enurgen

Case Study

Boosting Plant Performance by 2.9% for a 50 MW Solar Plant

How Enurgen's platform uncovered hidden losses and improved operational performance

Overview

A leading IPP selected a 50 MW bifacial HSAT solar site for a performance assessment to uncover hidden losses and maximize operational efficiency.

Building a representative 3D model of the plant, the Enurgen team:
- Identified the expected-to-realized energy yield gap as 3.9%
- Quantified the controllable and uncontrollable losses contributing to this discrepancy
- Proposed **immediate actions** to instantly boost performance by >1%, equating to €34,000/year annualized gain

The Challenge

Solar plants operating within expected thresholds can still be draining your revenue.

But you can't fix what you can't find. Hidden losses and the notorious "unallocated loss bucket" are the silent killers of ROI – and are all too familiar to performance and operations teams.

Standard historical assessments can only highlight acute issues and performance deviations, masking key loss contributors that result in millions of dollars of revenue leakage over plant lifetime.

How do IPPs get ahead of these losses?
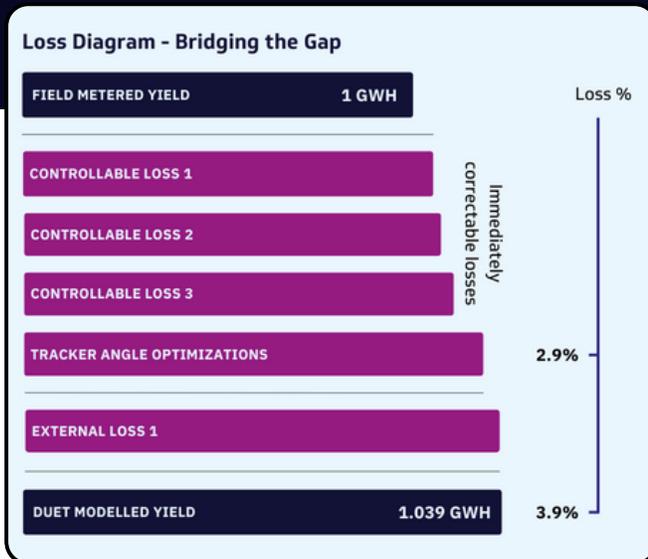
Enurgen's Approach

Enurgen built a high-fidelity 3D model of the system, incorporating:
- Sub-hourly solar resource and meteorological data
- Cell-to-system modelling

Our operational solution layers custom loss detection algorithms and DC health diagnostics on top of high-accuracy modelling to build detailed loss waterfalls across plant hierarchy. This powerful combination identifies and quantifies underperformance at high spatiotemporal granularity, and provides actionable insights to help your plants achieve operational excellence.

Key Findings

- A 3.9% discrepancy between expected and actual performance, equating to ~€3 million in lost revenue over a 25-year lifetime

- Enurgen identified 2.9% of the gap as controllable losses

- Of the controllable losses, >1% could be immediately corrected, for an instant €34,000/year annualized gain

- Enurgen outlined and executed a plan to increase yields by an additional 1.7% within the next month

Loss Diagram - Bridging the Gap

FIELD METERED YIELD	1 GWH	Loss %
CONTROLLABLE LOSS 1		
CONTROLLABLE LOSS 2		
CONTROLLABLE LOSS 3		
TRACKER ANGLE OPTIMIZATIONS		2.9%
EXTERNAL LOSS 1		
DUET MODELLED YIELD	1.039 GWH	3.9%

Immediately correctable losses

The Outcome

- The IPP is adjusting tracking algorithms according to site-specific terrain and geography with Enurgen's guidance and recommendations

- Enurgen's operational solution has been deployed further across their portfolio to automate performance benchmarking and assessments

Why It Matters

This case highlights the silent revenue drain of unknown losses that, when corrected, can yield millions in additional revenue over plant lifetime. This enforces the value of high-resolution, physics-based modelling for operations and performance teams.

Utilizing Enurgen's platform across the lifecycle of a solar asset enables:
- Faster root-cause analysis
- More accurate yield forecasting
- Actionable insights for O&M and financial planning
- Team alignment and less rework

Want to learn more?

Contact Us