

Cost-Effective Control Scheme for Reduction of Torsional Torque Oscillations in Starting Large Induction Motors

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Abstract

This article presents a cost-effective variable frequency drive for starting and operating large three-phase squirrel cage induction motors. The proposed drive employs the constant V/F control scheme, which regulates the rotor frequency such that it is always kept below a predetermined value. This has the effect of drastically reducing the motor shaft torque oscillations and significantly limiting the maximum value of the motor line current. In addition to its simplicity and hence cost-effectiveness, the proposed scheme is shown to be capable of (i) reducing the shaft torque oscillations to approximately 22% of that of the direct on-line start of the large motor, and (ii) limiting the motor line current to approximately 36% of that of the direct on-line start value.

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