New Intelligent control strategy by robust Neural Network algorithm for real time detection of an optimized maximum power tracking control in photovoltaic systems

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***Abstract*— To increase the power output of a PV module or a field of PV modules, an electronic controller is incorporated between the PV generator and the load, whose role and main objective is the continuous monitoring of the maximum power point of the PV generator commonly known as MPPT (Maximum Power Point Tracking) and this in general per action on a DC-DC conversion device. The regulation and control techniques provide the impedance matching function, transferring to the load the maximum electrical power output from the PV generator in any the temperature and sunshine conditions. The development of a revolutionary method based on neural algorithms for the prediction of an instantaneous command is the main objective in our work.**

Indeed, the paper presents a new control strategy for the photovoltaic PV, it is a command based on Neuronal Network technique. It is the first time that this technique has been introduced, and proposed by the authors in synthesizing control laws for the converters of electronic power.

The new technical algorithm based on Neural Networks, is designed to be more robust in performance with respect to tracking speed and precision. Moreover, this new

successful technical research, provides a robust neural structure compared to the noisy empirical data used for the prediction of the command. Consequently a smooth control signal without oscillation, targeting exactly the expected optimal control with an independent control of the sampling frequency of the system. This study, which is followed by a simulation, has enabled us to consolidate the idea that the new Neural Network controller when compared to their classical counterparts, and obtains the best performances concerning the speed of tracking and precision. The robustness of the networks of neurons opposite the noise of measurements, like, the smoothness of the power signal of PV system generated during the application of the neuronal order, will qualify this command as a practical alternative to the disadvantages recorded on the levels of the classical methods.

***IndexTerms*—Neural Networks, New technique, Optimization, Smooth signal, Noise of measurements, Sampling frequency, Speed, Precision.**