

Random space vector modulation (RSVM) is a new switching technique used in power converters to spread the power spectrum of the output voltage to reduce its amplitude. This technique is attracting interest for the reduction of both of electromagnetic interferences and acoustic noise in variable speed drives (VSDs). The existing simple RSVM schemes (one random parameter) are: random switching frequency (RSF-SVM), random zero vector (RZV-SVM) and random pulse position (RPP-SVM). In this paper, we propose a combination of the three simple schemes (RSF-RZV-RPP)-SVM that we call triple RSVM (TRSVM) technique, for the control of the three-phase inverter. After an overview on the classical deterministic SVM, we present the random SVM techniques. Then, a spectral analysis of output voltage shows the EMC advantage of the proposed TRSVM compared to the simple RSVM schemes. An application to a VSD using induction motor allows affirming that the proposed technique does not affect the control performances, in the other side the randomization effect is confirmed and analyzed in steady-state characteristics of the motor in closed loop, which is advantageous in reducing acoustic noise