



Electric Power Principles: Sources, Conversion, Distribution and Use

By James L. Kirtley

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This innovative approach to the fundamentals of electric power provides the most rigorous, comprehensive and modern treatment available. To impart a thorough grounding in electric power systems, it begins with an informative discussion on per-unit normalizations, symmetrical components and iterative load flow calculations.

Covering important topics within the power system, such as protection and DC transmission, this book looks at both traditional power plants and those used for extracting sustainable energy from wind and sunlight.

With classroom-tested material, this book also presents:

- the principles of electromechanical energy conversion and magnetic circuits;
- synchronous machines - the most important generators of electric power;
- power electronics;
- induction and direct current electric motors.

Homework problems with varying levels of difficulty are included at the end of each chapter, and an online solutions manual for tutors is available. A useful Appendix contains a review of elementary network theory.

For senior undergraduate and postgraduate students studying advanced electric power systems as well as engineers re-training in this area, this textbook will be an indispensable resource. It will also benefit engineers in electronic power systems, power electronic systems, electric motors and generators, robotics and mechatronics.

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Editorial Review

Review

From the Back Cover

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About the Author

Professor James Kirtley is currently teaching a course on electric power systems to both undergraduate and graduate students at MIT (Massachusetts Institute of Technology). He has been a fellow of IEEE since 1990, was awarded the IEEE Third Millennium Medal in 2000 and the Nikola Tesla Award in 2002. Since 2007 Professor Kirtley has been associate editor of IEEE Power Engineering Society's Transactions on Energy Conversion. He lectures outside the university, writes extensively for journals and holds 23 patents. Amongst other areas, his research interests include electric ships, superconducting generator, intelligent monitoring of equipment and systems, and advanced motor/generator machines for kinetic energy storage systems.

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