



旭 東 太陽能浮力系統

SOLAR FLOATING SYSTEM





About Us 關於旭東

旭東環保科技成立於1995年，為全球市佔第三太陽能浮力系統製造領導品牌。超過23年海上箱網及HDPE管材製造經驗，研發出的獨特繫泊系統，為旭東在能源產業中，打造優良品質的重要基礎。自2010年開發浮台至今，旭東已成為全球水上太陽能光電案場信賴夥伴，也是亞洲唯一受國際權威海事能源認證公司DNV GL邀請，參與制定全球業界浮動型太陽能建議規範DNV GL RP-0584，以減緩產業風險，領導產業發展的浮台製造商。

旭東所使用之海事錨固，為1999年為提升漁業發展投入海上箱網所研發之系統。超過20年考驗維持零損壞的好口碑，以及持續精進的技術，使得旭東多年來廣受全球海上養殖大廠信賴，成為全球前兩大海上箱網系統製造商。

有感地球暖化，旭東於十多年前便投入綠色素材研發，確保材料在使用及回收階段，皆不對環境造成汙染，並獲環保署認證標章肯定。旭東期望在這全球能源面臨重大挑戰的時代，於建立新能源技術同時，凝聚跨產業間重視，一同透過專業維護地球永續，創造企業恆續發展的契機。

Established in 1995, Sun Rise E&T is the third highest global market share developer of floating solar photovoltaic systems (FPV), as well as the leading FPV brand in Asia. With 25+ years of experience in offshore fish cages, HDPE pipes and accessories manufacturing, Sun Rise has developed its unique mooring system, which has become the foundation of Sun Rise's significant quality in the energy industry. As we continuously elevate our techniques of FPV, we have become a vital and trusted partner in offshore (OFPV) projects. Furthermore, Sun Rise has been the only manufacturer in Asia invited by DNV GL to compose FPV system guidance to reduce the risk of constructing a floating solar farm and lead the development of the OFPV industry.

Sun Rise's unique mooring system was first developed back in 1999 while introducing our robust offshore fish cage to the market. Sun Rise E&T is now the world's 2nd largest HDPE fish cages manufacturer. We have dedicated ourselves to advancing productivity, investing in the latest technology, and amassing the best minds and talents. We aim to meet the diverse needs of our global customers by providing the most worthwhile products and services.

Facing the ever-challenging global warming effect, Sun Rise E&T has poured vast resources into the research and development of eco-friendly materials. All of our HDPE pipes are pollution-free at both the functioning and recycling stages and are certified by Taiwan Environmental Protection Administration. Global energy is now confronting significant challenges. While we established the technology for alternative energy, it is our aspiration to inspire advancement and reach consensus in the industry toward environmental sustainability through green strategy.

FLOATER FEATURE 浮台特色

旭東自1999年起，近23年的海上箱網技術，奠定了太陽能浮力系統重要的基礎。在20幾年的專業技術及知識下，旭東所研發的水上太陽能浮台在眾多浮力系統品牌中，以多3%的高電量、材質耐撞不破裂、面板可依不同緯度日照調整角度，且迄今無任何失效紀錄等脫穎而出，成為全球市佔第三太陽能浮力系統製造商。旭東浮台設計不僅包含破浪消浪功能，更透過專業CFD規劃繫泊系統，可安置於各式水上空間，更已成熟發展至可於海上設置大量浮力系統，成為未來綠能科技重要夥伴。

"20多年來的海上浮力系統經驗，創造出色的綠能浮台"

With more than 20 years of experience on the sea, we provide the most reliable floater.

The fish cage techniques of Sun Rise E&T in aquaculture have been the solid foundation for developing the floating PV system. With over 20 years of expertise, techniques, and knowledge, the FPV system of Sun Rise E&T stands out among other floating system brands with features such as more than 3% power output, crack-proof material, adjustable panel system, and zero failure record in mooring systems since 1999.

Sun Rise E&T is now the third largest manufacturer in the global FPV market. With outstanding product quality, wave-breaking design, and multiple safety protection, Sun Rise FPV system is not only for inland waters but also for offshore marine. These days, Sun Rise E&T has become the solution partner for green technology.

旭東水上浮台7大特色

Sun Rise Floater's 7 Feature



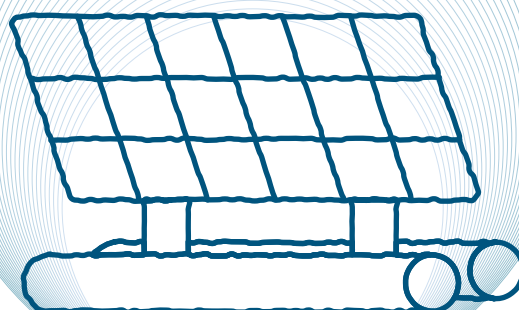
高電量 Higher Electrical Output

較市面上他牌系統發電量多3%。
3% more output compares to other brands.



超靈活 Highly Customized

- 面板依陽光照射角度，調整斜度
Adjustable panel angles, in accordance with sunlight incident angle
- 浮台及走道尺寸，可彈性客製
Free choices of modules with customizable floaters.



壽命長 Long Product Lifetime

HDPE底座壽命50-100年。
HDPE structure easily last more than 50 years.



阻火災 Fire Risk Reduce

防火管包覆電纜管線，搭配防火間隔設計，降低火災風險及延燒。
Fireproof cable protection pipe + interval waterway to reduce the events of fire and chances of spreading.

最安全 The Safest System **SAFE**

- 繫泊系統維持無失效紀錄(1999年至今)
No failure record in the mooring system (since 1999)
- 獨特電纜管線橋，特殊凸點防滑設計
Unique cable bridge design + anti-slip walkway pellets

抗風浪 Wave-Safe

- 浮台陣列通過風動測試
Wind tunnel test approved
- 錨碇設計經流體力學計算
Computational Fluid Dynamics approved
- 浮台設計含破浪及消浪功能
Wave breaking design on the floater structure

不破裂 Crackproof

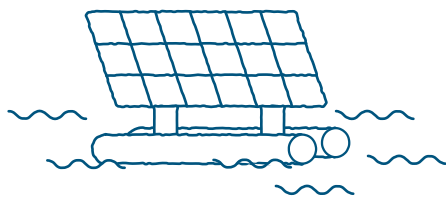
- 高度可撓管- 抗拉耐撞不破裂
High impact resistance system- anti-collision with high flexibility
- 支架材質選用預防面板隱裂鋼材
Selected materials for preventing PV panels from microcracking

FLOATER TYPES 浮台型式

旭東提供高度客製化載台，依客戶需求及案場地理條件，提供最佳設計建議。

客戶可自由選擇任意太陽能模組款式，並依需求調整面板角度、方向、高度、浮台長度及間隙。

Sun Rise's floating systems are highly customizable. Based on site conditions and client requests, we provide the best design solution recommendation. Clients can freely choose any PV module, and decide the panel angle, direction, height, as well as floater gaps and sizes.



水上型
Floating System

水陸兩棲設計 Amphibian Design

獨特高透氣、低接觸的管型載台底座。

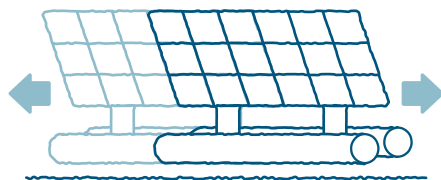
Low material contact designed base structure.

載台於水位變化時，能輕鬆脫離地面不與之產生沾黏、拉拔、或互相擠壓等受力情形。

When the water level altered, Sun Rise floaters can easily detach from the ground without any adsorption or floater deformation.

乾溼季水位變化大、易乾涸水域，或部分著陸之案場皆可使用。

Sun Rise floaters are applicable to sites with large water level differences, with wet and dry seasons, or half dry (floaters partially landing).



陸上型
Onshore System

無須打樁 No Pile Needed

可移動式陸上型底座。

Transportable land system.

管型底座不需打樁、不破壞案場、無事業廢棄物、可快速復原於新案場重複使用。

No piling needed base structure. Zero impact on the environment, no commercial waste, capable of rapid restoration, and reusable at the next solar plant.

綠色能源之礦場、石材場等地形不易打樁之場域皆適用。

Suitable for sites that are not able to employ piling. Commonly used at mine yard and stone quarry.



REFLECTOR BOARD 反射板

2022 旭東獨步全球，推出全球第一組浮台適用之雙面太陽能模組反射板。100%無遮擋之結構設計使得模組背面可獲得全面性採光。

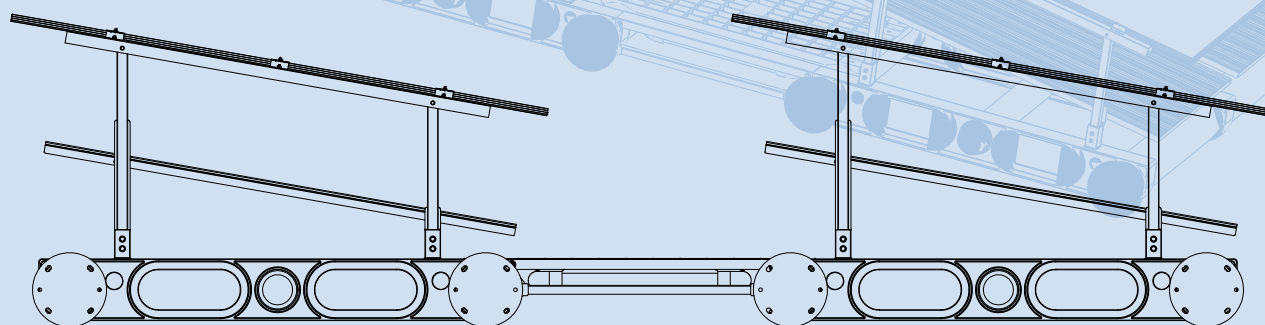
目前市場研究顯示，採用反射板後雙面模組可增加12–19%發電量。旭東正與國際知名測試、檢驗和認證公司 Kiwa NV合作實測旭東系統架設反射板後所增發電量。

反射板材質採用與台塑福欣鋼合作研發之最新無塗層高抗鹽蝕鋼材，可安心使用於海面、濕地、鹽灘地等高鹽分含量水域。

2022 Sun Rise E&T launched the world's first reflector board system for bifacial module floaters. With the zero blocking structure design, the back side of bi-facial modules can be fully exposed to sunlight.

Sun Rise is currently cooperating with the world-famous TIC company-KIWA and ExTEL Energy, to test the increase of output by reflector board on Sun Rise's system. Compared with the mono-facial module, it is estimated to increase 12%-19% power output with the reflector board.

Sun Rise also co-develop the new material "Fuxin 443/446 stainless steel" with FPG, to update the racking system and develop the reflect boards on floaters. Fuxin 443/446 can prevent salt corrosion and resist sea salt deposition without any coating. It is applicable for hypersaline waters, such as offshore, wetlands, and salt marsh.



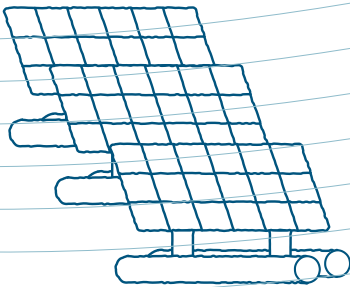


Mooring System 繫泊系統

旭東擁有超過20年，零失敗繫泊紀錄的好口碑。在每一個案場皆以最高安全係數進行設計，確保客戶投注之心血，在每一次不可測的極端氣候考驗下都能穩固度過。

Sun Rise maintain its perfect anchoring record since 1999 by providing the highest safety factor on each project. We make sure clients' investments survive under the unpredictable extreme climate.

四重防護，提供最貼近案場實況的多重保護設計 Quadruple Protection



浮台結構—經結構技師簽證 Floater Structure- Certified by Structural Engineer

蒲氏風級-17級颶風 (十分鐘平均風速47.5m/sec, 等同於陣風68.54m/sec)

Beaufort scale -17 hurricane- ten mins average wind speed 47.5m/sec, equivalent to 68.54m/sec gust.

浮台陣列—經風洞測試 Floater Array- Passed Wind Tunnel Test

20組浮台串並檢測，確保強風下浮台不互相影響及擠壓

Tested with an array of 20 floaters to make sure no collision between floaters.

錨定重量—CFD流體力學計算 Anoring Weight - Calculated with Computational Fluid Dynamics

導入案場風速、面板角度等數據，精準計算所需錨定

Input geographic data with floater design, to calculate the precise weight needed in each direction.

實地校正—浮台排佈模擬 Field Adjustment- Floater Onsite Simulation

整併浮台設計及電腦計算，模擬於案場空照圖中，依周圍地理環境補強隱性弱區

Simulate floater and anchoring design onto site aerial photography, to eliminate possible weakness.

旭東於全球水域皆有豐富實地錨定經驗 On-Site Anchoring Record

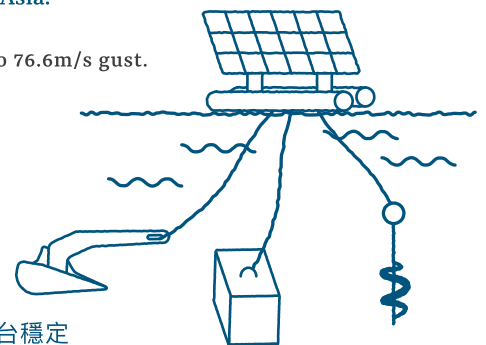
曾經歷北海颶風及亞洲強颱風考驗 Sustained North Sea Hurricanes and Typhoons in Asia.

蒲氏風級—超過17級颶風 (十分鐘平均風速達53.1m/s, 等同於76.6m/s 陣風)

Exceed Beaufort scale: 17 hurricane- ten mins average wind speed 53.1m/s, equivalent to 76.6m/s gust.

宏都拉斯深120m水庫繫泊經驗 120m Depth Mooring Experience in Honduras

北海7.5米浪高海浪衝擊 Ride Out 7.5 Meters High Wave Impact



實際施作 Construction Features

旭東之案場，皆建議採用水底錨。相較於案錨，水底錨能提供較高抗拉拔力及浮台穩定性，確保風災時，浮台穩固貼於水面。常用錨定類型:螺旋錨、鏟錨、重力錨。

Sun Rise always recommends submerged mooring as it provides better floater stability and pullout resistance compared to shore mooring. Commonly used mooring types: auger anchor, plow anchor, and deadweight anchor.

旭東使用自行開發之打錨船及拉拔船，案場不須抽乾，即可進行打錨及施作。

No pumping required, Sun Rise is equipped with our own developed mooring and pullout resistance test boat.



PROJECTS 案例

累積施作案場：251 百萬瓦

Constructed projects : 251 MW

寮國 LAOS / 14.1 MW

泰國 THAILAND / 5.6 MW

台灣 TAIWAN / 超過 30 個案場

洽談中案場：1033 百萬瓦

Projects in the pipeline : 1033 MW



The background of the page is a composite image. The top half features a white background with a pattern of thin, parallel, slightly curved lines in a light blue and yellowish-gold color. The bottom half shows a landscape at sunrise or sunset, with a warm orange and yellow sky over a body of water and a foreground of dark, possibly wet, ground with some structures or equipment. The text is overlaid on the white background in the top section and the landscape in the bottom section.

旭東環保科技股份有限公司
SUN RISE E&T CORPORATION

90093屏東市大洲里環東街2號 (屏東加工出口區)

No.2, Huandong St., Pingtung City, Pingtung County 900, Taiwan (R.O.C.)

(Ping-Tung Economic Processing Zone)

Tel: +886-8-7530968

Fax: +886-8-7535986

E-mail: sunrise@srise.com.tw