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SPEED CONTROL OF THE DOUBLY-FED INDUCTION MACHINE WITH CONTROLLED CONVERTERS IN THE STATOR AND ROTOR CIRCUITS

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Abstract

The purpose of the article is to develop and study speed control algorithms for a doubly-fed induction machine (DFIM) under the condition of simultaneous control of the stator and rotor circuits. A mathematical model of an electric drive system with a DFIM is constructed, on the basis of which a mathematical simulation of the DFIM speed tracking has been performed, provided it is excited by the rotor circuit. Two algorithms for vector speed control of the DFIM are investigated: orthogonal control and control with loss minimization. The regulators have been developed which ensured the speed and flux tracking when the DFIM is excited by the

rotor circuit. The conducted researches confirm that the considered system of DFIM vector control performs speed tracking with minimum error at a constant magnetic flux. The redundancy of the control coordinates in the construction of the control algorithm is used to reduce DFIM losses. References 13, figures 4.

Key words: matrix converter, input current, reactive power, unbalanced load.

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