

## عنوان مقاله:

Design Of Modern Controller On Single-phase Full-Bridge Grid-connected Inverter

## محل انتشار:

سومین کنفرانس بین المللی تحقیقات بین رشته ای در مهندسی برق، کامپیوتر، مکانیک و مکترونیک در ایران و جهان اسلام (سال: 1399)

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## خلاصه مقاله:

This paper demonstrates design of a modern current control method for a Single-phase Full-bridge Voltage Source Inverter (VSI) with LCL filter by pulse width modulation(PWM). To deal with disturbing harmonics and DC current injection with AC current injected to the grid, a LCL filter is designed which, the stability of the filter can be noted as an important drawback. Moreover, Maintaining the closed-loop regulation and stability margins within a pre-determined range of operating conditions is the main objective behind the feedback loops design. On the other hand, the connected grid voltage can be provided as disturbance for the system which should be considered in the designing procedure of the current controller. The proposed controlling method has the ability to generate a pure sinusoidal waveform with a low value of Total Harmonic Distortion(THD) and elimination of the DC current injected into the grid. Furthermore, The grid voltage phase can differ over a time, to overcome this issue a new method for grid synchronization has been introduced to extract the parallel and orthogonal components of the grid voltage for creating a synchronized current reference to the current control loop which contains low complexity and highly computationally efficient manner. Additionally, To deal with the source DC voltage variations, a Proportional-Integral-Derivative (PID) controller is designed which can generate a sinusoidal reference for the system. The simulation results are performed by Matlab-Simulink to show the validation of the work.

## کلمات کلیدی:

Current controller, Single-phase Full-bridge In-verter, PID Voltage Compensator, Noise, Disturbance Rejection

## لینک ثابت مقاله در پایگاه سیویلیکا:

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