

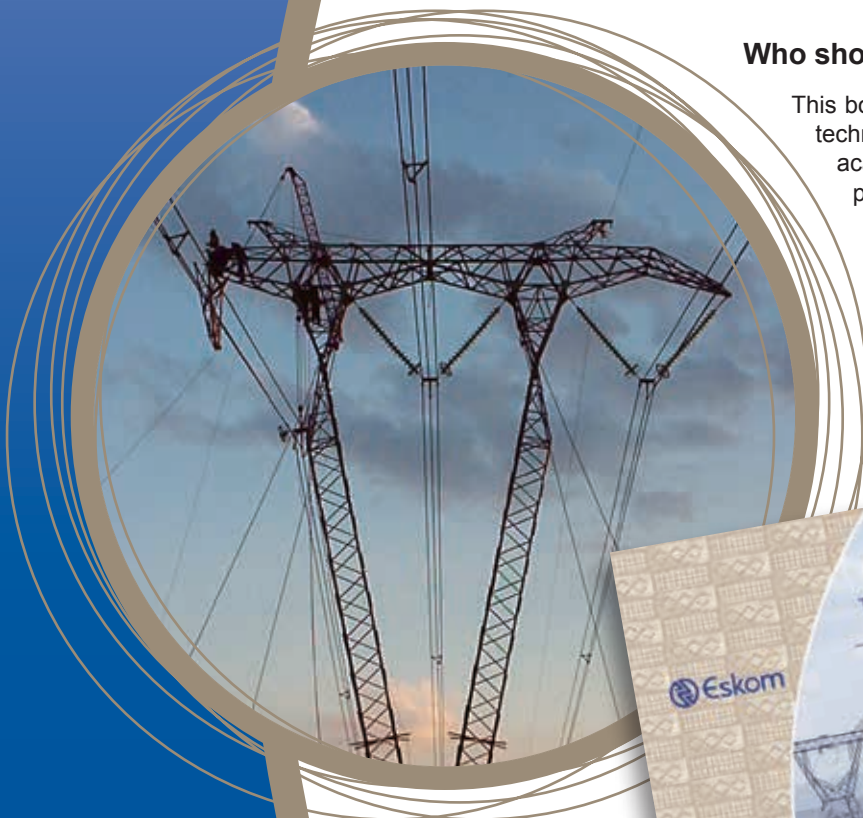
Eskom Power Series

Volume 1

The Planning, Design and Construction of Overhead Power Lines

Who should read this book?

This book is a useful reference for engineers, technicians, maintenance personnel and academics involved in the field of overhead power lines.



What does this book cover?

South Africa has an electrical transmission grid, largely designed and built by the power utility Eskom, of over 25 000 km of overhead power lines with voltages of 132 kV to 765 kV. The Planning, Design and Construction of Overhead Power Lines (Volume 1 in the Eskom Power Series) embodies the planning philosophies, design principles and construction practices of Eskom. It is the culmination of decades of thought, study, research and the practical experience of many overhead power line engineers and researchers.

The book covers the main aspects of overhead power line design and construction from electrical first principals, system planning, insulation co-ordination (including live-line working) and mechanical design through to environmental impact management and power line communications. The content emphasises the need for close interaction between all technical disciplines involved and the importance of optimising designs for economy and performance.

Additional challenges in South Africa are the relatively high altitude of the interior plateau, severe lightning in some areas and long transmission distances. This volume explains how these factors are accommodated in modern designs. Other work covered includes the use and understanding of polymeric insulators, the judicious reduction of phase-to-phase spacings and the extensive adoption of guyed structures.

Contents of the book

Chapter 1:	Overhead Lines
Chapter 2:	Modelling
Chapter 3:	Power System Analysis and Planning
Chapter 4:	High Voltage Direct Current (HVDC) Transmission
Chapter 5:	Environmental Impact Management
Chapter 6:	Corona
Chapter 7:	Power Frequency Electric and Magnetic Fields
Chapter 8:	Modelling of Electric Fields
Chapter 9:	Lightning
Chapter 10:	Introduction to Design Optimisation
Chapter 11:	Basic Electrical Design
Chapter 12:	Insulation Co-ordination
Chapter 13:	Thermal Rating
Chapter 14:	Coupling
Chapter 15:	Conductor Optimisation
Chapter 16:	Ground Wire Optimisation
Chapter 17:	Insulator Selection
Chapter 18:	Insulation Design
Chapter 19:	Line Hardware
Chapter 20:	Supporting Structures
Chapter 21:	Foundations
Chapter 22:	Earthing
Chapter 23:	Land Survey
Chapter 24:	Tower Spotting
Chapter 25:	Introduction to Communication Systems
Chapter 26:	Power Line Carriers
Chapter 27:	Aerial Fibre Optic Cables
Chapter 28:	Cellular Base Station Antennas
Chapter 29:	Construction

What other books are available?

Volume 2: Fundamentals and Practice of Overhead Line Maintenance (pp 258), ISBN No. 0-620-30906-7

Volume 3: The Practical Guide to Outdoor High Voltage Insulators (pp 224), ISBN No. 0-620-31074-X

Volume 4: Inductive Instrument Transformers and Protective Applications (pp 860), ISBN No. 0-620-37865-4

Volume 5: Theory, Design, Maintenance and Life Management of Power Transformers (pp 337), ISBN No. 978-0-620-38294-6

Volume 6 (Part 1): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Conductor Installations (pp 349), ISBN No. 978-0-620-42834-7

Volume 6 (Part 2): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Transmission Line Towers (pp 378), ISBN No. 978-0-620-46585-4

Volume 7: Corona in Transmission Systems: Theory, Design and Performance (pp 528), ISBN No. 978-0-620-49388-8

Volume 8: Power Quality in Electrical Power Systems: A Holistic Approach (pp 665), ISBN No. 978-0-9921781-2-3

Volume 9 (Part 1): HVDC Power Transmission: Basic Principles, Planning and Converter Technology (pp 832), ISBN No. 978-0-9921781-0-9

Volume 10: Thermodynamics for Students and Practising Engineers (pp 262), ISBN No. 978-0-992-17811-6

Volume 11: Thermal Science for Engineers (pp 303), ISBN No. 978-0-992-17813-0

What books are in development?

- The Engineer's Toolkit
- HVDC Power Transmission (Part 2)
- Power Station Chemistry Book
- High Voltage Overhead Power Lines: Construction Works
- Fly Ash Properties and Utilisation Book (Parts 1 to 6)
- Insulating Fluid for the Electrical Engineering Industry
- AC Substation Design Handbook
- Coal Classification and Utilisation Book

Where can I purchase copies?

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