RINGKASAN

ANALISIS PERBANDINGAN UNJUK KERJA PLTS ON-GRID 75,4 KWP DI PT MIDI UTAMA INDONESIA TBK

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Penelitian ini bertujuan membandingkan kinerja aktual dan ideal dua PLTS On-Grid 75,4 kWp di Alfamidi Super Grand Wisata dan Pondok Kelapa. Evaluasi dilakukan berdasarkan standar teknis IEC 61724, dengan mengkomparasikan data riil dari platform Huawei FusionSolar (Oktober 2025) terhadap hasil simulasi perangkat lunak PVSyst 8.0.

Hasil analisis menunjukkan PLTS Grand Wisata memiliki unjuk kerja aktual lebih unggul (YF 3,329 kWh/kWp, YR 5,18 h, PR 64,67%, CUF 13,87%) dibandingkan Pondok Kelapa (YF 2,902 kWh/kWp, YR 4,808 h, PR 61,13%, CUF 12,09%). Meski demikian, kinerja aktual kedua sistem mengalami deviasi signifikan terhadap target simulasi PVSyst. Grand Wisata mencatat deviasi (YF -18,54%, PR -21,19%, CUF -18,54%, dan YR +3,04%). Sementara itu, Pondok Kelapa (YF -25,30%, PR -21,16%, CUF -25,31%, dan YR -4,54%).

Kesenjangan produksi dan penurunan efisiensi pada kedua lokasi tersebut dipicu oleh tiga faktor utama: (1) perbedaan intensitas iradiasi lokal, (2) rugi bayangan (shading) yang berdampak jauh lebih parah di Pondok Kelapa (-3,8%) dibanding Grand Wisata (-0,7%), serta (3) pemotongan daya akibat sistem Zero Export. Dampak Zero Export terbukti lebih merugikan di lokasi Pondok Kelapa karena profil beban operasional tokonya yang lebih rendah.

Kata Kunci: PLTS *On-Grid*, Evaluasi Kinerja, IEC 61724, PVSyst, *Zero Export.*

SUMMARY

COMPARATIVE PERFORMANCE ANALYSIS OF 75.4 kWp ON-GRID PHOTOVOLTAIC SYSTEM AT PT MIDI UTAMA INDONESIA TBK

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This study aims to compare the actual and ideal performance of two 75.4 kWp On-Grid Solar Power Plants at Alfamidi Super Grand Wisata and Pondok Kelapa. The evaluation was conducted based on the IEC 61724 technical standard by comparing real data from the Huawei FusionSolar platform (October 2025) against the simulation results of the PVSyst 8.0 software.

The analysis results show that the Grand Wisata Solar Power Plant has a superior actual performance (YF 3.329 kWh/kWp, YR 5.18 h, PR 64.67%, CUF 13.87%) compared to Pondok Kelapa (YF 2.902 kWh/kWp, YR 4.808 h, PR 61.13%, CUF 12.09%). Nevertheless, the actual performance of both systems experienced a significant deviation from the PVSyst simulation targets. Grand Wisata recorded a deviation of (YF -18.54%, PR -21.19%, CUF -18.54%, and YR +3.04%). Meanwhile, Pondok Kelapa recorded (YF -25.30%, PR -21.16%, CUF -25.31%, and YR -4.54%).

The production gap and efficiency reduction at both locations were triggered by three main factors: (1) differences in local irradiation intensity, (2) shading losses that had a much more severe impact at Pondok Kelapa (-3.8%) compared to Grand Wisata (-0.7%), and (3) power curtailment due to the Zero Export system. The impact of the Zero Export system proved to be more detrimental at the Pondok Kelapa location due to its lower operational load profile.

***Keywords**: On-Grid Solar Power Plant, Performance Evaluation, IEC 61724, PVSyst, Zero Export.*