

# ENERGY YIELD ESTIMATION OF MONOFACIAL AND BIFACIAL SOLAR MODULES

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## Abstract/Summary:

Monofacial and bifacial solar modules featuring diverse characteristics were produced and measured indoor under standard test conditions (STC). They were installed in the desert in El Gouna, Egypt, where their IV curves were recorded continuously for six months, together with the solar irradiance and the ambient temperature. Simple models based on indoor measurements of power and outdoor measurements of irradiance were built in order to estimate the modules energy yield. The estimations are compared with the measured values. Where the models do not match the measurements, a deep analysis was carried out in order to understand the discrepancies. In the absence of an encapsulant, the energy yield can decrease significantly, mainly due to a mismatch in refractive indices. It is also noticed that indoor measurements at STC can deliver quite different results when performed by different parties. Light induced degradation (LID) can also play a partial role in p-type cells. A formula calculating the outdoor bifacial efficiency is suggested for a fair comparison between monofacial and bifacial modules.

**For more Information on the topic please contact the R&D Team of PI Berlin.**

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