3.58% Yield Gain of Tiger Neo 3.0 vs. N-Type BC in Rooftop Field Test in Guangdong



Project Design

This project employs a string-level parallel comparison approach, strictly controlling variables to ensure data validity.

1. Test Samples: Eight pieces of Tiger Neo 3.0 module (rated power 650W) were selected, along with eight N-type BC modules (rated power 650W).

2. Installation Conditions: Both sets of modules were installed flat at a 0 ° tilt angle on a color-coated steel tile roof with no shading and consistent orientation, ensuring identical irradiation reception conditions.

3. Electrical Configuration: Two strings connected to the same model string inverter, utilizing independent MPPT channels to synchronously data collection.

4. Monitoring Period: February 1, 2026, to February 27, 2026, covering a nearly one-month operational cycle.

5. Typical Day Analysis: February 23, 2026 (overcast conditions, southeast wind at level 2, temperature 20–27 ° C) as a time-slice analysis sample, focusing on monitoring low-irradiance periods in the morning and evening, as well as hourly generation performance throughout the day.

6. Key Monitoring Metrics: Cumulative power generation per watt (Wh/W), hourly power generation per watt (Wh/W), and Relative Power Gain (%). Data collection was conducted without interruption throughout the process to ensure the integrity and credibility of empirical conclusions.



Conclusion

The Jiangmen, Guangdong field test project fully validated the power generation advantages of Tiger Neo 3.0 modules in rooftop applications. During the testing period, the Tiger Neo 3.0 modules achieved an average 3.58% power gain over N-type BC and the power gain further amplified to 7.70% during low-light conditions in the evening.

This test project featured unique installation conditions: **modules were laid flat at a 0 ° tilt on a color-coated steel tile roof with minimal clearance from the ground, virtually eliminating access to ground reflection and atmospheric scattering light. Even in typical rooftop scenarios where bifacial effects are negligible, the Tiger Neo 3.0 modules still achieved significant power generation gains. This fully demonstrates that the gain stems entirely from its superior front-side low-light performance rather than bifaciality.** This conclusion precisely attributes the performance difference between Tiger Neo 3.0 and BC modules precisely to low-light response capability itself, eliminating interference from other variables.

From a technical perspective, the TOPCon cell structure used in Tiger 3 modules features positive and negative electrodes distributed on both sides, confining leakage pathways to a minimal area at the cell edges. This design significantly enhances leakage current control compared to N-type BC modules. In contrast, the complex interdigitated electrode structure and multiple patterning steps in BC modules result in densely distributed leakage points. Under low-irradiance conditions, resulting in persistent power generation losses throughout the day. The Tiger Neo 3.0 module with its optimized interconnection resistance design and ultra-thin tunnel oxide layer structure, maintain higher current collection efficiency and fill factor in low-light environments, achieving all-weather performance that "keeps pace in strong light and excels in weak light."

In summary, Tiger Neo 3.0 modules demonstrate all-weather performance