

Abstract

The control of commutation of switched reluctance (SR) motor has nominally depended on a physical position detector. The physical rotor position sensor limits robustness and increases size and inertia of the SR drive system. The paper describes a method to overcome these limitations by using magnetization characteristics of the motor to indicate rotor and stator teeth overlap status. The method is using active current probing pulses of same magnitude that is used to simulate flux linkage in the winding being probed. A microprocessor is used for processing magnetization data to deduce rotor-stator teeth overlap status and hence rotor position. However, the back-of-core saturation and mutual coupling introduces overlap detection errors, hence that of commutation control. This paper presents the concept of the detection scheme and the effects of back-of core saturation.