

Eskom Power Series

Volume 5

Theory, Design, Maintenance and Life Management of Power Transformers

Who should read this book?

This book is intended to be of use to anyone with responsibilities in the transmission and distribution of electric power. It is a valuable reference for technical specialists, system operators, maintenance staff and managers.



What does this book cover?

Theory, Design, Maintenance and Life Management of Power Transformers (Volume 5 in the Eskom Power Series) is a record of the understanding, gained over years of experience, of power transformers as they are used in the power supply industry. In its compilation, the various specialist authors have striven to blend knowledge and experience in a legible and easily understandable manner. The book opens with a chapter on the impact that market forces have on the operation and maintenance of transformers. It goes on to address fundamental transformer principles, specification, design and construction.

The important aspects of understanding how a transformer and its environment interact and the measures that must be taken to preserve both are explained. Insulation co-ordination and protection are thoroughly discussed. Every aspect of transformer management, starting with factory testing, through commissioning and condition monitoring to the extension of its life are comprehensively addressed. The final chapter has a specific focus on pole-mounted distribution transformers and their special needs.

While this book is based on experience in Eskom, it has attempted to extract and encapsulate general principles relevant to the utility. Specific Eskom practices have been used as examples to illustrate these principles. Each chapter is largely stand-alone and can be used without having to read the rest of the book. Where necessary, cross-references have been made to relevant material elsewhere in the book.

Contents of the book

Chapter 1:	Power Transformers in an Evolving Electricity Market
Chapter 2:	Transformer Fundamentals
Chapter 3:	Basic Specification for the Design and Construction of Large Power Transformers
Chapter 4:	Matching the Transformer to its Environment: The Eskom Approach
Chapter 5:	Insulation Co-ordination of Power Transformers
Chapter 6:	Protection of Power Transformers
Chapter 7:	Factory Testing and Commissioning
Chapter 8:	Condition-Based Monitoring of Oil/Paper Insulation Systems
Chapter 9:	Management of Transformer Life
Chapter 10:	Special Considerations: Pole Mounted Distribution Transformers

What other books are available?

Volume 1: The Planning, Design and Construction of Overhead Power Lines (pp 772), ISBN No. 978-0-620-33042-8

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 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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