Simultaneous Estimation of Speed and Rotor Resistance in the Sensorless Vector Control Systems with Induction Motors

Olimpiu Stoicuta[1], Teodor Pana[2], Robin Molnar[3] Daniel Deaconu[4]

[1]Faculty of Mechanical and Electrical Engineering, University of Petrosani, Romania
[2]Faculty of Electrical Engineering, Technical University of Cluj-Napoca, Romania
[3]Faculty of Electrical Engineering, Technical University of Cluj-Napoca, Romania
[4]Faculty of Electrical Engineering, Technical University of Cluj-Napoca, Romania

Abstract – **This paper presents a new method of simultaneous estimation of speed and rotor resistance of an induction motor, from a sensorless vector control system. The simultaneous estimation of the speed, rotor flux and of rotor resistance is done by using an adaptive estimator, called the COS observer. To ensure the persistent excitation condition, in the vector control system, over the rotor flux reference, we overlay a sine wave signal of low frequency and amplitude. The new method of simultaneous estimation of the speed, rotor flux and of the rotor resistance, is validated through simulation.**

Keywords — **induction motors; observers; sensorless vector control systems; rotor resistance adaptation; parameter estimation.**

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