

Power Delivery Reference Books

Continuing a Colorful Tradition

EPRI is updating and expanding a series of industry-standard engineering guidebooks to preserve expert knowledge and capture the latest developments in transmission, distribution, grid operations, and power control.

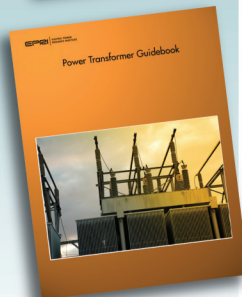
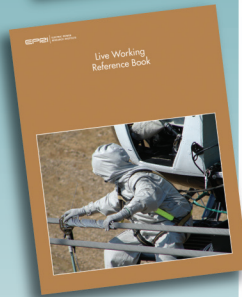
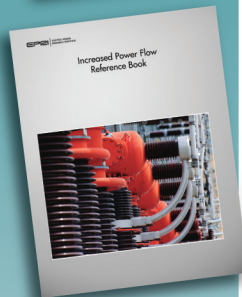
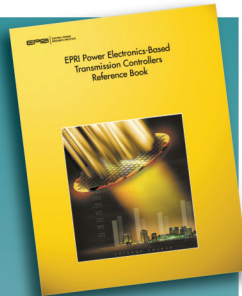
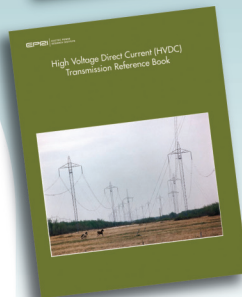
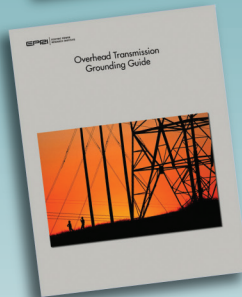
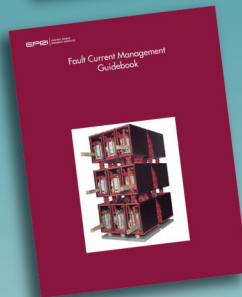
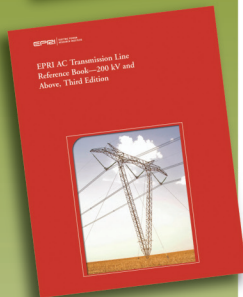
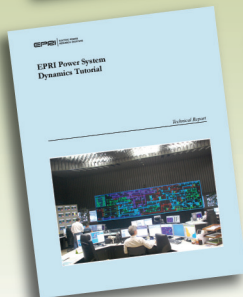
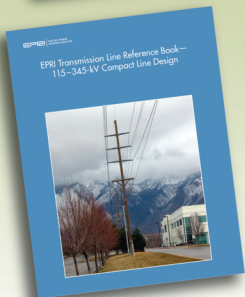
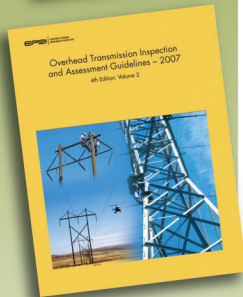
In collaboration with industry organizations, EPRI develops comprehensive reference books—each with a distinctive colored cover—that document and distill the knowledge and experience of the world’s top power delivery experts. As utilities cope with issues related to aging workforces and the loss of expertise, these industry-standard references preserve institutional knowledge while presenting the latest advances in technology, tools, and practices.

READY NOW

Designed for use by practicing engineers and as training tools, these seven books are available in print and electronic format that can be accessed by hundreds of employees. EPRI supports each title with a suite of training, software, and services to help transfer the knowledge to new generations of engineers who will design, build, and operate the power systems of the future.

ON THE WAY

To meet industry needs, EPRI is developing the following books in collaboration with member utilities and the world’s leading subject matter experts. Project funders help guide the books’ development and influence content. Funders also receive regular communication on the development, regional training, and other benefits. Additional participants are welcome to join the development effort and play an essential role in creating these unique information resources.



Ready Now

Equip your staff with the collective knowledge of the world's leading power delivery experts

The Green Book: EPRI Underground Transmission Systems Reference Book (1014840). The new Green Book updates the 1992 first edition to reflect the latest technology, new materials and methods, recently issued standards and regulations, and current utility needs and practices. Separate chapters have been developed to provide detailed information on extruded-dielectric, pipe-type, and self-contained fluid-filled cables. Special application cables—gas-insulated lines, dc cables and long-length submarine, and superconducting cables—are given coverage. New chapters have been added on hydraulic design and grounding and cathodic protection.

The Red Book: EPRI AC Transmission Line Reference Book: 200 kV and Above, Third Edition (1011974). For 30 years, transmission engineers around the world have turned to the Red Book to confirm design parameters, select technology, optimize designs, defend decisions, and brush up on non-routine topics. The new version significantly expands upon previous editions, with eleven updated chapters and four new ones to cover the full spectrum of overhead transmission, from fundamental concepts through insulation coordination, corona and field effects, and applications. The new edition also includes more than 50 software programs that help readers implement key concepts and theories.

The Orange Book: EPRI Transmission Line Reference Book: Wind-Induced Conductor Motion (1012317). First published in 1979, this book has enabled several generations of overhead line designers to anticipate the circumstances in which cyclic conductor motion might be expected, become familiar with protection methods, and refine their in-house design practices. Areas covered include aeolian vibration, conductor fatigue, conductor galloping, and wake-induced oscillation, with new chapters on fiber-optic cables and associated aerodynamic problems. Each conductor behavior is explored in depth in chapters that examine the causes, mechanisms, incidence, types of motion, factors influencing motion, resulting damage, and protection methods associated with each behavior.

The Yellow Book: EPRI Overhead Transmission Inspection and Assessment Guidelines (1012310). This annually updated reference helps utilities establish and refine transmission inspection and assessment programs, with emphasis on asset management. It covers component degradation and failure modes; procedures and technologies for inspecting, assessing and documenting line condition; use of inspection data to assess maintenance requirements; and guidance on choosing effective equipment and test procedures—considering performance and life-cycle costs—to facilitate good grounding inspection practices.

The Blue Book: EPRI Transmission Line Reference Book: 115–345-kV Compact Line Design (1013787). Originally published in 1978 and newly revised in 2007, the Blue Book provide the most up-to-date technical information and practices on the design and maintenance of compact overhead lines. It will enable energy companies to construct cost-effective compact lines that produce optimal performance and to address the ability to maintain compact lines while the lines are energized.

The Light Blue Book: EPRI Power System Dynamics Tutorial (1001983). This tutorial helps operators understand power system dynamics to exercise critical judgment in emergency situations. It reviews power system fundamentals, active and reactive power flow, frequency and voltage control, voltage and angle stability, power system oscillations, harmonics, resonance, and solar magnetic disturbances. The latest edition has been expanded to explain the causes of power system shutdowns, with emphasis on power system restoration.

The Teal Book: Best Practices & Life Extension Guidelines for Substations (1001779). This industry-standard reference offers utilities a compendium of fundamental principles and the latest research results and techniques to reduce life-cycle costs, improve equipment reliability, and optimize maintenance. Equipment covered includes power transformers, circuit breakers, relay and control systems, buses and structures, dc systems, grounding systems, surge arrestors, control cables, bushings instrument transformers, and optical sensors.

Seven titles are available in hardcopy and searchable electronic formats, with supplemental training courses to speed knowledge transfer.

On the Way

Join a collaborative effort to capture and preserve essential knowledge

The Maroon Book: EPRI Fault Current Management Guidebook (2008). The Maroon Book will fill the urgent need for a practical reference to help utilities limit fault currents that can trigger equipment failures and costly outages. The book will document conventional and emerging techniques for managing fault currents and provide a high-level economic analysis so utilities can make informed decisions when choosing fault current management options.

The Platinum Book: EPRI Increased Power Flow Reference Book (2008). This state-of-the-art “best practices” reference will help transmission company engineers find economical and technically sound ways to move more power through existing circuits without compromising safety or reliability. The book will review available technology options and methods, illustrate alternatives with case studies, and analyze the costs and benefits of different approaches.

The Bronze Book: EPRI Underground Distribution Systems Reference Book (2009). The Bronze Book will serve as a reference manual for practicing engineers and as a training tool for new engineers, operators, and planners. Topics include underground system components and system design, cable designs, cable materials, cable electrical characteristics, lightning effects and arresting, ampacity, diagnostics, component aging phenomena, accessories, corrosion, installation, testing, operation, and maintenance.

The Gold Book: EPRI Power Electronics-Based Transmission Controllers Reference Book (2009). This brand-new reference will provide a broad overview on power electronics-based controllers—including historical perspective, fundamental principles, basic design considerations, site installations, commissioning, operating performance, operation and maintenance, and future trends. The Gold Book will assist users in planning, developing, installing, and utilizing this technology to enhance the controllability and increase the power transfer capability of transmission systems.

The Grey Book: EPRI Overhead Transmission Grounding Guide (2009). This comprehensive reference—supported by software and training—will help utilities save time, resources, and money by applying the latest knowledge, tools, and techniques for implementing cost-effective grounding systems that ensure safety and reliability. Intended for transmission line designers, planners, protection engineers, construction staff, and asset managers, the book presents fundamental grounding principles, practical guidance for grounding analysis and design, and the latest results of advanced grounding research.

The Tan Book: EPRI Live Working Reference Book (2009). Building on the EPRI *Live Working Reference Book*, this essential resource will enable utilities to develop in-house live working procedures that lead to increased worker safety and reliability. Emphasizing practical applications and real-life examples, the Tan Book will describe traditional North American and international live working practices including gloving, insulating tool work, the bare-hand method, and de-energized work. The book will also include the latest research results and information on new U.S. and international standards, tools, and work procedures.



“On the Way” descriptions continued on next page...

Working together, utilities, EPRI, and power delivery experts are creating eight new repositories of expertise that will serve the industry for decades to come.



The Olive Book: EPRI High Voltage Direct Current (HVDC) Transmission Reference Book (2010). This new reference will provide transmission companies with a comprehensive, single source of technical information and guidance for designing, building, operating, and extending the life of HVDC transmission systems. The Olive Book will guide users to address HVDC challenges, such as life extension and operation at ultrahigh voltage levels, and capture the technology's full range of benefits.

The Copper Book: EPRI Power Transformer Guidebook (2014). This new resource will cover all aspects of power transformer ownership with a view to effective and efficient transformer life management. Coverage will include large power transformers, autotransformers, generator step-up transformers, converter transformers, phase-shifting transformers, and reactors. It will also include material written by the world's transformer experts as well as the results of years of EPRI research and development. The book is being structured to follow a logical sequence from initial planning to retirement, so it can be used as a guide for the day-to-day operation of transformers.

The Electric Power Research Institute (EPRI), with major locations in Palo Alto, California; Charlotte, North Carolina; and Knoxville, Tennessee, was established in 1973 as an independent, nonprofit center for public interest energy and environmental research. EPRI brings together members, participants, the Institute's scientists and engineers, and other leading experts to work collaboratively on solutions to the challenges of electric power. These solutions span nearly every area of electricity generation, delivery, and use, including health, safety, and environment. EPRI's members represent over 90% of the electricity generated in the United States. International participation represents nearly 15% of EPRI's total research, development, and demonstration program.

Together... Shaping the Future of Electricity

Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

Electric Power Research Institute

3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com

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