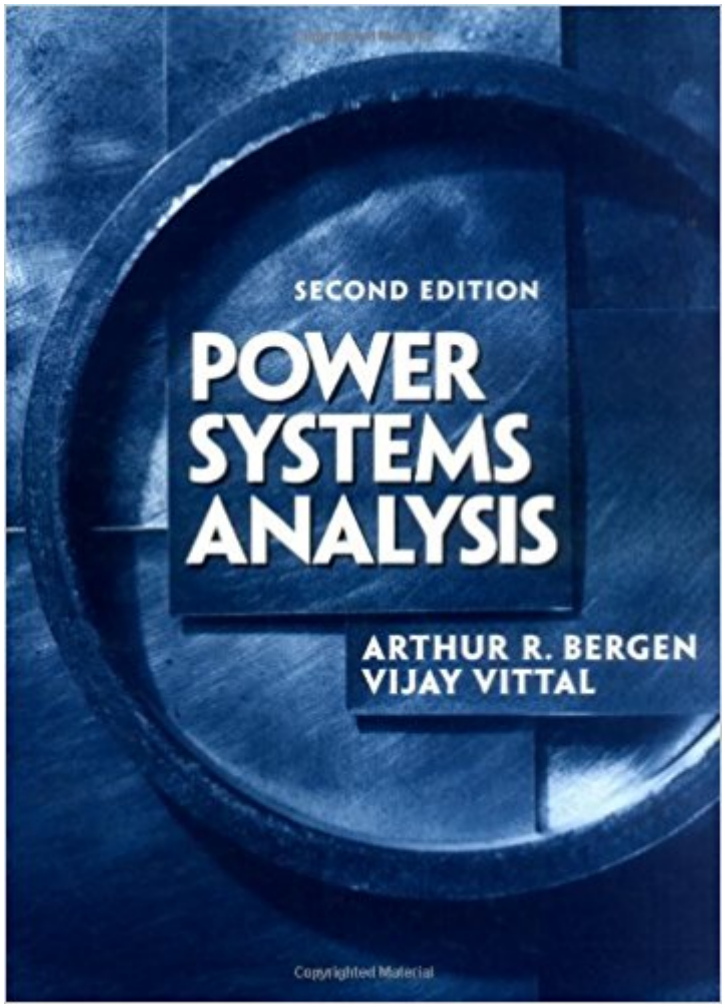
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Power Systems Analysis (2nd Edition)



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Synopsis

This is the first book on power system analysis to explore the major changes in the structure and operation of the electric utility industry, and to show how power system operation will be affected by the new changes. It reflects the trends in state-of-the-art, computer-based power system analysis and shows how to apply each modern analysis tool in designing and improving an expansion of an existing power system. KEY FEATURES: Features a computer-based design example (carried out from chapter-to-chapter) which uses all the analysis. As the example develops, readers determine the parameter values for a proposed transmission system upgrade to support load growth and a new steel mill being located in the area; convert all the parameters to per unit -- the preferred choice of units for system analysis; determine typical parameters for the generators in the system being designed; develop the admittance matrix and the impedance matrix for the system being designed; conduct the power flow and check the designed system for possible violations, and appropriately modify the design; and conduct a contingency analysis on the designed system; analyze the behavior of the designed system under faulted condition; continue the design with a selection of relay settings to protect the system in the event of these faulted conditions; and perform a transient stability simulation on the system and verify the ability of the system to remain stable. For engineers working in the electric utility industry.

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Customer Reviews

Keeping pace with the major changes in the structure and operation of the electric utility industry, this is the first book on power system analysis that explores the issues and shows how power system operation will be affected by the changes in the industry. It incorporates state-of-the-art, computer-based power system analysis and describes how to apply each modern analysis tool in designing and improving an expansion of an existing power system. FEATURES/BENEFITS NEW—Describes the new market environment of the electric utility industry. Introduces changes in the electric utility industry structure, and describes how the restructuring will impact important aspects of power system analysis. NEW—Emphasizes computer application and design and reflects current industry practice. NEW—A computer-based design problem dealing with the calculations of transmission line parameters is introduced in Chapter 3 and continued in each successive chapter. Providing readers with the opportunity to apply the tools they encounter in each chapter. NEW—A new chapter on network matrices, their construction and manipulation. This chapter introduces efficient computational techniques to analyze large power systems. NEW—Many additional worked-out examples and problems—Includes several problems which can be solved using MATLAB. Giving the reader clear illustrations of key issues and provides them with methods to solve complex problems. Clearly stated objectives and explanation of material without sacrificing necessary rigor and understanding.

I work for an electrical utility now, and when I bought this I was a student tearing my hair out over my first power systems classes at university. If you’re buying this, you’re probably a student and have to buy it because it’s required for your class. But do yourself a favor, and unless you drop the class and decide that power systems isn’t for you, do not under any circumstances sell this book back. Keep it, it will be a very useful resource in the future. 90% of the stuff that’s in this book I use only on a few rare occasions, and it’s really nice to have the reference there when I need to make some kind of an unbalanced fault current calculation or something.

I used this book to teach Power Systems course to undergrads last term. I found the book very well structured, very good examples and end of chapter problems. The mathematics in the course are what you should expect any future engineer should be able to handle.I am giving this book a 4 star, only because it misses simulations. I believe that nowadays no course should be given out without some type of software resources. We used PowerWorld for this course, but it would have been much more illustrative if the book was prepared with such material.

Content wise, this book is great for understanding the mathematics utilized in power systems analysis and commercial analysis software. Unfortunately, the book is expensive, even in the soft cover version. Also the binding on the soft cover version is terrible. I've owned the book for a month and it is already starting to fall apart.... Not very happy with that aspect.

Very tough examples, the author should provide a manual answers appendix for all questions in the end of chapters .

This book is a great reference to have on the table. I made the purchase to aid in my current research on computational solutions for transmission systems analytics and it has proven to be invaluable. The book is perfect for the reader who is already competent in the topics presented and is looking to jump into more advanced numerical and analytical solution techniques. The book is in no way a conceptual introduction to material presented (as should be gathered from the last word in the title).

Surprisingly this book is a great practical reference for practicing power systems engineers. There are several key problems that may be useful in practice that were very helpful.

Good technical book that delves into the mathematics of high-voltage transmission and distribution systems. Not for the beginner, though, but mathematics are necessary if you want a complete understanding of how this stuff works. Great reference for electric utility professionals or anyone involved with an electric utility...consultants, industrial electrical engineers, etc. The book has some good appendices that include basic control theory methods (root-locus method, etc.), magnetic force generation, negative- and zero-sequence impedances of synchronous machines, and electric and other data for transmission line conductors, among other topics of interest.

As a teacher and researcher working in the power systems area for more than 35 years, I have great pleasure in welcoming a revised edition of Art Bergen's classic book on Power Systems Analysis. When the first edition came out in 1986, it was a trend setter for those entering an academic career. The presentation was fresh and different with challenging problems added to each chapter. The book combined control system concepts with power system models and provided insight into dynamic operation of power systems.In the last three decades, power system analysis has made great progress and mathematical techniques of optimization and matrix analysis have

become entrenched in problem solution. Matlab has become de facto tool for use in the class room. The revised edition recognizes these facts, and without affecting the originality of the first edition supplements material that is indispensable to any student of power systems.It is a difficult balancing act to provide the required mathematical knowledge without losing track of the practical nature of power systems. I feel that Vittal has achieved this.There is a number of other books on power system analysis in the market, but the approach in most of the cases is similar to the classic book of Stevenson.I would recommend the book for a senior level power system course in a 4-year program and as a reference to graduate students requiring a foundation in power systems.

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