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Bronislav FIRAGO, Dmitry VASILYEV*

SOFT STARTING AND BRAKING APPLICATION
FOR SQUIRREL-CAGE INDUCTION MOTORS OPERATING
IN INTERMITTENT DUTY

This paper deals with energetic aspects of soft starting and braking application for the squirrel-cage induction motors operating in intermittent duty with constant load. Energy losses in transients of an induction motor for different laws of voltage changing as well as induction motor stator winding temperature at the end of starting process are calculated and compared with the ones during full-voltage starting and plug braking. Energy losses calculation during induction motor soft starting and braking has been performed analytically and via the Matlab simulation models of equivalent two-phase induction motor in $\alpha - \beta$ coordinates. The results of both calculation methods are compared and a divergence between them is determined. Also the effect of total energy losses on the induction motor stator winding temperature at the end of the motor starting process and its allowable frequency of starting is analyzed. Analytical calculation and simulation of soft starting and braking have been performed with allow for the linear and exponential laws of the first voltage harmonic magnitude changing. The results of simulation and analytical calculations are given in the tables.

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* Belarusian National Technical University, Belarus, 220027, Minsk, F. Skaryna 65, dmy@tut.by