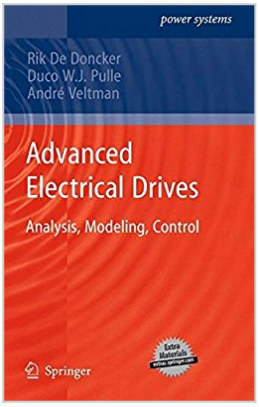

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems)

By Rik De Doncker, Duco W.J. Pulle, André Veltman

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems)
By Rik De Doncker, Duco W.J. Pulle, André Veltman

Electrical drives convert in a controlled manner, electrical energy into mechanical energy. Electrical drives comprise an electrical machine, i.e. an electro-mechanical energy converter, a power electronic converter, i.e. an electrical-to-electrical converter, and a controller/communication unit. Today, electrical drives are used as propulsion systems in high-speed trains, elevators, escalators, electric ships, electric forklift trucks and electric vehicles. Advanced control algorithms (mostly digitally implemented) allow torque control over a high-bandwidth. Hence, precise motion control can be achieved. Examples are drives in robots, pick-and-place machines, factory automation hardware, etc.

Most drives can operate in motoring and generating mode. Wind turbines use electrical drives to convert wind energy into electrical energy. More and more, variable speed drives are used to save energy for example, in air-conditioning units, compressors, blowers, pumps and home appliances.

Key to ensure stable operation of a drive in the aforementioned applications are torque control algorithms. In *Advanced Electrical Drives*, a unique approach is followed to derive model based torque controllers for all types of Lorentz force machines, i.e. DC, synchronous and induction machines. The rotating transformer model forms the basis for this generalized modeling approach that ultimately leads to the development of universal field-oriented control algorithms. In case of switched reluctance machines, torque observers are proposed to implement direct torque algorithms.

From a didactic viewpoint, tutorials are included at the end of each chapter. The reader is encouraged to execute these tutorials to familiarize him or herself with all aspects of drive technology. Hence, *Advanced Electrical Drives* encourages “learning by doing”. Furthermore, the experienced drive specialist may find the simulation tools useful to design high-performance controllers for all sorts of electrical drives.

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems)

By Rik De Doncker, Duco W.J. Pulle, André Veltman

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman

Electrical drives convert in a controlled manner, electrical energy into mechanical energy. Electrical drives comprise an electrical machine, i.e. an electro-mechanical energy converter, a power electronic converter, i.e. an electrical-to-electrical converter, and a controller/communication unit. Today, electrical drives are used as propulsion systems in high-speed trains, elevators, escalators, electric ships, electric forklift trucks and electric vehicles. Advanced control algorithms (mostly digitally implemented) allow torque control over a high-bandwidth. Hence, precise motion control can be achieved. Examples are drives in robots, pick-and-place machines, factory automation hardware, etc.

Most drives can operate in motoring and generating mode. Wind turbines use electrical drives to convert wind energy into electrical energy. More and more, variable speed drives are used to save energy for example, in air-conditioning units, compressors, blowers, pumps and home appliances.

Key to ensure stable operation of a drive in the aforementioned applications are torque control algorithms. In *Advanced Electrical Drives*, a unique approach is followed to derive model based torque controllers for all types of Lorentz force machines, i.e. DC, synchronous and induction machines. The rotating transformer model forms the basis for this generalized modeling approach that ultimately leads to the development of universal field-oriented control algorithms. In case of switched reluctance machines, torque observers are proposed to implement direct torque algorithms.

From a didactic viewpoint, tutorials are included at the end of each chapter. The reader is encouraged to execute these tutorials to familiarize him or herself with all aspects of drive technology. Hence, *Advanced Electrical Drives* encourages “learning by doing”. Furthermore, the experienced drive specialist may find the simulation tools useful to design high-performance controllers for all sorts of electrical drives.

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman Bibliography

- Sales Rank: #2357795 in Books
- Published on: 2011-01-19
- Original language: English
- Number of items: 1
- Dimensions: .90" h x 6.50" w x 9.40" l, 2.02 pounds
- Binding: Hardcover
- 462 pages

Editorial Review

Review

From the reviews:

“The book is written for those who have a desire or need to understand the intricacies of modern electrical drives.” (IEEE Control Systems Magazine, Vol. 31, August, 2011)

From the Back Cover

Electrical drives convert in a controlled manner, electrical energy into mechanical energy. Electrical drives comprise an electrical machine, i.e. an electro-mechanical energy converter, a power electronic converter, i.e. an electrical-to-electrical converter, and a controller/communication unit. Today, electrical drives are used as propulsion systems in high-speed trains, elevators, escalators, electric ships, electric forklift trucks and electric vehicles. Advanced control algorithms (mostly digitally implemented) allow torque control over a high-bandwidth. Hence, precise motion control can be achieved. Examples are drives in robots, pick-and-place machines, factory automation hardware, etc.
Most drives can operate in motoring and generating mode. Wind turbines use electrical drives to convert wind energy into electrical energy. More and more, variable speed drives are used to save energy for example, in air-conditioning units, compressors, blowers, pumps and home appliances.
Key to ensure stable operation of a drive in the aforementioned applications are torque control algorithms. In Advanced Electrical Drives, a unique approach is followed to derive model based torque controllers for all types of Lorentz force machines, i.e. DC, synchronous and induction machines. The rotating transformer model forms the basis for this generalized modeling approach that ultimately leads to the development of universal field-oriented control algorithms. In case of switched reluctance machines, torque observers are proposed to implement direct torque algorithms.
From a didactic viewpoint, tutorials are included at the end of each chapter. The reader is encouraged to execute these tutorials to familiarize him or herself with all aspects of drive technology. Hence, Advanced Electrical Drives encourages “learning by doing”. Furthermore, the experienced drive specialist may find the simulation tools useful to design high-performance controllers for all sorts of electrical drives.

About the Author
Rik W. De Doncker (M'87 SM'99 F'01) received his Ph.D. degree (summa cum laude) in electrical engineering from the Katholieke Universiteit Leuven, Leuven, Belgium in 1986. In 1987, he was appointed a Visiting Associate Professor at the University of Wisconsin, Madison, where he lectured and conducted research on high-performance induction motor drives. In 1988, he was a General Electric Company Fellow in the microelectronic center, IMEC, Leuven, Belgium. In December 1988, he joined the General Electric Company Corporate Research and Development Center, Schenectady, NY, where he led research on drives and high-power soft-switching converters, ranging from 100 kW to 4 MW, for aerospace, industrial, and traction applications. In November 1994, he joined Silicon Power Corporation (formerly GE-SPCO) as Vice President, Technology. He worked on high-power converter systems and MTO devices and was responsible for the development and production of a 15-kV medium-voltage thyristor based transfer switch. Since October 1996, he has been a professor at Aachen University of Technology, Aachen, Germany, where he leads the Institute for Power Electronics and Electrical Drives. In Oct. 2006 he was also appointed director of the E.ON Energy Research Center at RWTH Aachen University, where he leads the Institute for Power

Generation and Storage Systems. He has published over 170 technical papers and is holder of 25 patents, with several pending. Currently, Dr. De Doncker is member of the Board of the German engineering Society VDE-ETG. He is past president of the IEEE Power Electronics Society (PELS). He is member of the EPE Executive Council. He was founding Chairman of the German IEEE IAS-PELS Joint Chapter. Dr. De Doncker is recipient of the IAS Outstanding Achievements Award and the IEEE Power Engineering Custom Power Award (2008).

Users Review

From reader reviews:

Leonard Santiago:

Book is to be different for every single grade. Book for children till adult are different content. As it is known to us that book is very important normally. The book Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) seemed to be making you to know about other information and of course you can take more information. It is quite advantages for you. The e-book Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) is not only giving you considerably more new information but also to be your friend when you experience bored. You can spend your current spend time to read your guide. Try to make relationship together with the book Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems). You never truly feel lose out for everything if you read some books.

Renee Wood:

Do you one among people who can't read gratifying if the sentence chained from the straightway, hold on guys that aren't like that. This Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) book is readable by means of you who hate the perfect word style. You will find the information here are arrange for enjoyable reading experience without leaving perhaps decrease the knowledge that want to provide to you. The writer connected with Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) content conveys objective easily to understand by a lot of people. The printed and e-book are not different in the written content but it just different such as it. So , do you nevertheless thinking Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) is not loveable to be your top record reading book?

Tasha Banda:

Hey guys, do you wants to finds a new book to study? May be the book with the headline Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) suitable to you? The particular book was written by renowned writer in this era. The particular book untitled Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems)is one of several books which everyone read now. This kind of book was inspired a lot of people in the world. When you read this book you will enter the new dimension that you ever know ahead of. The author explained their concept in the simple way, therefore all of people can easily to be aware of the core of this reserve. This book will give you a great deal of information about this world now. So that you can see the represented of the world within this book.

Lee Erbe:

As a college student exactly feel bored in order to reading. If their teacher inquired them to go to the library or to make summary for some book, they are complained. Just minor students that has reading's internal or real their interest. They just do what the teacher want, like asked to go to the library. They go to right now there but nothing reading seriously. Any students feel that examining is not important, boring in addition to can't see colorful photos on there. Yeah, it is for being complicated. Book is very important for yourself. As we know that on this age, many ways to get whatever we would like. Likewise word says, many ways to reach Chinese's country. Therefore this Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) can make you really feel more interested to read.

Read Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman for online ebook

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman books to read online.

Online Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman ebook PDF download

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman Doc

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman Mobipocket

Advanced Electrical Drives: Analysis, Modeling, Control (Power Systems) By Rik De Doncker, Duco W.J. Pulle, André Veltman EPub