration with PCS that reduces installation complexity and cost.
  - Modular cabinet design is scalable to meet a wide range of applications, while allowing for a small footprint.
  - Minimized system footprint and connection study requirements.

### C-2-C™ Configuration & Sizing

<table>
<thead>
<tr>
<th>Power Level</th>
<th>Configuration</th>
<th>1-Hour System</th>
<th>2-Hour System</th>
<th>4-Hour System</th>
</tr>
</thead>
<tbody>
<tr>
<td>200kVA 480V 3P</td>
<td>4.5’x6’x10’</td>
<td>4.5’x6’x10’</td>
<td>9’x6’x10’</td>
<td></td>
</tr>
<tr>
<td>400kVA 480V 3P</td>
<td>9’x6’x10’</td>
<td>9’x6’x10’</td>
<td>13.5’x6’x10’</td>
<td></td>
</tr>
<tr>
<td>600kVA 480V 3P</td>
<td>13.5’x6’x10’</td>
<td>13.5’x6’x10’</td>
<td>18’x6’x10’</td>
<td></td>
</tr>
<tr>
<td>800kVA 480V 3P</td>
<td>9’x11.5’x11.5’</td>
<td>9’x11.5’x11.5’</td>
<td>9’x11.5’x20’</td>
<td></td>
</tr>
</tbody>
</table>
**Superior IRR**
De-risked projects with 20-year performance guarantee.

SPS drives value by eliminating costly balance-of-system components. Installation costs have been reduced through use of modular cartridge technology, perfected in the telecom world. C-2-C™ system arrives at site with all inter-cabinet connections included for quick and seamless installation.

**Optimized Revenue**
For the first time, storage integrates multiple customer value streams to maximize IRR. C-2-C™ enables true revenue stacking by segmenting storage into configurable units which can be dynamically reconfigured in real time to perform distinct revenue functions.

**Compact Design**
Balance of System Simplified, Miniaturized & Integrated, with 143 kW/306 kWh Per m² Footprint.

**High Efficiency**
NEMA 3R/IP55 rated.
Ultra-high efficiency power electronics & low auxiliary (10 kW) power requirements. Intelligent thermal management using forced air cooling. Cabling & large switch gear eliminated.

**100% Availability**
Engineered using principles from telecom applications for enhanced availability, providing cost effective N+1 redundancy and no single point of failure. MTBF = 300,000 Hours. MTTR = 60 Minutes. Response time 2 msec. Up to -40ºC to 60ºC operation (with de-rating).

**Maximum Safety**
UL1741, UL1973, CSA/UL 9540/A and NFPA855 compliant. 7-Layers of safety built in for optimum protection against thermal runaway - 4 prevention layers and 3 containment layers. There are an additional 6 unique protection layers for public and worker safety. Holistic cybersecurity approach that meets IEC-62443-4-1 and BDEW whitepaper and NERC CIP.1.

**Sustainability**
SPS practices Circular Lifecycle Design Principles. LFP cells are 100% recyclable and meet all ROHS compliance requirements.

**Cell-to-Cabinet Storage Designed for Maximum Customer Value**

- Bankable, Superior Project IRR
- Maximum Revenue Optimization
- Compact System With Highest Energy Density
- Outstanding System Efficiency
- Resilience, Reliability & Availability
- Quality & Environmental Sustainability
- Safety & Security First

- De-risked With 20-Year Performance Guarantee
- True Revenue Stacking With Real Time, Dynamically Reconfigurable Building Blocks
- Balance of System Simplified, Miniaturized & Integrated With 143 kW/306 kWh Per m² Footprint
- Ultra High Efficiency Power Electronics & Low Auxiliary Power Through Intelligent Thermal Mgmt
- N+1 Redundancy With PCS for Safety & Operation
- Circular Lifecycle Design Principles Built in: Reduce, Recycle, Recover, Reuse
- 7 Safety Layers Plus 6 Layers of Security for Ultimate Protection

**7 Safety Layers Plus 6 Layers of Security for Ultimate Protection.**

**Circular Lifecycle Design Principles Built in:**
- Reduce, Recycle, Recover, Reuse

**N+1 Redundancy With PCS for Safety & Operation**

**Ultra High Efficiency Power Electronics & Low Auxiliary Power Through Intelligent Thermal Mgmt**

**Compact System With Highest Energy Density**

**Outstanding System Efficiency**

**Resilience, Reliability & Availability**

**Quality & Environmental Sustainability**

**Safety & Security First**

**Maximum Safety**
UL1741, UL1973, CSA/UL 9540/A and NFPA855 compliant.

- 7-Layers of safety built in for optimum protection against thermal runaway - 4 prevention layers and 3 containment layers.
- There are an additional 6 unique protection layers for public and worker safety.
- Holistic cybersecurity approach that meets IEC-62443-4-1 and BDEW whitepaper and NERC CIP.1.
Storage Power Solutions (SPS), founded in 2014 with its HQ near Toronto, Canada, designs, manufactures and distributes large-scale battery energy storage solutions that are infrastructure-hardened, resilient and affordable. SPS is uniquely positioned in energy storage, leveraging its 100+ years of experience in AC & DC Power Electronics, Ni-Cd, VRLA, Ni-MH and LFP batteries, control & monitoring, IP65 N+1 systems with network & asset management tools as well as solar energy. SPS has designed, deployed and managed over 6 GW/6 GWh in a variety of critical applications. SPS’ DNA is critical infrastructure and employs a field-proven system architecture in its C-2-C™ technology. This includes a proprietary front-end with analog intelligent controls of the battery module, enabling plug and play interface with a variety of PCS and UPS. With a focus on reliable and resilient (N+4) system design, SPS’ modular approach can scale from 50 kWh to GWh+ and is suited to a variety of applications requiring infrastructure hardening and rugged environments.