Abstract

Autonomous converters of the PWM type are widely used in electric drive systems, which currently constitute the main source of mechanical energy in industry. The study of oscillatory processes in motor-converter systems recently became a concern because of the problems arising from the switching of modern semiconductor devices, and their influence on the insulation of electric machines. As overvoltages in electric machines fed by a PWM converter are dangerous tor their insulation, appropriate protections should be implemented. The goals of this work are the calculation of the oscillatory parameters of an AC induction motor, the development of the mathematical models for the calculation of overvoltages in any point of the winding, and the design of validation tests. We hint to solutions to minimize overvoltages and compensate for their effects, including advanced digital control strategies on FPGA chips