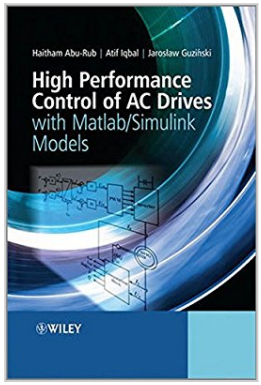

High Performance Control of AC Drives with Matlab / Simulink Models

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High Performance Control of AC Drives with Matlab / Simulink Models
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A comprehensive guide to understanding AC machines with exhaustive simulation models to practice design and control

Nearly seventy percent of the electricity generated worldwide is used by electrical motors. Worldwide, huge research efforts are being made to develop commercially viable three- and multi-phase motor drive systems that are economically and technically feasible.

Focusing on the most popular AC machines used in industry – induction machine and permanent magnet synchronous machine – this book illustrates advanced control techniques and topologies in practice and recently deployed. Examples are drawn from important techniques including Vector Control, Direct Torque Control, Nonlinear Control, Predictive Control, multi-phase drives and multilevel inverters.

Key features include:

- systematic coverage of the advanced concepts of AC motor drives with and without output filter;
- discussion on the modelling, analysis and control of three- and multi-phase AC machine drives, including the recently developed multi-phase-phase drive system and double fed induction machine;
- description of model predictive control applied to power converters and AC drives, illustrated together with their simulation models;
- end-of-chapter questions, with answers and PowerPoint slides available on the companion website www.wiley.com/go/aburub_control

This book integrates a diverse range of topics into one useful volume, including most the latest developments. It provides an effective guideline for students and professionals on many vital electric drives aspects. It is an advanced textbook for final year undergraduate and graduate students, and researchers in power electronics, electric drives and motor control. It is also a handy tool for specialists and practicing engineers wanting to develop and verify their own algorithms and techniques.

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Editorial Review

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Dr Abu-Rub has been working in the academic field and has been an active expert in the area of electrical machine drives and power electronics for almost 20 years. He is currently Associate Professor at Texas A&M University at Qatar. From 1997 until 2005 he worked as first assistant professor and then associate professor at Birzet University, Palestine. He was appointed Chairman of the Electrical Engineering Department there for four years. Dr Abu-Rub has published around 80 journal and conference papers and has co-authored four lab manuals.

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Dr Iqbal is presently on academic leave from AMU and is working as Teaching Associate in Electrical & Computer Engineering at Texas A&M University at Qatar. He joined the Electrical Engineering Department at Aligarh Muslim University as a Lecturer in 1991 and was promoted to the post of Associate Professor in 2006. Dr Iqbal completed two large R&D projects from AICTE and CSIR, Govt. of India on multi-phase drive control and is currently supervising one large R&D project from CSIR, New Delhi, on Five-phase Matrix Converter and a project on Renewable Energy technology at TAMUQ under UREP. He has filed three patents on the electrical phase transformation systems and published more than is associate editor of International Journal of Electrical & Computer Engineering, SJI, USA.

Dr J. Guzinski, Gdansk University of Technology, Poland
Dr Guzinski is currently an adjunct with the faculty of Electrical and Control Engineering at Gdansk University of Technology. In 2001 he was the design engineer of power electronics converters at Electrotechnical Research Institute, Gdansk, and was invited as visiting professor at Ecole Superieure d'Ingenieurs de Poiters in France. From 2004-2006 and then from 2008-2010 he was head of two grants supported by Polish Government, dedicated to closed loop control of the induction motor with voltage inverter output filter. Dr Guzinski has authored or co-authored more than 80 papers presented in journals and conferences. He is reviewer in IEEE Transactions on Power Systems and IEEE Transactions on Industrial Electronics.

Users Review

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