



# Due Diligence Services for PV Power Plants

As the global installations market for solar photovoltaic (PV) systems continues to grow, field experience demonstrates a variety of challenges faced by the industry related to the performance, safety and reliability of these PV systems, which impact on their revenues and bottom-line profitability. These issues are increasingly becoming a concern for investors and insurance firms, which have stricter criteria for entering into such PV projects. Having a multi-disciplinary expert partner with state-of-the-art competence can help developers navigate the complexities of these challenges and maximize the PV project's return on investment.

Through its partnership, Allianz Climate Solutions, VDE Renewables, and the Fraunhofer Institute for Solar Energy Systems ISE are well qualified to support you with the full range of due diligence services for your PV power plants: from feasibility planning and engineering to construction and operations. By bringing together technical, financial and insurance experts in PV, we can conduct deep-dive assessments into your PV power plant along the entire project lifecycle.

In addition to our standard scope of due diligence services, we can support you with your PV-specific needs, such as:

## Development and engineering

- Solar resource assessment
- Environmental stress assessment
- Precise yield assessments

## Procurement and commissioning

- Reliability and performance tests for module samples
- On-site module power measurements
- Visual inspection and thermography imaging
- Final acceptance test and report

## Operations

- Independent performance evaluation
- Failure analysis and reporting
- Long-term performance reporting



## Case study

# PV plant example with performance risk of USD 7-digit losses over 10 years due to low quality

### Background

The consortium was tasked to look at a PV system in an emerging PV market with a total portfolio capacity of 230 MWp using 8 different PV module types. The procured modules possessed certification according to international standards, as is normally the case.

### Issue

Underperforming PV modules were detected at the start of PV system operation. The comprehensive quality assurance work carried out by the consortium determined that there were two types of PV modules underperforming by around 4%, which is beyond the tolerance limit, taking into account measurement uncertainty. These underperforming modules were used in 26% of the whole portfolio.

Services delivered: The comprehensive module testing (with very low measurement uncertainty of 1.6%) done by the consortium, and the resulting reports, enabled the plant owner to negotiate compensation from the PV module manufacturer for the underperformance.

### Financial business case

Based on a 4% underperformance rate, the sub-par PV modules led to annual losses of about USD 200,000 (or USD 2,000,000 over 10 years of operation). Taking into account these resulting losses, the investment in additional quality assurance by the consortium has a payback period of less than ½ year.

### Additional improvements to strengthen business case

Additional issues relating to deviations between planning and execution, safety issues, and non-compliance with technical standards were found during the quality assurance work by the consortium. These issues also had to be remediated by the EPC company.

- The due diligence report gives additional confidence to owners, operators and potential future buyers of the PV asset. In particular, long-term asset owners like pension funds who pay very competitive prices tend to prefer assured, stable and long term revenue from the PV plant they invest in.
- Furthermore, insurance companies like Allianz would be willing to insure further loss of revenue based on system performance once the consortium has performed such world class quality assurance reporting. This combination of quality assurance and insurance can again increase selling price expectations for the asset owners.



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