Synthesis and Analysis of PWM Inverter Output Voltages

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***Abstract*— The output voltage analysis of PWM inverter, from the photovoltaic (PV) power plant, represents the first of the objectives of this research. On the one hand, a real voltage wave is analyzed, taken by oscillography and on the other hand two waveforms are identified, alternative step type, by multiplying and their composing, any form of output voltage can be obtained from PWM inverters. The two signals types are first analytically defined in general case and then their corresponding Fourier series are determined. Having the analytical expressions of the Fourier coefficients, as control quantities functions, could identify the realization conditions of two optimum conditions, as fundamental maximum or deforming residue minimum. The two constitutive signals types, proposed, presents Fourier series ofsimilar forms, which indicates these contain harmonics with the same order and phase, but with different weights, of which coefficients are summarized when such signals are to be overlapped. Because there is a dependency of the harmonics coefficients on the control quantities, as conduction and pause times, it becomes possible to apply some control optimum criteria for the PWM invertor output voltage to satisfy some energy requirements.**

***Keywords*—fhotovoltaic system; PWM inverter; output voltage analysis.**

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