

Analysis and mathematical models of canned electrical machine drives: in particular a canned switched reluctance machine

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Abstrak

This book focuses on the electromagnetic and thermal modeling and analysis of electrical machines, especially canned electrical machines for hydraulic pump applications. It addresses both the principles and engineering practice, with more weight placed on mathematical modeling and theoretical analysis. This is achieved by providing in-depth studies on a number of major topics such as: can shield effect analysis, machine geometry optimization, control analysis, thermal and electromagnetic network models, magneto motive force modeling, and spatial magnetic field modeling. For the can shield effect analysis, several cases are studied in detail, including classical canned induction machines, as well as state-of-the-art canned permanent magnet machines and switched reluctance machines.

The comprehensive and systematic treatment of the can effect for canned electrical machines is one of the major features of this book, which is particularly suited for readers who are interested in learning about electrical machines, especially for hydraulic pumping, deep-sea exploration, mining and the nuclear power industry.