

Article Abstract

Title:	Sensorless induction motor drive for electric vehicle application
Author(s):	J. Guzinski ^{1*} , H. Abu-Rub ²
Address(es):	^{1*} Gdansk University of Technology, POLAND ² Texas A&M University at Qatar, QATAR * Corresponding Author: e-mail: jarguz@pg.gda.pl, Tel +48-58-3472960, Fax.+48-58-3410880
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Abstract:	In this paper, an electric vehicle drive with a robust and low cost alternating current (AC) induction motor is presented. This approach is applied to an existing commercial utility electric vehicle where previously used direct current (DC) series motor was replaced by the new AC induction motor. The use of three-phase squirrel cage induction motor requires implementing of voltage source inverter supplied by DC voltage from vehicle battery system. A new DSP based voltage inverter is designed for the proposed drive. The used processor realizes the field oriented control algorithm with torque and flux closed loop control. The proposed drive does not require speed sensor, which make the solution sensorless and reliable on speed sensor faults. Motor speed is computed by the processor using speed observer. In this paper system description, control algorithms realization, and speed computation are presented. The paper includes the simulation and experimental results of the discussed system.
Keywords:	Electric vehicle, induction motor, field oriented control, sensorless control.