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LITHTECH

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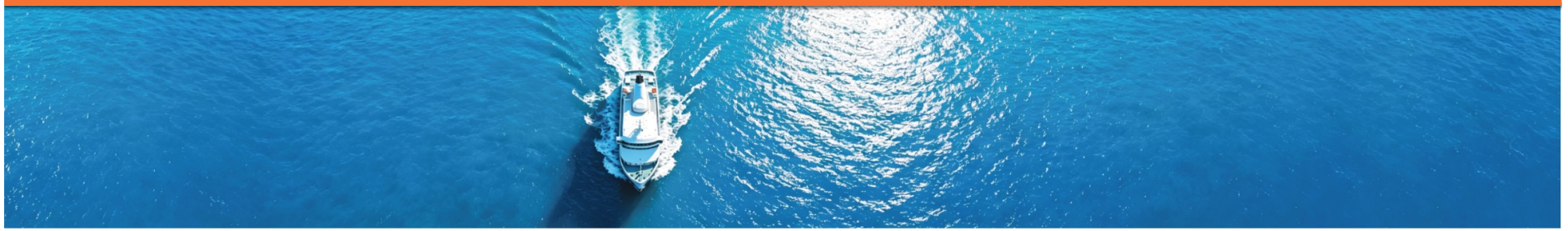
MARINE BATTERY SOLUTION

Innovative Marine Battery & Shore Power Systems



Shenzhen Lithtech Energy Co., Ltd
info@lith-tec.com
https://www.ltc-energy.com/
+(86) 0755-23300421
Office: 14F, Block D, Central Avenue, Baoyuan Road, Xixiang Sub-district, Bao'an District, Shenzhen City, Guangdong Province, China
Factory: 1F, Building 1&6F, Building 2, Min'gang High-tech Industrial Park, No. 96 Qingbin East Road, Qingxi Town, Dongguan City,Guangdong Province, China

SHENZHEN LITHTECH ENERGY CO., LTD



LITHTECH ENERGY

Shenzhen Lithtech Energy Technology Co., Ltd. (Lithtech), founded in 2018 with the mission of "safeguarding sustainable energy ecology," specializes in Marine Energy Storage Systems (Marine ESS), while also covering C&I energy storage, residential ESS, and AI-driven smart energy solutions. The company is committed to becoming a world-leading marine new energy system integration solution provider.

Driven by technology integration and innovation, Lithtech has independently developed marine-grade high-precision BMS technology featuring anti-corrosion, and vibration tolerance. Through AI intelligence, the system enables real-time monitoring, dynamic optimization, and full life-cycle energy management. The product adopts intelligent modular design, multi-level safety protection, and advanced fire-resistant materials, meeting the stringent safety requirements of marine applications under extreme conditions, and supporting customers in their transition to green shipping.

Lithtech adheres to a global development strategy, establishing overseas subsidiaries and localized service capabilities in Frankfurt (Germany), Los Angeles (USA), Saudi Arabia (Middle East), and Nigeria (Africa), building a worldwide network integrating R&D, manufacturing, and service. All products comply with international certifications and standards such as CE, UL, and SASO. In the marine energy sector, Lithtech is one of the earliest manufacturers in China to obtain DNV certification for marine battery systems in 2019, demonstrating industry-leading certification expertise and extensive ODM development experience. Lithtech has successfully delivered multiple marine ESS projects approved by major classification societies including DNV, LR, BV, and RINA, providing "zero-distance" technical support and services to customers in more than 100 countries and regions worldwide.

Looking ahead, Lithtech will continue to focus on marine electrification and shore power integration technologies, driving the evolution of energy systems toward "safer, more reliable, and smarter" solutions, and contributing to a harmonious and sustainable marine energy ecosystem between humanity and nature.

100+
Global Partners

1200+MWh
Global Projects

120+
Patents

25%
R & D Investment Ratio

Our Service

Integrated marine battery solutions centered on high-safety, long-life lithium iron phosphate (LFP) technology, covering R&D, production, and sales.

- Product Introduction and Technical Training
- Practical Application Needs Analysis
- Professional System Solution Design
- Product Application Guidance
- On-Site Installation and Commissioning
- Cutting-Edge Technology Information Sharing

100% Delivery Commitment

- Supply Chain Collaboration & Real-Time Monitoring
- Dynamic Production Scheduling & Flexible Capacity Planning
- Order Promise Governance

Lifetime Value Partnership

- Predictive Maintenance 3.0
- Over 10-Year Performance Warranty
- Technology Upgrade Pathway

Zero-Compromise Quality

- 24 / 7 / 365 Remote Monitoring
- PPB-Level Defect Rate
- Triple-Check Certification System

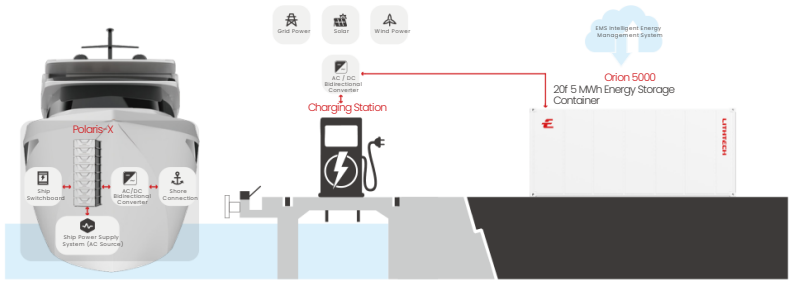
Recycling Ecosystem

- Advancing with Time
- Partnering for Growth
- Thriving with Nature

Marine & Shore Battery Solutions

Shore-to-ship power

What does a shore-to-ship power supply do?



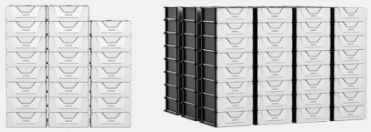
Onboard (Marine BESS)
Ships can shut down their engines while berthed and plug into onshore power source.

OPS (Onshore Power Supply)
Emissions to the local surroundings are eliminated.

Onshore BESS
The ship's power load is transferred to the shore-side power supply without disruption to onboard services.

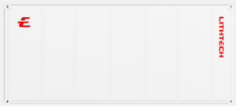
LITHTECH Ship Energy Storage System

Shipborne BESS Energy Storage System



Polaris-X

Port BESS Energy Storage System

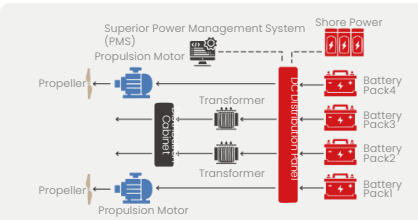


Orion 5000

Smart Energy Ecosystem



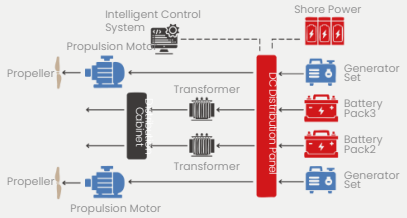
Vessel Propulsion & Power System Configurations



Pure Battery Power

— Green energy such as lithium batteries as main power source.

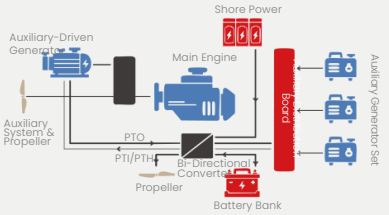
Applicable to small and medium-sized inland vessels; Main power uses green energy such as lithium battery; Zero-emission, pollution-free, ultra-quiet; High system dynamic response capability; Endurance is limited by battery capacity; Relatively high initial investment.



Series Hybrid Power

— Diesel generator set and battery operate in parallel network.

Applicable to most vessel types Diesel engine supports variable speed operation Most of the time operates in efficient power generation mode Reduced pollutant emissions Significantly reduced vibration and noise



Parallel Hybrid Power

— Hybrid mode combining diesel engine, generator set, battery pack.

Applicable to vessels requiring multiple speeds or power outputs Supports multiple PTO / PTI / PTH modes Rational energy distribution among multiple power sources Significantly reduced pollutant emissions Supports long-distance navigation

Core Strength

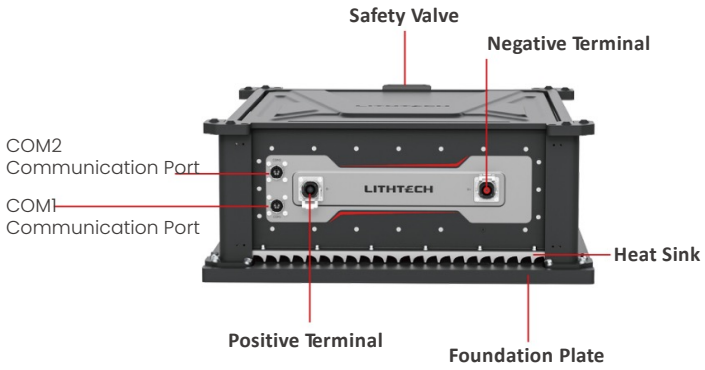
DNV RINA
First DNV-Certified Manufacturer in China (2019). Multiple DNV & RINA Certifications

Full ODM Team with Mature Configuration

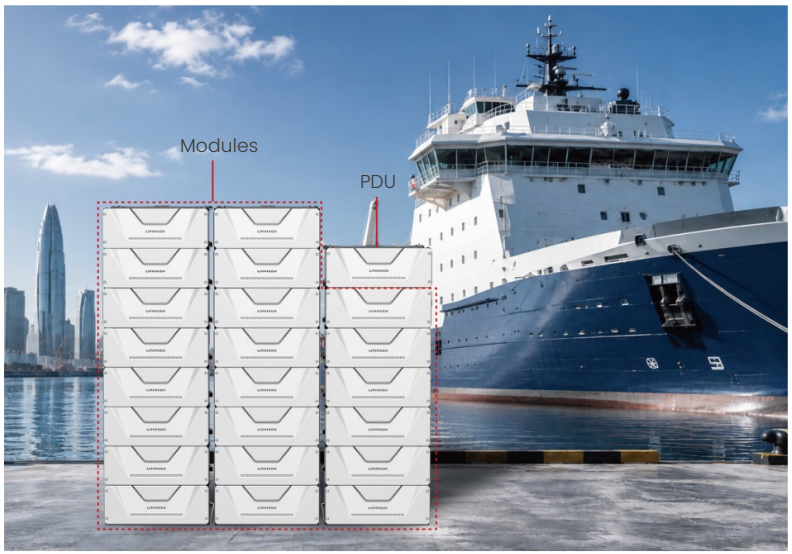
Marine Electrification Project Management Expertise

Overseas Marine Installation Projects > 100 MWh

Polaris-X



Battery String Case (String of 22 Modules and 1 PDU)



Polaris-X

Technical Specifications

Performance Specifications	
Battery Cell Chemistry	Lithium Iron Phosphate
C-Rate - Continuous (Discharge / Charge)	0.5C / 0.5C
C-Rate – Peak (Discharge / Charge)	1C / 1C
Module Specifications	
Module Energy	18.08 kWh (at 57.6 V nominal)
Modules per String	22
Module Dimensions [L × W × H]	675(L) x 615(W) x 249.5(H) mm
Module Weight	~134 kg±3%
Module Energy Density	134.9 Wh/Kg
Fire Suppression Device	Aerosol Fire-extinguishing Device
Ingress Protection	IP67
Protection Grade	C5
Cooling	Natural Air Cooling / Liquid Cooling (> 0.5C)
System Specifications	
Installation	Module Stacking
Type Approval	DNV: target February 2027 (pending)
Module Numbers of 1 String	(pending)
String Voltage	1267.2 V
Strings per Array	8
Energy per Array	3,182.08 kWh
System Capacity	Configured per Project / EMS
String Numbers of 1 System	Based on EMS
Cycles	8000
Operating Temperature (Charge)	0 °C ~ 55 °C
Operating Temperature (Discharge)	-20 °C ~ 55 °C

Highlights

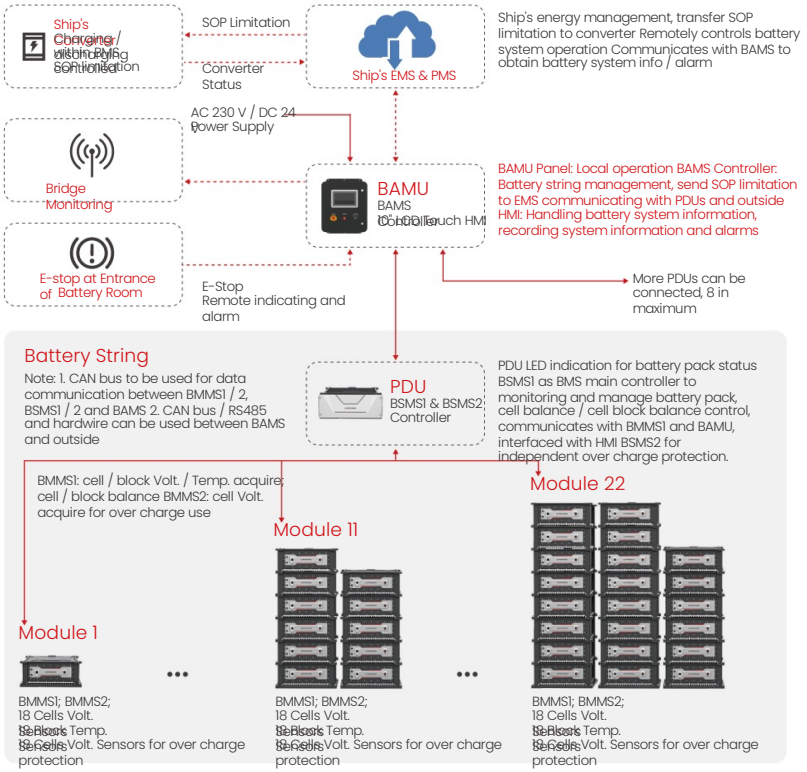
Multi-Compatibility
Suitable for Pure Electric Vessels and Hybrid Electric Vessels Applicable to In-Cabin and Containerized Power Systems Compatible with Most Vessel Types, Including Cargo Ships and Passenger Vessels

Monitoring & Diagnostics
BMS Real-Time Monitoring of Voltage, Temperature & SOC Supports Remote Monitoring & Early Fault Warning Early Detection of Potential Risks Reduces Downtime Losses

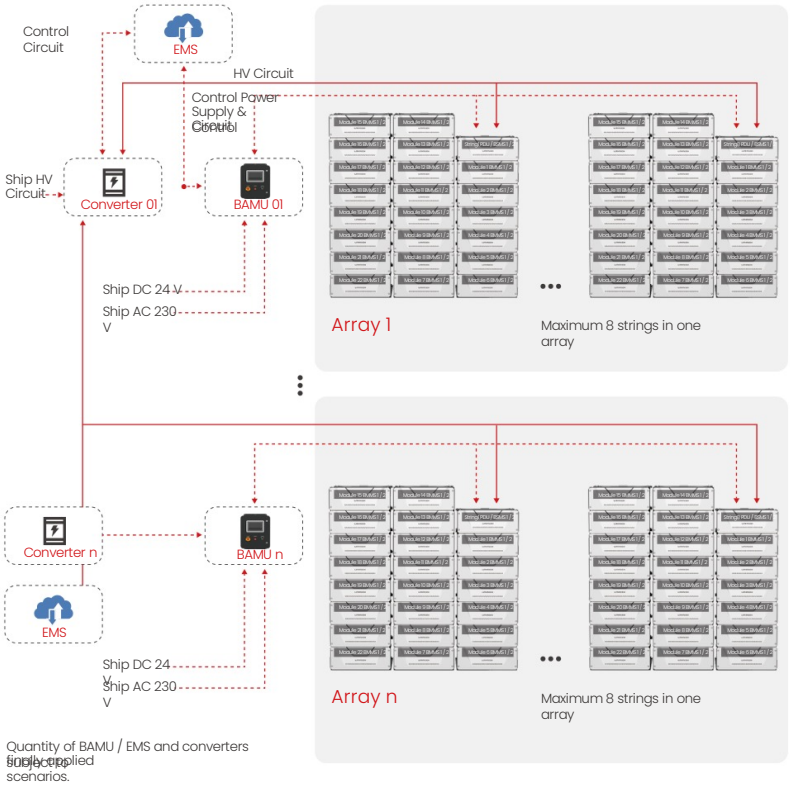
Flexible Expansion
Flexible Parallel / Series Configuration Quick Installation & Maintenance Significantly Reduced Maintenance Cost

Ultra-High Protection
Active & Passive Multi-Layered Safety Design Millisecond Fault Response IP67 / Marine-Grade Protection

Battery Management System



Battery System Topology



Shore Power + Cloud + Charger Integrated



Core Technology

Three-layer architecture is designed to support high safety at sea, Real-time monitoring of voltage, temperature, and insulation. Accurate SOC / SOH supports passive balancing, thermal management, pre-charge, fault alarm, and protection.

- Marine Anti-Corrosion
- Millisecond-Level Fault Response
- Cloud Remote Monitoring & Diagnosis
- Liquid / Air Cooling Compatible

Orion 5000



Technical Specifications

Performance	
Continuous Discharge C-rate	0.5C
Peak Discharge C-rate	1C for 30 s
System Specifications	
Nominal Voltage	811.44 V
Nominal Capacity	6072 Ah
Nominal Energy	4927 kWh
System Configuration	24P252S
Energy Density	156.4 Wh/kg
Cycle Life	≥4,000 cycles (80% SOH, 25°C)
Dimensions [L × W × H]	6058(L) x 2438(W) x 2591(H) mm
Weight	≈43 t
Safety Specifications	
Disconnect Circuit	Hardware-based fail-safe for over-temperature and over-voltage
Short Circuit Protection	Fuses included on pack level
Emergency Stop Circuit	Hard-wired
Ground Fault Detection	Integrated
Disconnect Switchgear Rating	Full load
General Specifications	
Cooling Method	Liquid
Communication	Modbus, Ethernet, CAN
Certification	DNV / IEC 62619 / 62620 / 60945 / UN38.3 / UN3536
Warranty	5 Years / 10 Years

Orion 5000

Core Solutions for Port New Energy

200 kW ~ 800 kW
Small ports or terminals Low-voltage rated grid frequency 50 Hz/60 Hz Low-voltage four-quadrant variable frequency power supply

1 MW ~ 2 MW
Medium-sized ports or terminals along rivers and coasts High-voltage rated grid frequency 50 Hz/60 Hz Low-voltage four-quadrant VFD and high-voltage cascaded H-bridge VFD

3 MW ~ 15 MW
Large ports or terminals High-voltage rated grid frequency 50 Hz/60 Hz Low-voltage four-quadrant VFD and high-voltage cascaded H-bridge VFD

Application Scenarios


▲ Sightseeing Boat


▲ Car Ferry


▲ MPV Cargo Ship


▲ RoPax Ship


▲ Fish Farm


▲ Tugboat

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LITHTECH TECHNOLOGY

Marine energy storage solutions and shore-to-ship electrical power supply systems (OPS).

SCOPE OF ACTIVITIES

Distribution, commercialization, solution integration and O&M in Spain and Portugal. Business development in the European maritime sector.

SERVICE AND CONTACT

Technical support, integration engineering and commissioning assistance, subject to each project scope.

Marine and port energy solutions

HEAD UP services

DISTRIBUTOR · SPAIN & PORTUGAL

+34 986 12 41 63

comercial@headup.es

Barrio San Andrés Pontellas, 20

36412 O Porriño (Pontevedra) · Spain

Technology: LITHTECH