

Preface

Induction motor applications in industry are becoming more and more complex. The dependence of drives and automation on induction motor has made the control and the fault detection of the motor sufficiently intricate. With the increase of load variation and use of modern power electronic devices, nowadays the complexities in construction and operation are made more efficient, user-friendly, and reliable also. But the usage of these devices has pushed motors into a fault-prone environment. Since the use of sophisticated electronic gadgets has increased in every sphere of life, for their good longevity, requirement of early motor fault diagnosis has become a predominant criterion to the consumers in the competitive market of drives and automation. Therefore, early fault diagnosis has become the concern of utilities, end users, operating engineers, as well as manufacturers. This book is intended for graduates, postgraduates, and researchers, as well as for professionals in the related fields.

This book has evolved from the researches carried out by the authors and the contents of the courses are given by the authors at University of Calcutta, Department of Applied Physics, India in the bachelor's and master's courses in electrical engineering. A large number of references are given in the book, most of which are journal and conference papers and national and international standards.

The content of the book focuses, on the one hand, on different motor faults, their sources, and effects, and on the other hand, different analytical methods for diagnosis of various motor faults. Advantages and limitations of different methods are discussed along with simulated and laboratory experiment results. At the end, a chapter has been added to focus on the general discussion of the induction motor fault diagnosis and research scope.

The key features of the book can be highlighted as follows:

- This book has approached the subject matter in a lucid language. Fault diagnosis techniques have their analytical background supplemented by simulated and experimental results.

- This book has mainly handled fault diagnosis methods using both steady-state motor current and starting current transients, which are absent in many other similar books.
- In general, the book has dealt with common motor faults which are required for students, researchers, and practicing engineers.
- The content level of the book is designed in such a way that the general description of different induction motor faults are made first, followed by some existing and new fault diagnosis techniques. This content should attract the students, researchers, and practicing engineers.
- The predominant features of the book are
 - Lucid but concise description of the subject (which may be available in other books).
 - Chapter outcome in each chapter is clearly mentioned.
 - Abstract in each chapter is provided which will attract the researchers.
 - Detailed new measurement techniques (which are not available in other books).
 - Simulation results of new techniques and comparison of the same with experimentation will give fresh researchers a guideline as to how the can be done (which are not available in other books).

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Approach through Current Signature Analysis

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