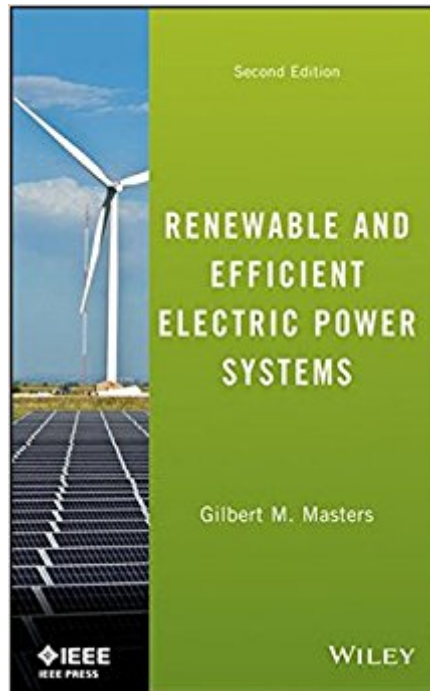




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# Renewable And Efficient Electric Power Systems



## Synopsis

A solid, quantitative, practical introduction to a wide range of renewable energy systems—in a completely updated, new edition The second edition of Renewable and Efficient Electric Power Systems provides a solid, quantitative, practical introduction to a wide range of renewable energy systems. For each topic, essential theoretical background is introduced, practical engineering considerations associated with designing systems and predicting their performance are provided, and methods for evaluating the economics of these systems are presented. While the book focuses on the fastest growing, most promising wind and solar technologies, new material on tidal and wave power, small-scale hydroelectric power, geothermal and biomass systems is introduced. Both supply-side and demand-side technologies are blended in the final chapter, which introduces the emerging smart grid. As the fraction of our power generated by renewable resources increases, the role of demand-side management in helping maintain grid balance is explored. Renewable energy systems have become mainstream technologies and are now, literally, big business. Throughout this edition, more depth has been provided on the financial analysis of large-scale conventional and renewable energy projects. While grid-connected systems dominate the market today, off-grid systems are beginning to have a significant impact on emerging economies where electricity is a scarce commodity. Considerable attention is paid to the economics of all of these systems. This edition has been completely rewritten, updated, and reorganized. New material has been presented both in the form of new topics as well as in greater depth in some areas. The section on the fundamentals of electric power has been enhanced, making this edition a much better bridge to the more advanced courses in power that are returning to many electrical engineering programs. This includes an introduction to phasor notation, more emphasis on reactive power as well as real power, more on power converter and inverter electronics, and more material on generator technologies. Realizing that many students, as well as professionals, in this increasingly important field may have modest electrical engineering backgrounds, early chapters develop the skills and knowledge necessary to understand these important topics without the need for supplementary materials. With numerous completely worked examples throughout, the book has been designed to encourage self-instruction. The book includes worked examples for virtually every topic that lends itself to quantitative analysis. Each chapter ends with a problem set that provides additional practice. This is an essential resource for a mixed audience of engineering and other technology-focused individuals.

## Book Information

Hardcover: 712 pages

Publisher: Wiley-IEEE Press; 2 edition (June 24, 2013)

Language: English

ISBN-10: 1118140621

ISBN-13: 978-1118140628

Product Dimensions: 6.2 x 1.6 x 9.3 inches

Shipping Weight: 2.5 pounds (View shipping rates and policies)

Average Customer Review: 4.0 out of 5 stars 16 customer reviews

Best Sellers Rank: #132,655 in Books (See Top 100 in Books) #25 in Books > Engineering & Transportation > Engineering > Energy Production & Extraction > Electric #30 in Books > Engineering & Transportation > Engineering > Energy Production & Extraction > Alternative & Renewable #565 in Books > Engineering & Transportation > Engineering > Electrical & Electronics

## Customer Reviews

“This book is recommended reading to a wide audience, from engineering students, to working engineers wanting a refresher on renewable energy, to the lay person wanting to inquire deeper into electrical systems.” (IEEE Power Electronics Society Newsletter, 1 September 2013)

GILBERT M. MASTERS received his PhD in electrical engineering from Stanford University and has taught courses there for over three decades on energy and the environment, with an emphasis on efficiency and renewables. He is currently Professor Emeritus in the Atmosphere/Energy Program in the Department of Civil and Environmental Engineering at Stanford University. He is the author of several books on environmental engineering and energy for sustainability.

I took a renewable energy class that used this book. There are good textbooks and bad ones and this one is the latter. Mr. Masters attempts to cover too many topics in one book and does a poor job at describing any of these topics in enough detail to be useful. The first chapter starts out with a review of the economics of the power industry. Our instructor for this section was previously the CFO of a large midwest utility and he cautioned us that some of the data represented in the book was wrong. He also mentioned that some of the calculations were questionable. So that was the first chapter. The second chapter attempts to review / teach basic electricity and magnetic circuits. This area of study should not be relegated to a single chapter in a book. I am an EE/Physics major

and I was confused as to who this book is written for after reading this chapter. If you don't know circuits, I'm pretty sure this overview is frustratingly brief. If you do know circuits you are left to wonder why this chapter is included in the book. As the chapters progress more and more material is introduced in a similar way. If you know physics great, otherwise you are introduced to many complex concepts like valence electrons and pn junctions in 2 to 3 pages, wow. The problems are the worst, Mr. Masters wants his readers to make large leaps to be able to solve the given problems. He figures that the reader is at the point, after being briefly introduced to topics, can then make the assumptions of a seasoned electrical engineer / physicist / CFO / contractor to work through his problems. He also enjoys asking questions where the data is not in the units described in the text so the reader must first convert the units before starting the problem. It would seem that in the least, this book would try to show the reader how to convert what one is left to assume are industry standard units for renewable energy from one form to another but this is always left to the reader.

One of the better engineering texts books. Lots of worked out examples in the book. However like all engineering texts there are a lot of problems in each chapter that are not discussed in text at all.

A very solid book for understanding the basics of power systems, including detailed chapters and examples dedicated to the early basics (Ohm's Law, voltage dividers, motors, inductance and capacitance equations) of circuit and E&M theory. The examples presented are simple, but real-world applicable, including some nice forays into the economics behind the various power systems. I am a grad student focusing on optics and photonics, so power systems are completely new for me. I can't claim to have finished the book yet, but so far it's been a very comprehensible tool and I have learned a lot.

If you're an engineer or an engineering student, this book is worthless. The math is fleeting and not calculus based, there are very few examples, and it is overall not intended for engineers.

Not all of the charts match the printed version of this book! My professor assigned HW based off of the printed text, and when I went to do the problems some of the charts didn't match his. So I had to go into his office and take pictures of the correct charts. And I'm sure it was the exact same edition.

Required for course. Got the kindle version, think the hardcopy might have been easier to read but

the search function was useful.

I am just through chapter 3 at the time of writing this review. It is an easy text to understand. I got my BSEE in 2006 and was a bit nervous about this course. The text has allowed me to re-familiarize myself slowly but surely

Good Book, with powerful information on design.

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