Fault Diagnosis of Induction Motors

Induction motors are still among the most reliable and important electrical machines. The wide range of their use involves various electrical, magnetic, thermal and mechanical stresses which results in the need for fault diagnosis as part of the maintenance. A yet unreached goal is the development of a generalized, practical approach enabling industry to accurately diagnose different potential induction motor faults.

Fault Diagnosis of Induction Motors aims to fill this gap by focusing on theoretical, experimental and computer aided processes for fault diagnosis, building a comprehensive, structural approach allowing users to select the proper diagnosis strategy. Topics covered include condition monitoring and fault diagnosis of induction motors; the theory of line-start and inverter-fed induction motors; induction motor faults basics, developments and laboratory-scale implementation; magneto-motive force waves in healthy three-phase induction motors; multiple coupled circuit model of induction motors; finite element implementation of induction motors in healthy and faulty conditions; signal processing techniques utilized in fault diagnosis procedures; diagnosis of broken bars fault in induction motors; diagnosis of eccentricity fault in induction motors; and diagnosis of inter-turn short circuit fault in induction motors.

This work is essential reading for researchers and technicians involved with motor-drive applications and their related maintenance procedures or dealing with applications of signal processing techniques.

About the Authors

Jawad Faiz is a Professor in the School of Electrical and Computer Engineering at the University of Tehran, Iran, where his research interests are the design, modelling and fault diagnosis of electrical machines and transformers. He is a member of the Iran Academy of Sciences and has published more than 460 papers and a book in this field.

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