

Injection of Renewable Energy into the Electricity Grid with intelligent Commands

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Abstract

In the first part of this paper we present the command MPPT (Maximum Power Point Tracking) that we have programmed to extract the maximum power at the terminal of the photovoltaic generators in spite of the change of climate (Temperature and Illumination). While the second part shows the injection of solar energy to the electrical grid with a well-adapted system with the filters that we have made to improve in order to minimize the harmonics to the electrical grid. In fact, solar photovoltaic energy offers us the possibility of producing a green, clean and non-polluting energy, this energy is built by converting the light's rays coming from the sun into an electric current through the photovoltaic effect principle. The electricity produced is of a continuous nature. In case we want to inject this current into the distribution grid, it must be converted into a sinusoidal current of 50 Hz, this transformation will be done through a converter called: "Inverter". The latter must have an adequate command and judiciously chosen to have a compatible voltage with the grid in the minimum of harmonic. For that, we did this work with intelligent commands to have a well-adapted system for injecting this clean energy to the electrical grid.

Keywords

Photovoltaic, MPPT Command, Connection Functions and conversions, Inverter, Chopper, PWM, Filtering, Grid.

Biographies

Mohammed El Alami was born in Errachidia, Morocco, on 20th August 1985. He received the Master degree in Telecommunication from National School of Applied Sciences of University of Sidi Mohammed ben Abdellah Fez, in July 2011. He received his Doctorate degree in Electric Engineering from the Faculty of Science at Laboratory of Electrical Engineering and Energy Systems (LGESE) of University Ibn Tofail Kenitra, Morocco.

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Mohamed Habibi was born in 1957 in Khemisset in Morocco. He received his Thesis of University of 3^o Cycle (Electronics) from the University of Sciences and Techniques, Lille Flandres Artois, France, in 1985 and the State doctoral thesis (Electronics) from Engineer School Mohammedia of the University Mohamed V, Rabat, Morocco, in 1993. He was a member of (the Laboratoire) the Laboratory of e electronic and Communications since 1989 at the 'Engineer School Mohammedia', Rabat. He was responsible of the Automatic Laboratory and microwave (LAMO) and presently he is a member of the Laboratory of Electrical Engineering and Energy Systems (LGESE). He is a Professor of Electrical Engineering at the University Ibn Total, Faculty of Science, Department of Physique, Kenitra, Morocco since 1985. He is working on applications of Microwaves.

Seddik Bri is a Professor at the Electrical Engineering Department in High School of Technology (ESTM), Moulay Ismail University, Meknes -Morocco. His scientific research interests are the microwaves applications and the security in communication systems.