



ENVIRONMENTAL IMPACT SCENARIO OF AN AZIMUTHAL TRACKED PV PLATFORM BASED ON CO₂ EMISSIONS REDUCTION

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Abstract

The progressive technological development of world countries contributed to global warming effect due to the quantities of greenhouse gases emitted. The development and implementation of photovoltaic (PV) systems, and thus renewable energies, represents a trend in achieving the objectives specified in Kyoto protocol. The aim of this theoretical study is to quantify the CO₂ emission reduction from electricity generation of a particularly small sized azimuthal tracked PV platform (approximately 1.7 kW_p) under real average and ideal radiation conditions. The quantification is based on a simple framework: CO₂ estimation reduction is determined on the assumption that the electricity produced by the azimuthal tracked PV system displaces an equal quantity of electricity generated by the local grid in Romania. The system is designed, modelled and analyzed considering the factors that influence the CO₂ emissions. The analysis results provide an overall view of the azimuthal tracked PV system sustainability potential in a mountain region (case study Braşov-România). Compared to local grid the green source of energy avoids greenhouse gas output with the annual energetic gain estimated at 620 kWh/yr results in an annual CO₂ reduction of 249 kg.

Key words: CO₂ emissions, PV platforms, reduction potential

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