

Cmoonlight Advances Integrated Solar Street Light Performance Through MPPT and LiFePO4 Thermal Management

Optimizing Energy Harvesting, Battery Reliability, and Outdoor Lighting Efficiency for Diverse Applications

CALIFORNIA, CA, UNITED STATES, August 28, 2026 /EINPresswire.com/ -- SHENZHEN, China, Aug. 28, 2026 — Shenzhen Moonlight Technology Co., Ltd., a solar street light manufacturer operating under the [Cmoonlight](#) brand, has structured its integrated solar lighting line around MPPT (Maximum Power Point Tracking) photovoltaic conversion, LiFePO4 battery storage and programmable light control, according to company specifications and certification records. The company, founded in 2010, reports a 100% export ratio and says its products are deployed in more than 120 countries and over 400 counties and cities globally.



The company's product portfolio includes integrated/all-in-one solar street lights, split solar street lights, all-in-two solar street lights, auto-cleaning solar street lights, vertical solar wrapped light poles, smart solar street lights and hybrid solar street lights. Its integrated luminaires are used in municipal engineering projects, road construction sites, highway service areas, urban main roads, rural roads, parks and parking lots, according to the company's application scope.

Solar Street Lighting Market Continues to Expand

The global solar street lighting market was valued at USD 5.0 billion in 2024 and is projected to grow at a compound annual growth rate of 7.4% through 2034, according to Global Market

Insights. Asia-Pacific holds the largest regional share at approximately 40%, according to P&S Intelligence. In March 2026, China's solar product exports including panels, cells and wafers reached a record 68 GW, as reported by Ember via Mongabay, reflecting sustained overseas demand from Africa and Asia.

MPPT-Based Photovoltaic Conversion

Cmoonlight applies MPPT solar controllers on its foldable Palm Series and Vertical Solar Wrapped Light Poles. In the ML-PALM-120, a 160W double-sided high-efficiency monocrystalline panel feeds a LiFePO₄ battery through an MPPT controller, while the ML-PALM-100 uses the same control approach with a 140W panel and a 45Ah/12.8V battery. The Vertical Solar Wrapped Light Pole ML-VSWLP-6 integrates two 120W photovoltaic panels with a combined 240W rating, using high-efficiency heterojunction monocrystal cells with cell efficiency of 24% and above, and a 12.8V/36Ah A-Plus LiFePO₄ battery. MPPT controllers are designed to operate the panel near its maximum power point under varying irradiance, a common method to improve energy harvest in solar lighting systems.

Battery Selection and Thermal Management

All integrated models in Cmoonlight's portfolio use lithium iron phosphate (LiFePO₄) batteries. Representative configurations include 15Ah, 30Ah, 45Ah and 60Ah packs at 12.8V, as well as a 25.6V version in the split ML-Split-200 model. The outdoor lighting application specification for Cmoonlight equipment lists a working temperature range of -20°C to 60°C. Based on published specifications, the thermal management approach relies on the stability of LiFePO₄ chemistry combined with IP65/IP67-rated sealed enclosures to protect the battery pack from moisture and dust across this temperature range.

Intelligent Light Sensing, Timer and Motion Control

Cmoonlight's integrated lighting systems support light-activated, timer-based and microwave sensor control modes, according to product datasheets. The microwave sensor functions as an inductive detection mechanism, adjusting brightness based on the presence of people or vehicles. For example, the ML-CL-60 auto-clean all-in-one model operates at 100% output when people are detected and dims to 30% when they leave. The ML-ST-120 uses a time-dimming profile of 100% for four hours, 70% for four hours and 30% for four hours. The ML-PALM-120 also uses the 100%-4hrs, 70%-4hrs, 30%-4hrs schedule, with an option for microwave sensor operation. These control strategies reduce energy consumption during low-traffic periods while maintaining safety illumination.

Representative [Integrated Solar Street Light](#) Specifications

Across the product line, common parameters include LED luminous efficacy of 200 lm/W for Philips, Cree and San'an chips, continuous operation of 3-5 rainy days, and 12-hour nightly

operation. The ML-ST-120 is an adjustable all-in-one fixture with a 150W panel, 120W LED output, 45Ah/12.8V LiFePO4 battery and a 12V15A controller, recommended for installation heights of 8-9 meters and spacing of 30-35 meters. The ML-CL-100 auto-clean model pairs a 130W panel with a 100W LED output and 60Ah/12.8V battery, adding an automatic cleaning system for the photovoltaic surface. The ML-Split-200 split-type system uses a 200W DC36V monocrystalline panel with an 80W LED fixture at 200 lm/W, a 45Ah×25.6V LiFePO4 battery and a 12V8A controller. The Palm Series ML-PALM-40, a compact foldable unit, integrates a 60W double-sided panel with a 15Ah/12.8V battery and is rated for 4m installation heights.

High-brightness applications are served by LED outputs ranging from 30W to 200W, with die-cast aluminum housings and IP66/IP67 protection levels across different series. The company also offers smart solar street light configurations that integrate hybrid solar-grid power functions and remote control, according to its OEM/ODM customization list.

Certification and Standards Compliance

The Palm Series foldable all-in-one solar street light holds CE certification under certificate number CTE15GR-664E, with the scope covering 40W, 64W, 100W and 120W models, according to Cmoonlight's certification records. The series also maintains CB (DE 2-034408), FCC (CTE15GR-664F), IP67 (CTE15GC-665IP), RoHS (CTE15GC-664R) and ISO 9001:2015 (00119Q33912R0S/4403) certificates. For municipal tenders in the EU, Middle East, Southeast Asia and Latin America, such third-party documentation is commonly required as part of procurement evaluation.

Export Track Record and Market Impact

Shenzhen Moonlight Technology reports a 100% export ratio, with primary markets in the Philippines, South America, Thailand, Malaysia, the Middle East and Africa. The company's products have been deployed in more than 120 countries and over 400 counties and cities globally, according to its corporate profile. Cmoonlight lists case projects including a 2,080-unit highway deployment in Chile with a 15-year project duration, and a 1,800-unit city road project in Peru, both described as stable operation. The company's 20,000-square-meter factory in Shenzhen employs 245 staff, with a stated annual output of 120,000 units and a monthly capacity of 8,000 units. Its R&D team includes 25 engineers focused on smart solar lighting and integrated system design.

Customization and After-Sales Support

Cmoonlight's manufacturing capability covers OEM and ODM production, with customization options for solar panel wattage; battery model, capacity and voltage; hybrid solar-grid functions; light efficiency; color temperature; and lighting modes. The company states a monthly capacity of 8,000 units, a minimum order quantity of 2 units, and a lead time of 15-45 days. All products undergo 100% factory testing, and the company offers a 5-year replacement warranty under which damaged units can be exchanged within the warranty period.

Outlook

As integrated solar street lights gain share in municipal, highway and rural road projects, the combination of MPPT-based energy harvest, LiFePO₄ storage and intelligent dimming is becoming a common procurement consideration. Cmoonlight's emphasis on certifications such as CE, CB and IP67, together with its field references across multiple countries, may influence buyers who require documented compliance for long-cycle infrastructure projects. The company's auto-cleaning series and foldable Palm Series are positioned to address dusty environments and high-wind regions, where panel fouling and aerodynamic drag are practical concerns. Contact at cmoonlight.com

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