I. K
1. L
The powes gtion cest at the K gtrtion prt in J p
cted from At 1 to Septemces 19, 3036. Meed d ta shows that dusin% the test

V v In μ ¸ я ŋ Ґ ص v t r ! !

Neo 3.0 achieved a power generation gain of **7.13%**; in the 0–200 W/m² range, the cumulative gain reached **4.13%**, reflecting its excellent low-light response capability. This consistent gain performance fully demonstrates the Tiger Neo 3.0 ' s exceptional responsiveness in low-irradiance and low-light environments.

II. Project Background

To verify the power generation performance of the Tiger Neo 3.0 in a real-world operating environment and to explore its practical application value in typical coastal power plant scenarios in Japan and East Asia, JinkoSolar conducted a comparative field test of the Tiger Neo 3.0 and N-type BC modules in Kagoshima, Japan, with independent data monitoring performed by the authoritative third-party organization TÜV NORD.

The project site, Izumi City in Kagoshima, Japan, is located in southern Kyushu and has a subtropical monsoon climate. The testing period (August through mid-September) coincided with Japan ' s typhoon season. Kagoshima is situated in a high-risk typhoon path, have become key application scenarios in the area. Therefore, this project employs a fixed-mount installation method for the field demonstration, ensuring that the test results more closely reflect the actual operating conditions of local power plants.

III. Project Design

To ensure that the comparison results are objective and valid, this project employs a string-level parallel comparison approach and strictly controls variables.

1. Test Samples:Eight Jinko Tiger Neo 3.0 modules (rated power: 650 W) and eight N-type BC modules (rated power: 650 W) were selected. Both types of modules are bifacial.

2. Installation Method: Both sets of modules are installed using fixed mounting brackets, with the lowest point of the modules 0.5 meters above the ground. They are oriented in the same direction and have no obstructions in the surrounding area to ensure that irradiation conditions are essentially consistent.

3. Purpose of Comparison: The fixed mounting bracket installation reflects power generation capacity under typical installation conditions in Japan and other coastal regions of East Asia, with a focus on evaluating the comprehensive power generation performance of the two types of modules in a subtropical monsoon climate and in a ground-mounted power plant scenario.

4. Electrical Configuration: Two string circuits are connected to the same model of string inverter, utilizing independent MPPT channels to synchronously collect power generation data.

5. Monitoring Period: August 1, 2026, to September 19, 2026, covering a nearly 50-day operational cycle that includes the summer rainy season with typhoons and the early autumn transition period.

6. Key monitoring indicators include: cumulative power generation per watt (kWh/kW), time-of-day power generation per watt (kWh/kW), relative power generation gain (%), and irradiance (W/m²).

IV. Data Insights

During the 50-day testing period, actual test data showed that JinkoSolar ' s Tiger Neo 3.0 modules achieved a cumulative power generation of 216.19 kWh/kW, while N-type BC modules of the same power rating recorded 212.79 kWh/kW. The Tiger Neo 3.0 modules delivered a stable power generation gain of 1.59% per watt. The testing period coincided with Japan ' s typhoon season, during which typhoons frequently struck, and Kagoshima experienced its peak annual precipitation; The comprehensive advantages of the Tiger Neo 3.0 can be verified from the following two perspectives.

1. Stable Gain Across All Time Periods: Throughout the entire testing period, the Tiger Neo 3.0 consistently maintained a positive gain over the N-type BC module, with a cumulative per-watt gain of **1.59%**. It did not experience any gain degradation due to the harsh environment of high temperatures and humidity, demonstrating stable and reliable performance at all times.

2. Outstanding Performance at Low Irradiance and in Low-Light Conditions: Data broken down by irradiance level shows that the Tiger Neo 3.0 achieved a power generation gain of **7.13%** in the low-irradiance range of 0–100 W/m². This gain was particularly pronounced during early morning and evening hours, demonstrating excellent low-light responsiveness. This capability e ectively extends the daily e ective power generation period and increases total daily power output.

V. Analysis of Operating Principles

From a technical perspective, the Tiger Neo 3.0 ' s power generation advantage during low-irradiance periods is primarily attributable to lower internal leakage current losses. As irradiance decreases, the photogenerated current produced by the module decreases accordingly, causing the proportion of leakage current in the total output to rise relatively. This has a more pronounced impact on the module ' s operating voltage, fill factor, and output power. The TOPCon electrode structure absorbs long-wavelength light better than the BC structure; due to Rayleigh scattering, long wavelengths penetrate the atmosphere more easily. During the early morning and evening hours, as sunlight travels through a longer atmospheric path, blue and violet light (short wavelengths below 400 nm) are scattered, while the proportion of red and near-infrared light (long wavelengths above 600 nm) increases. The proportion of red light in the spectrum increases significantly. TOPCon is able to make better use of these long-wavelength light resources, theso سد apacity. The
Tigain a m rttsical output und s low isradianc
its rtiv powes gtion adva ag
o] co t or rainy pesiods.
In cttythodes are arsa g
otsntione
highes dem nds on l cec
r%ste. Relaed electsicasily ampl)fi und s low-isr
thest v Ď Ґ ectent with the 7.13%
result obser