

Modular PCS + GridMind AI

Modular Power Conversion System with built-in predictive AI dispatch, vendor-agnostic integration, and automated carbon reporting.

Your storage is installed. But is it thinking?

Most BESS systems are blind — locked to one brand, cloud-dependent, running on fixed rules. GridMind AI changes this: it **predicts load & solar, dispatches on real tariffs, connects to any brand, and reports carbon automatically**. No separate EMS. No extra license. **One controller. Full intelligence. From day one.**



Leonics MSSP — Containerized Power Conversion System

Modular inverter modules in a rugged IP55 container. Each module is individually hot-serviceable — scale from 0.12 to 3.2 MW (depending on AC voltage configuration) by simply adding modules, with no system downtime.

HARDWARE PLATFORM

Modular Scalable String Platform (MSSP)

CORE SPECS

TOPOLOGY
3-Level NPC

EFFICIENCY
>98%

DC RANGE
570–1,500 VDC

AC RANGE
380–690 VAC

SCALABLE OUTPUT
0.12–3.2 MW

OPERATING TEMP
-20 to +50°C

CONTAINER OPTIONS
10ft / 20ft CSO

CERTIFICATIONS
UL / IEC / IEEE

ENGINEERING ADVANTAGES

- **Patented parallelability** — AC + DC side, any capacity (Thai petty patent No. 25403)
- **Black start built-in** — Grid restoration as standard
- **Central-string architecture** — Up to 16 modules, service one without stopping others
- **Predictive duty balancing** — Intelligent rotation extends MTBF
- **IP55 rated enclosure** — Outdoor deployment ready

GridMind AI — Intelligent operating functions

Built into every PCS. Not a bolt-on. Actively controls assets to reduce costs, save fuel, and generate carbon data.

On-grid — C&I factories & commercial

1. Peak shaving

AI predicts load spikes, pre-positions BESS to reduce Maximum Demand charge.

Lower demand charge

2. TOU optimization

Charge off-peak, discharge on-peak — driven by AI forecast, not timers.

Maximize tariff savings

3. Self-consumption

Absorb surplus solar into BESS instead of exporting at low rates.

Higher self-consumption

4. Ft / AFA tracking

Adjusts dispatch to minimize variable tariff exposure (TH: Ft / MY: AFA).

Lower variable cost

Off-grid — Microgrids & remote sites

5. Diesel displacement

Coordinates Solar + BESS + Genset to minimize diesel runtime at optimal load.

Less diesel runtime

6. Genset optimization

Prevents wet stacking, rotates duty across units, extends engine life.

Lower fuel cost/kWh

7. Seamless switching

Pre-charges BESS before source transitions so the load rides through the changeover.

Seamless transfer

Universal — Both on-grid & off-grid

8. Predictive AI

Machine-learning load + solar forecast 4 hours ahead, refreshed every 15 minutes. 100% on-site, no internet needed.

Edge-powered AI

9. Multi-brand control

HAL Library: Modbus RTU/TCP, CAN, RS485. Multi-brand device support. IEEE 1547-2018.

No rip-and-replace

10. Carbon & ESG reporting

Auto tCO₂e using TGO/IEA emission factors. CBAM, T-VER, ESG ready — no separate software.

Carbon data from day one

Trained in the cloud. Runs at the edge.

GridMind AI learns from every deployment — refining models in the cloud, pushing them to your Edge Controller via OTA. All decisions run locally: forecasting, dispatch, carbon tracking — with or without internet.

Cloud-trained brains. Edge-powered control. Zero extra cost.

Leonics Energy Storage Solutions

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Leonics PCS — Modular Scalable String Platform

PCS – 10ft Container (CSO 10ft CNTR / IP55)

Voltage	INV 3	INV 4	INV 5	INV 6	INV 7	INV 8	INV 9	INV 10
@690Vac	0.6	0.8	1.0	1.2				
@600Vac	0.5	0.7	0.9	1.0	1.2			
@480Vac	0.4	0.6	0.7	0.9	1.0	1.2		
@440Vac	0.4	0.5	0.6	0.8	0.9	1.0	1.2	
@400Vac	0.3	0.5	0.6	0.7	0.8	1.0	1.1	1.2
@380Vac	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.2

PCS — 20ft Container (CSO 20ft CNTR / IP55)

Voltage	INV 7	INV 8	INV 9	INV 10	INV 11	INV 12	INV 13	INV 14	INV 15	INV 16
@690Vac	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
@600Vac	1.4	1.6	1.8	1.9	2.1	2.3	2.5	2.7	2.8	
@480Vac		1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.4	
@440Vac			1.3	1.5	1.6	1.7	1.8	2.0	2.1	
@400Vac				1.3	1.5	1.6	1.7	1.8	2.0	
@380Vac				1.3	1.4	1.5	1.6	1.8	1.9	

Weight	Max 10.5 ton
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AC Power Output per Voltage (kW)

Voltage	INV 1	INV 2	INV 3
@690Vac	200	400	600
@600Vac	180	360	540
@480Vac	150	300	450
@440Vac	120	240	360
@400Vac	120	240	360
@380Vac	120	240	360
DC Voltage Range	570-1500 Vdc @380Vac · 600-1500 Vdc @400Vac · 660-1500 Vdc @440Vac 720-1500 Vdc @480Vac · 900-1500 Vdc @600Vac · 1035-1500 Vdc @690Vac		
Rated AC/DC Current	Varied by INV# and Vac		
Power Factor	1.0 Leading to 1.0 Lagging		
Current Harmonics	< 5% THD		
Maximum Efficiency	98%		
Max Ramp Rate	< 16.67 ms		
Cabinet	IP44, Outdoor		

Dimension & Weight	INV 1	INV 2	INV 3
Dimension (W×H×D) mm	800×1500×1250	800×1750×1250	1600×2100×1400
Weight (kg)	450	850	2,500

Common specifications — 3 models

Environmental	
Operating Temperature	-20 to +50°C
Max Elevation	1,000 Meters
Cooling	Air Cooler (HVAC)
Grid Frequency	50 / 60 Hz
AC Input Voltage	690 / 600 / 480 / 440 / 400 / 380 V 3Ø3W

Certifications & standards compliance

- UL1741SA including CA Rule 21 (Inverter)
- IEC62477-1
- CSA22.2
- EN61800-3
- IEEE1547

Hardware protections

- AC SPD, AC Breaker with Shunt Trip
- DC SPD, DC Fuse / DC IMD (Option)
- DC Pre-Charge & Discharge

Software protections

- AC Over/Under Voltage, Over/Under Frequency
- AC Power Derate by DC Battery SoC and Temperature
- AC Power Limiting
- AC Power Command Time-Out
- DC Over/Under Voltage, Over Current Limiting
- DC SoC & Temp Limiting
- Anti-Islanding Protection