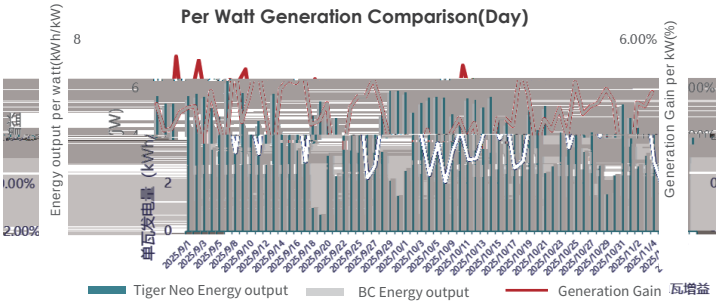
9.47% Per-Watt Low Light Power Gain: Empirical Result of a Residential Rooftop PV System in Jiangsu

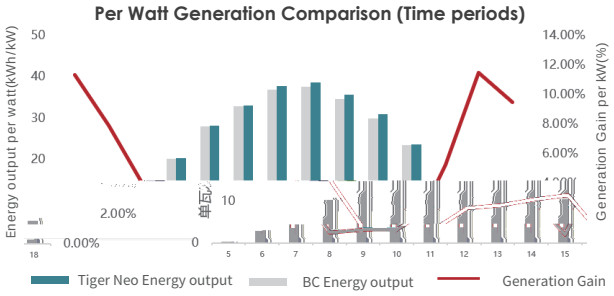
Recently, Jinko Solar conducted a comparative test on the power generation of each string in an existing residential PV project in Northern Jiangsu Province. Based on the measured power generation data from September 1 to November 9, 2025, the results show that the single-watt power generation performance of Jinko Solar Tiger Neo Series modules was significantly superior to that of N-type BC modules with the same power during the test period. The empirical results fully demonstrate that Jinko Solar Tiger Neo Series modules have stronger environmental adaptability and power generation efficiency in residential PV scenarios, especially under complex lighting conditions in autumn and winter.

Key Conclusions:

1.During the test period, the total single-watt power generation of Jinko Solar Tiger Neo modules reached 284.34kWh/kW, while that of N-type BC modules with the same power was 277.62kWh/kW. The Tiger Neo Series achieved a total single-watt gain of 2.42%, demonstrating remarkable advantages in power generation performance.



2.From a time-segment perspective, the Tiger Neo modules exhibit distinct performance differentiation, with particularly significant gains during the morning and evening low-irradiation periods. The single-watt gain reaches 7.94% from 6 AM to 7 AM and as high as 9.47% from 6 PM to 7 PM, demonstrating excellent adaptability in low-light environments.



Project Background:

The current residential PV market has higher requirements for the power generation efficiency, stability, and full-scenario adaptability of modules. To objectively evaluate the practical application performance of Jinko Solar Tiger Neo Series modules, Jinko Solar selected an existing residential PV project in Northern Jiangsu Province for comparative empirical testing. The test results provide important reference value for module selection, system optimization, and investment return evaluation of residential PV projects.

Project Design:

This field test is located at a residential PV station in Northern Jiangsu Province. The test period is set from September 1 to November 9, 2025, covering typical lighting periods in autumn and winter to ensure that the collected data can fully reflect the real power generation performance of the modules under the lighting conditions of this season. To eliminate the interference of installation condition differences on the test results, the module installation inclination angle is uniformly set to 20 ° , ensuring consistent basic conditions for light reception of the two types of test modules. The test samples are selected following the principle of equivalence, with 16 Jinko Solar Tiger Neo Series modules and 16 N-type BC modules of the same power (rated power: 635W) configured respectively. This design aims to deeply explore the differences in power generation performance between the two types of modules under different light intensities and time periods, providing comprehensive and accurate data support for the analysis of gain causes.

Gain Analysis:

1.Significant Advantages in Low-Irradiation Performance: N-type BC modules adopt a backside finger-crossed electrode structure, and their patterning process requires multiple grooving operations, which inevitably form a large number of leakage current sites. Such structural defects have a particularly prominent negative impact on power generation performance under low-irradiation environments, leading to significant power generation losses. In contrast, Jinko Solar Tiger Neo Series modules effectively reduce the generation of leakage current through optimized electrode structure design, maintaining stable and efficient power generation even during the morning and evening low-light periods, thus achieving significant gains.

2.Full Utilization of High Bifaciality: The test period covers the autumn and winter seasons, during which the proportion of air-scattered light and ground-reflected light received by the backside of the modules in the total light resources is significantly higher than that in summer. Jinko Solar Tiger Neo Series modules have the advantage of high bifaciality, enabling them to fully capture diverse light resources and convert them into electrical energy. Compared with competing modules with limited single-sided power generation performance, their technical advantages are further amplified under the lighting conditions of autumn and winter, contributing to the improvement of overall power generation.