Prace Naukowe Instytutu Maszyn, Napędów i Pomiarów Elektrycznych
Nr 66 Politechniki Wrocławskiej Nr 66

Studia i Materiały Nr 32 2012

permanent magnet synchronous motors, induction motors, high-efficiency motors, optimization

Wiesław JAŻDŻYŃSKI*, Martin BAJEK

A COMPARISON OF OPERATION PROPERTIES OF A HIGH-EFFICIENCY SQUIRREL-CAGE INDUCTION MOTOR AND LSPMSM

In the paper some results of design optimization calculations performed for induction motors with both the aluminum and copper cages, as well as for a line start permanent magnet synchronous motor (LSPMSM) with ratings P_N = 0.75 kW, U_N = 400 V, f_N = 50 Hz, 2p = 4 are presented. Basing upon obtained optimal designs, the prototypes of the LSPMSM and an induction motor with a reduced rated power P_N = 0.55 kW have been manufactured. The experiments have proved that the LSPMSM has a self-starting and sufficient overloading ability, and its rated efficiency (according to standards – direct efficiency determination by means of the torque meter test) is circa 89.1%. The properties of the optimized prototype of the induction motor could not be determined due to a delay in its correct manufacturing.

* AGH University of Science and Technology, al. Mickiewicza 30, 30-059 Cracow.