A Novel Initial Rotor-Position Estimation Method for Switched Reluctance Motors Based on Frequency Measurement

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ABSTRACT
This paper presents a novel method which is designed to detect the rotor position at standstill and also low speeds in switched reluctance motor (SRM). In this paper the inductance of phase winding is added as a part in Colpitts oscillator and will cause a change in oscillation frequency according to the rotor position. The phase inductance regularly varies with the rotor position. Experiments were carried out on three phases SRM 6/4, where the measured frequency of colpitts oscillator was converted into a voltage value by the frequency to voltage converter and were then converted into a digital value to be matched with the proposed digital processing. The Experimental results showed high accuracy in determining the values of phase inductance, which produced an estimated rotor position accurately and quickly.

Keywords: Switched Reluctance; sensorless method; position estimation