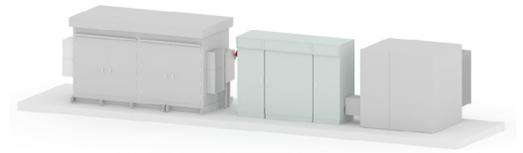


# IHI Energy Storage Solar + ESS Solution: DC/DC Coupling

IHI Energy Storage provides a unique DC/DC coupled solar + storage system. Maximize your energy output with an effective and autonomous system, with controls directed by a deep neural network to create a highly efficient solar + storage solution.



## Product Features



**Optimally harvest clipped energy (lost energy)** and solar shift to achieve highest economic value



**Reduced cost** through streamlined design with fewer components compared to AC coupled energy storage systems



**High efficiency** compared to AC coupled systems, with fewer inverters and transformers



**Optimally configured DC/DC system solution for solar + storage** designed with the latest generation Li-Ion battery racks to support 1500Vdc PV & battery voltage



**Autonomously controlled DC converter and PV inverter** with optimized control model between MPP and ESS operations



**Maximum output enabled with deep neural network solar forecasting** maximizes the cliff energy use and energy arbitrage

## Product Specification

Details	Specifications
kW Power Rating	600 - 3000kW per Unit
kWh Energy Rating	1200kWh - 12000kWh
DC PV Voltage	850-1500 Vdc *
DC ESS Voltage	840-1100 Vdc **
Estimated RTE	89% - 91%
Battery Technology	Lithium Ion
Temperature Rating	-20° ~ 50°C
Enclosure Protection Rating	NEMA3R
Enclosure Material	Reinforced Concrete, steel, or ISO standard container
Seismic Category	Zone 4, Category E
Auxiliary Power	480V / 208Vac Configurable
Cooling	HVAC
Safety Certification & Compliancy	UL508 or UL-1741 (no Grid interaction testing) NEC 2017
PV Array Connection	16-24 1500V fused inputs (optional)***
Protection	Non-load break disconnect and reverse current blocking diode
PV Inverter Connection	Configurable based on PV inverter vendor requirement
Control Software	Automated control of ESS & PV MPP voltage through DC/DC converter: DNP3.0 Modbus

\* DC PV & ESS specification subject to change based on project specifications and final vendor selection

\*\* De-rate based on PV voltage. Detailed TBD.

\*\*\*PV+ESS recombiner to be discussed separately based on solar project design