

## <<电力系统分析与设计>>

### 图书基本信息

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## <<电力系统分析与设计>>

### 前言

很高兴能再次为《电力系统分析与设计（英文改编版·原书第4版）》一书作序。

本书第3版于2002年出版，于2004年在中国影印发行，受到了国内外电力系统分析设计领域工程技术人员和高校师生的广泛关注。

这次在中国出版的第4版比第3版做了部分改动，使本书更加实用。

本书主要介绍电力系统分析和设计的方法，并借助先进的电网可视化分析软件，帮助学生深入理解电力系统的基本理论和分析方法。

本书的主要特点如下： 1.对于电气工程专业的的大学生来说，本书内容十分全面，这是美国教材不同于我国教材之处，对于本书的内容，国内一般是分成几本教材来讲述的。类似的教材，如《电力系统分析》、《电力系统》、《电能系统基础》等，所涵盖的知识点都没有本书全面。

2.编写内容新。

本书是2008年出版的最新版，内容反映了电力系统领域内的最新问题和研究成果，包括电力市场环境下电力系统的一些问题。

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### 内容概要

《电力系统分析与设计（第4版）》由于知识点全面、系统，理论与工程实际联系紧密，实用性强，在国内外读者中广受赞誉，而成为电力系统分析设计领域的重要参考资料。

原书是基于美国国情而编写的高等学校教学用书，为了使该书的内容更为适用于广大的中国读者，应机械工业出版社之邀，编者在承担本书中文版翻译工作的同时，在综合考虑知识内容的适用性、连贯性和行文简洁的基础上，对原书内容、结构做了一些调整，形成了本英文改编版。

改编版相对原书作了如下调整：原书每章均包括“案例分析”和正文（包含“习题”和“课程设计”）两个部分。

改编版为保证全书的完整性，保持原书正文内容不变，但从中国读者的应用角度出发，去掉了原书各章的“案例分析”部分。

同时，从删除的“案例分析”中精选了10篇对国内读者较具代表性和借鉴意义的论文，组织在一起新增了第14章（Extended），为开阔读者视野提供一个窗口，以使广大读者了解电力系统发展现状及未来新方向。

内容涉及分布式发电、可视化电网、广域安稳控制系统、动态安全评估等电力系统前沿领域。

改编版的出版，是将外文教材引入、消化，使之适合中国读者的一次有益的尝试。

原书内容经过调整后将更好地体现“实用性强、应用性强”的特点。

期望本书能够成为国内电力系统专业教师、学生的优秀参考教材。

## &lt;&lt;电力系统分析与设计&gt;&gt;

## 书籍目录

出版说明序前言PREFACEList of Symbols, Units, and NotationCHAPTER 1 Introduction 1.1 History of Electric Power Systems 1.2 Present and Future Trends 1.3 Electric Utility Industry Structure 1.4 Computers in Power System Engineering 1.5 PowerWorld SimulatorCHAPTER 2 Fundamentals 2.1 Phasors 2.2 Instantaneous Power in Single-Phase ac Circuits 2.3 Complex Power 2.4 Network Equations 2.5 Balanced Three-Phase Circuits 2.6 Power in Balanced Three-Phase Circuits 2.7 Advantages of Balanced Three-Phase versus Single-Phase Systems 51CHAPTER 3 Power Transformers 3.1 The Ideal Transformer 3.2 Equivalent Circuits for Practical Transformers 3.3 The Per-Unit System 3.4 Three-Phase Transformer Connections and Phase Shift 3.5 Per-Unit Equivalent Circuits of Balanced Three-Phase Two-Winding Transformers 3.6 Three-Winding Transformers 3.7 Autotransformers 3.8 Transformers with Off-Nominal Turns Ratios CHAPTER 4 Transmission Line Parameters 4.1 Transmission Line Design Considerations 4.2 Resistance 4.3 Conductance 4.4 Inductance: Solid Cylindrical Conductor 4.5 Inductance: Single-Phase Two-Wire Line and Three-Phase Three-Wire Line with Equal Phase Spacing 4.6 Inductance: Composite Conductors, Unequal Phase Spacing, Bundled Conductors 4.7 Series Impedances: Three-Phase Line with Neutral Conductors and Earth Return 4.8 Electric Field and Voltage: Solid Cylindrical Conductor 4.9 Capacitance: Single-Phase Two-Wire Line and Three-Phase Three-Wire Line with Equal Phase Spacing 4.10 Capacitance: Stranded Conductors, Unequal Phase Spacing, Bundled Conductors 4.11 Shunt Admittances: Lines with Neutral Conductors and Earth Return 4.12 Electric Field Strength at Conductor Surfaces and at Ground Level 4.13 Parallel Circuit Three-Phase LinesCHAPTER 5 Transmission Lines: Steady-State Operation 5.1 Medium and Short Line Approximations 5.2 Transmission-Line Differential Equations 5.3 Equivalent n Circuit 5.4 Lossless Lines 5.5 Maximum Power Flow 5.6 Line Loadability 5.7 Reactive Compensation TechniquesCHAPTER 6 Power Flows 6.1 Direct Solutions to Linear Algebraic Equations: Gauss Elimination 6.2 Iterative Solutions to Linear Algebraic Equations: Jacobi and Gauss-Seidel .....CHAPTER 7 Symmetrical FaultsCHAPTER 8 Symmetrical ComponentsCHAPTER 9 Unsymmetrical FaultsCHAPTER 10 System ProtectionCHAPTER 11 Power System ControlsCHAPTER 12 Transmission Lines: Transient OperationCHAPTER 13 Transient StabilityCHAPTER 14 Extended Appendix

## 章节摘录

HISTORY OF ELECTRIC POWER SYSTEMS      In 1878 , Thomas A. Edison began work on the electric light and formulated the concept of a centrally located power station with distributed lighting serving a surrounding area. He perfected his light by October 1879, and the opening of his historic Pearl Street Station in New York City on September 4, 1882, marked the beginning of the electric utility industry ( see Figure 1.1 ) . At Pearl Street, dc generators, then called dynamos, were driven by steam engines to supply an initial load of 30 kW for 110-V incandescent lighting to 59 customers in a 1-square-mile area. From this beginning in 1882 through 1972, the electric utility industry grew at a remarkable pace—a growth based on continuous reductions in the price of electricity due primarily to technological accomplishment and creative engineering.      The introduction of the practical dc motor by Sprague Electric, as well as the growth of incandescent lighting, promoted the expansion of Edison's dc systems. The development of three-wire 220-V dc systems allowed load to increase somewhat, but as transmission distances and loads continued to increase, voltage problems were encountered. These limitations of maximum distance and load were overcome in 1885 by William Stanley's development of a commercially practical transformer. Stanley installed an ac distribution system in Great Barrington, Massachusetts, to supply 150 lamps. With the transformer, the ability to transmit power at high voltage with corresponding lower current and lower line-voltage drops made ac more attractive than dc. The first single-phase ac line in the United States operated in 1889 in Oregon, between Oregon City and Portland 21 km at 4 kV.

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