PV Maximum Power Point Tracking Through Pyranometric Sensor: Modelling and Characterization

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Abstract – Solar trackers represent apparatuses that may significantly improve electric power production of photovoltaic panels. For detecting solar position, the trackers use different sensors (e.g. photoresistor, photodiode receiver, phototransistor, etc..). This research proposes an alternative way, the use of the sensor par excellence for retrieving solar radiation; the pyranometer. A design and tests have been performed in order to show the improvements. A comparison has been made between this alternative mounted on a solar follower plant and another tracking system called S.A.I.S. which does not use any solar position sensor but tracks the panel by solar position calculations, from the ad hoc knowledge of longitude, latitude, date and hour. A second comparison has been also made between the above pyranometer architecture and a specifically designed solarimeter.

Index terms*:* PV system, MPPT, pyranometer, modelling, solar irradiance, solar tracker, solarimeter.