

Torsional Vibration Control of Large Induction Motors Using Constant Air Gap Flux Scheme

Naser Mohammed Bayoumy AbdelRahim ,A. Shaltout

Abstract

Comprehensive analysis of the starting period of inverter-fed large induction motors reveals that these motors are subjected to additional components of pulsating torsional torque. These torque pulsations may coincide with the natural torsional frequency of the large motor system and produce hazardous shaft torque oscillations. To alleviate the torsional torque problem and limit the motor starting current, a constant air-gap flux using slip frequency control scheme is proposed to operate the motor inverter. Simulation results show that the proposed scheme is capable of drastically reducing the torsional torque oscillations and limiting the motor line current to approximately 22% of its direct online starting value without prolonging its starting period.

IET Electric Power Applications Journal 2012, September