

SUMMARY

Thesis contains: pages – 117, drawings – 38, tables – 23.

The goal of the of the thesis lies in development of the control methods of the IPMSM with the purpose of its research and improvement of efficiency and performance of the electromechanical system.

In this thesis, analytical review of the inductance determination methods for the IPMSM is presented. After that two tests for inductance determination of the interior permanent magnet synchronous motors are proposed, analyzed and experimentally verified. Four methods are proposed to use to obtain static and dynamic inductances from the tests data.

Speed and position control algorithms are derived basing on the non-saturated model of the motor and its effectiveness was researched by means of experiment and simulation for small saturated motors. After that position control algorithm with adaptation to the mechanical parameters is designed and tested via simulation. Stability is proved using the second Lyapunov method.

Derived algorithms provide asymptotic tracking of the controlled coordinates, and decoupling of the direct current component and mechanic coordinate control subsystems.

INTERIOR PERMANENT MAGNET SYNCHRONOUS MOTORS,
INDUCTANCE DETERMINATION, SATURATION OF THE MAGNETIC
SYSTEM, ADAPTIVE CONTROL, MECHANICAL PARAMETERS
ESTIMATION.

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Ch.	Page	№ document	Sign	Data	Adaptive control of the interior permanent magnet synchronous motor	Lit	Page	Pages
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