

Feedback Experience on Solar Energy Yield Assessments

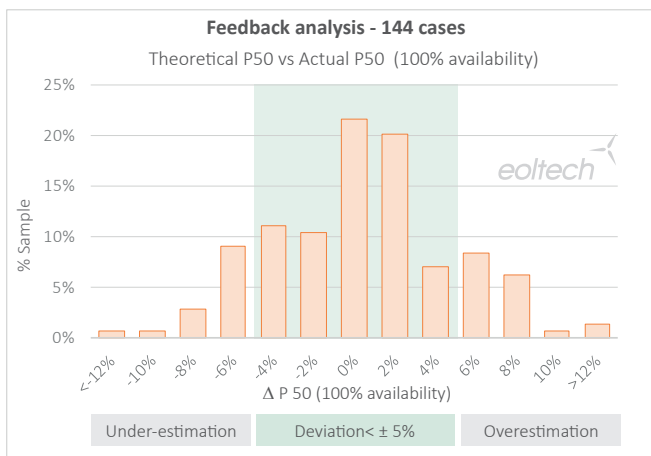
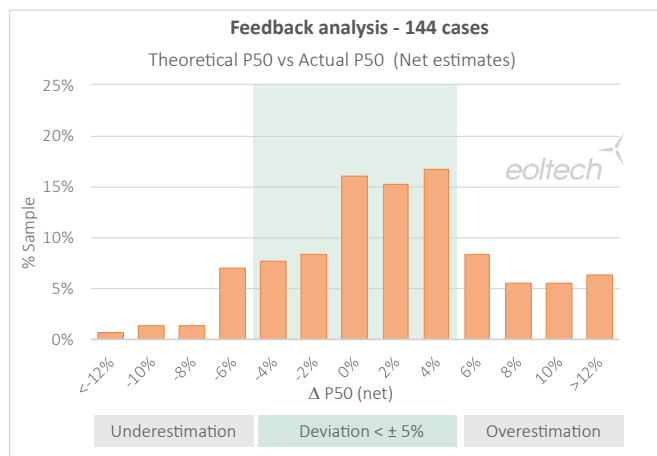
Comparative analyses between pre and post-construction P50 estimates on 125 PV plants (>1.3 GWp)

EU PVSEC- Sept 2023 - 40th European Photovoltaic Solar Energy Conference and Exhibition - Author: Marion Jude

PROJECT PRESENTATION

This project consists in a feedback analysis performed by Eoltech. The main objective was to compare the theoretical P50 estimated during the project development phase (pre-construction energy yield assessment) to the actual P50 assessed by Eoltech from the historical production data of the plants (post-construction energy yield assessment).

MAIN RESULTS



$\Delta P50 = \text{Theoretical P50} / \text{Actual P50} - 1$, i.e. $\Delta P50 > 0$ means $\text{Theoretical P50} > \text{Actual P50}$

- ↪ Theoretical assessments tend to overestimate the net production capacity (i.e., the net P50). The median deviation is +2.1% and a quite significant spread is observed (deviations exceed $\pm 5\%$ for about 1/3 of the studied cases).
- ↪ Assumptions of availability rates higher than the ones actually observed globally explain this overestimating trend. Indeed, the median deviation between theoretical and actual production capacity adjusted to 100% availability is close to zero (+0.3%).
- ↪ Actual availability rates were estimated for the plants from their operational data (average rate on the entire period analysed). The median availability rate is about 97.8%, and for about 1/10 of the plants it is below 94%.
- ↪ The average uncertainty level considered in the theoretical assessments (between $\pm 5\%$ and $\pm 6\%$ for most recent studies) seems quite relevant when putting aside availability assumptions.
- ↪ The actual performance degradation rate observed on operating plants is coherent with the assumptions taken into account in theoretical yield assessment (median value about 0.5%/year). However, although the median is close to what is expected, a significant spread of these rates is observed on operating plants ($>1\%$ /year for several plants).

Find out more details in the full paper (available on demand marion.jude@eoltech.fr or contact@eoltech.fr)

SAMPLE

PV plants considered for the project have been operating for at least 18 months and represent at least 1MWp of installed power each.



15 Participants
Owners / Operators



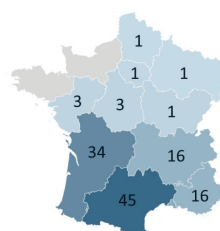
125 PV Plants
In operation



144 Assessments
Performed pre-construction



>1.3 GWp
total installed power analyzed



Location of the PV plants in France (+4 plants in Germany, Portugal, Spain)