Automatic Control of Converter-Fed Drives, Volume 46 (Studies in Electrical and Electronic Engineering)

By Marian P. Kazmierkowski, Henryk Tunia

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This book introduces the reader in a systematical way to the design philosophy behind vector control systems. The mathematical motor models based on complex-space vector descriptions as well as the control structures for DC motors provide a perfect basis for explaining the principles of AC motor vector control. An in-depth review of electromagnetic transients in induction motors under various methods of frequency control is given. This is explained with the help of appropriate block schemes and new equivalent circuits. Properties of AC motors under non-sinusoidal supply are reviewed. The basic power converter topologies applied in motor control technology as well as symmetry and loss reduction problems are discussed. Some examples of controller design methods are presented step by step. An important feature of the book is that it contains many examples of systems applied in practical engineering as well as simulation and experimental results. The volume will be of interest to all those familiar with the basics of electrical machines and control systems theory. Therefore, it is recommended to students of electrical, electronics and mechanics departments. The book can also be used by those working in industry, who are interested in modern power electronics, drives and motion control, robotics as well as automation of industrial processes.

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