

## عنوان مقاله:

Selective Harmonics Elimination Technique in Cascaded H-Bridge Multi-Level Inverters Using the Salp Swarm Optimization Algorithm

## محل انتشار:

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## نویسندگان:

M. Hosseinpour - *Department of Electrical and Computer Engineering, University of Mohaghegh Ardabili, Ardabil, Iran*

.S. Mansoori - *Department of Electrical and Computer Engineering, University of Mohaghegh Ardabili, Ardabil, Iran*

.H. Shayeghi - *Department of Electrical and Computer Engineering, University of Mohaghegh Ardabili, Ardabil, Iran*

## خلاصه مقاله:

A new optimization method is proposed in this paper for finding the firing angles in multi-level voltage source inverters to eliminate low-order selective harmonics and reduce total harmonic distortion (THD) value of the output voltage. For this end, Fourier series is used for calculating objective function and selecting specific harmonics. Regarding the nature and complexity of the employed non-algebraic equations in the optimization problem for achieving the optimal angle in the multi-level inverter, a recently developed meta-heuristic method known as Salp Swarm Algorithm (SSA) is presented. In the proposed method, the optimal angles for a given multi-level inverter are obtained based on the objective function such that the magnitudes of the selective harmonics and the THD value of the output voltage are reduced. The method is applied on a cascaded H-bridge type five-level inverter. The simulation results illustrate that the magnitudes of the selective harmonics and the THD percentage of the output voltage have been reduced through selecting the optimal switching angle by the proposed optimization algorithm. The result of this method are compared with those of SPWM method. Moreover, the performance of SSA algorithm with respect to PSO algorithm is compared which shows its rapid convergence speed and less THD value.

## کلمات کلیدی:

Elimination of selective harmonics", "Cascaded multi-level H-bridge inverter", "Total harmonic distortion (THD)", "Salp" "swarm optimization algorithm

## لینک ثابت مقاله در پایگاه سیویلیکا:

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