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Investigation in the Technique of Adaptive Predictive Control Fed by a Hybrid Inverter Applied to a Permanent Magnetic Synchronous Machine

I. Bentchikou [1], F. Boudjema [1], D. Boukhetala [1], A. Tlemçani [2*] and N. Ould Cherchali [2]

[1] *Laboratory of Process Control, National Polytechnic School, ENP, Algiers, Algeria.*
[2] *Research Laboratory in Electrical Engineering and Automatic (LREA), Medea, Algeria.*

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Abstract: The purpose of this paper is to present an approach to control the nonlinear system represented here by permanent magnet synchronous machines with two forms of control. This approach results from a combination of the adaptive and predictive properties, and the interaction of continuous-time and discrete event systems. Such a hybrid system consists of a discrete program with an analog environment. Many of the control approaches are limited to discrete-time hybrid systems because many complex mathematical issues are removed. In many applications the command variables are intrinsically discrete, either because such a system design is simpler or for other technological reasons. Our system consists of a five level inverter which controls a synchronous permanent magnet machine by predictive adaptive control, also, multilevel inverter is an effective solution for increasing power and reducing harmonics of AC waveforms.

Keywords: *PMSM-GPC; adaptive predictive control; structure cascade hybrid inverter.*

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* Corresponding author: mailto:h_tlemcani@yahoo.fr

