# Why N-type Tiger Neo Best Suits FPV Projects?

RE100

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The floating photovoltaic (FPV) market has been expanding at an impressive rate, and will double its global installed capacity year after year. This growth was possible due to the numerous advantages FPV plants compared to ground-mounted plants, which are mainly related to land occupation and energy efficiency. With the N-type modules being mainstream and the maturity of the sector, this expansion will extend from freshwater applications to the vast potential that the offshore environment entails.

As the main components of the FPV plants, the compatibility of N-type TOPCon technology with the marine environment is assessed. Its higher energy density, more energy yield per Watt, lower degradation, lower temperature coefficient, higher bifacility, dual semi-strengthen steel glass plus POE encapsulant to isolate water vapor and resist salt spray corrosion, allows Jinkosolar' s N-type TOPCon panels outstanding suitability for the marine environment.

The unique features of N-type technology respond well enough to the challenge of FPV installation. This could also lower the total cost of energy, given the important role played by the total system capacity on it. For example, Jinkosolar' s N-type PV modules show higher efficiencies up to 23% at module level and more yield per kW due to the synergy effect of its technology characteristics. The anodized aluminum frame and optimized POE encapsulant can addresses the issue of saltwater corrosion and high humidity in the harsh marine environment. Additionally, higher energy density, reliability, stability, and lower UV degradation help tackle the relatively higher balance of system (BOS) and operations & maintenance (O&M) costs compared to ground-mounted projects. Wind and wave loads is also a demonstrated problem for FPV, the presence of stronger winds is endured by the strengthened dual glass structure. The ocean provides practically unlimited space to deploy N-type TOPCon.

In addition to the advantages of TOPCon cell technology, the relevant module adaptations are in place in Tiger Neo to cater for marine FPV applications.

a) Corrosion resistant frame: Applying Anodized Aluminum (AA) 20μm frame to resist saltwater and salt spray in the marine environment

b) Double protection of connector: Highly waterproof and anti-corrosion connectors, plus FSR fluoro-liquid silicone rubber protective case to deliver double protection, IP68

c) Dual coated glass: To ensure both higher light transmission and anti-humidity.

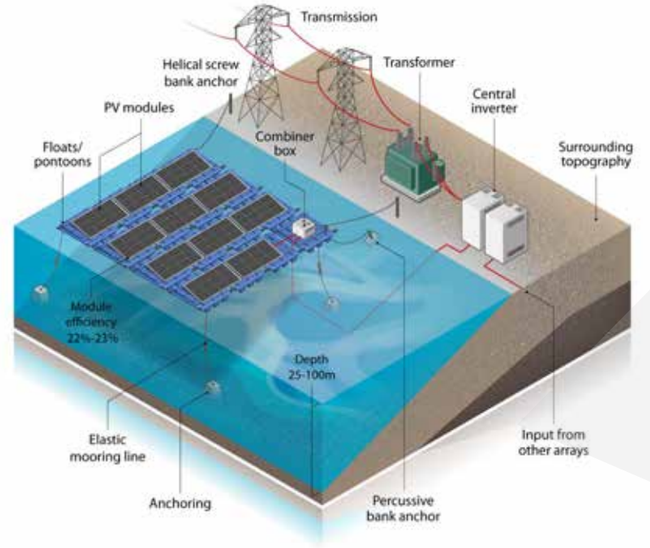
d) Optimized encapsulation: adopting first class quality POE to ensure lower vapor penetration, better thermal stability and high temp endurance, mitigating PID.

Some of the existing FPV projects with Jinkosolar' s N-type Tiger Neo panels are described as bellows.

Based on our bottom-up cost model, we estimate an installed system capital cost premium of about 25% for FPV systems compared with conventional ground-mounted PV installed over bare ground. This premium is primarily attributed to higher structural costs related to the floats and anchoring systems. Furthermore, site investigation costs are also higher for FPV, particularly for marine FPV, because of the additional complexity involved in the planning and design. In a word, among the various factors influencing the installed cost of FPV systems, float costs, wind & snow loading, and module efficiency have the most sensitive impact.

Given the float cost, wind & snow loading is the same for a certain FPV project, the PV module efficiency determines the economic value proposition and cost benefit of the project.

For example, our simple analysis based on currently available data suggests that the 1% variance of module efficiency will entail the 2.5% variance in LCOE, in other words, LCOE from FPV systems applying module of 22% efficiency is around 2.5% higher than the LCOE from FPV systems using 21% efficiency modules.




# CIMC RAFFLES semi-submersible offshore floating solar power platform

**Location: Yantai, Shandong Province, China**

JinkoSolar provides 200kw high-efficiency solar PV modules for CIMC RAFFLES semi-submersible offshore floating solar power platform. The project site is located approximately 6km offshore, with a water depth of over 12m and maximum wave heights reaching up to 6.5m.

This world' s first groundbreaking venture combines N-type TOPCon modules with a domestically manufactured offshore semi-submersible floating solar power platform. The platform possesses Chinese independent intellectual property rights and marks a significant milestone in the exploration and practical application of marine-based photovoltaics within the global renewable energy industry.

## Xijiang Yuliang Reservoir District Lilagou 30MW Project

**Location: Baise, Guangxi Province, China**

JinkoSolar provides 30MW of high-efficiency modules for the Xijiang Yuliang Reservoir Lilagou Project, which is the first water floating project in Guangxi. Upon completion, the project will generate an average of 31 million kWh of electricity per year, with an average annual revenue of more than 26 million yuan, which is equivalent to saving more than 10,000 tons of standard coal consumption per year compared with coal-fired power generation of the same capacity.

## Shandong Jining Weishan Coal Mining Subsidence Area PV Pilot Technology Base100MW Floating Project

**Location: Jining, Shandong Province, China**

JinkoSolar is providing 100MW of high-efficiency modules for the Shandong Jining Weishan Coal Mining Subsidence Area, which is the largest floating project on water among the frontrunner projects. Upon completion, it will provide an average of 110.78 million kWh of clean electricity to the power grid annually, saving 35,000 tons of standard coal per year compared to coal-fired power generation of the same capacity.

## 5.4MW Floating Project in Muduchaiden Mine by China Coal

**Location: Ordos, Inner Mongolia, China**

JinkoSolar provided 5.4MW of high-efficiency modules for the China Coal Muduchaideng Mine Floating Project, which effectively revitalises the idle water surface and brings new vitality to the governance of the mine area, and turns the "ecological burden" into sunshine wealth.

## Reignwood Park 2MW Floating Project

**Location：Bangkok, Thailand**

JinkoSolar provided 2MW of PV modules for the Reignwood Park PV plant in Thailand. The project is located on top of a reservoir in the park, which provides efficient and clean energy as well as aesthetic value.

## SUT 4.3MW Floating Project

**Location：Thailand**

JinkoSolar supplied 4,276.8 kw of high-efficiency modules for Combined Heat and Power Producing Co., Ltd's floating project in Thailand

## Nir Etzion Reservoir 700kW Floating Project

**Location：Israel**

JinkoSolar supplied 700kW of high-efficiency modules for the Nir Etzion Reservoir PV plant, which is currently the largest floating power plant in Israel.

## GC5 996.36kW Floating Project

**Location：Thailand**

JinkoSolar supplies 996.36kw high efficiency modules to Thailand power company GPSC floating project

## 3MW Floating Project in Kagawa Prefecture, Japan

**Location: Kagawa Prefecture, Japan**

JinkoSolar supplied 3MW of high-efficiency modules for the first floating power plant project in Kagawa Prefecture, Japan, which realizes both economic and environmental benefits by combining photovoltaic power generation with amberjack aquaculture.

## 2.7MW Floating Project in Mei Prefecture, Japan

**Location: Mei Prefecture, Japan**

## 1MW Floating Project in Osaka, Japan

**Location: Osaka, Japan**