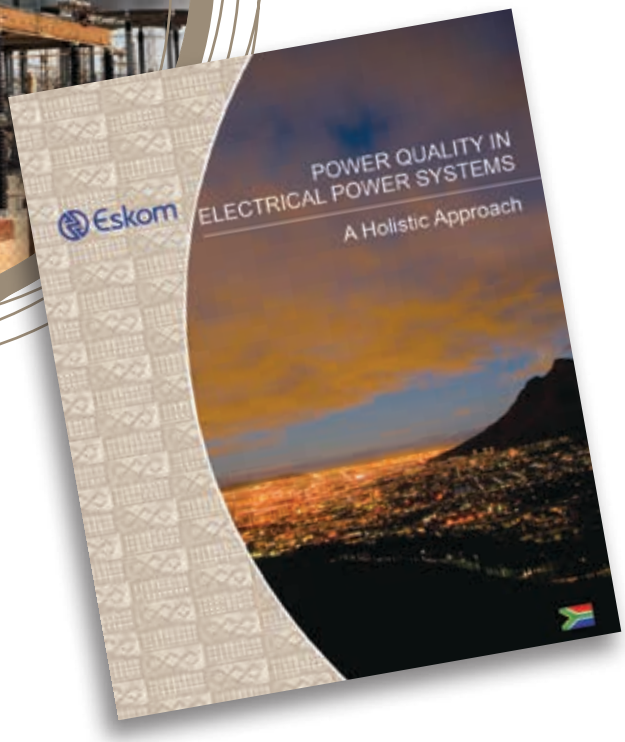
Eskom Power Series

Volume 8

Power Quality in Electrical Power Systems: A Holistic Approach

Who should read this book?

It is envisaged that the readership of this book will be much broader than other publications in the series and will include specialist practitioners, consultants, academics, students, utility managers and local and international regulatory authorities. Customers of power utility companies will benefit from this publication by gaining a better and more integrated understanding of power quality. Academic institutions can also use the book for teaching, learning and research purposes. Research and innovation in power quality should be encouraged at these institutions to grow the knowledge base.



Eskom

What does this book cover?

Power Quality in Electrical Power Systems: A Holistic Approach (Volume 8 in the Eskom Power Series) explains the significance of Power Quality (PQ) or Quality of Supply in the context of today's electricity supply systems. It begins by exploring the history and technical scope of PQ, how it forms a subset of the broader topic of Electromagnetic Compatibility, and how and why it has developed into a distinct technical discipline during the past 20 to 25 years. The theoretical aspects of a given technical component of PQ are introduced in the main body of the book in dedicated chapters; in each case, the experience gained (by Eskom) is then used to illustrate how the principles of PQ are being effectively applied in modern electric networks.

The book encapsulates the knowledge and unique insights gained by Eskom during the implementation of a comprehensive PQ measurement survey. The objectives of the survey were firstly, to determine the levels of PQ being attained, and secondly, to establish how the results could be used to set realistic design and performance criteria for each component of PQ. Key drivers in the evolvement of PQ into a discipline include the increased sensitivity of customer equipment to deleterious electrical effects, the need for operational efficiency, the move to privatise utilities, and increasingly tight regulatory requirements in many countries.

The formal integration of PQ by means of the standardisation of limits for voltage fluctuations (which comprise primarily voltage surges, voltage regulation, dips, notches, flicker, harmonics, unbalance) and frequency control as the key components of PQ, has greatly helped to consolidate PQ as a stand-alone discipline in today's power utility. By elaborating on the foregoing aspects, this book will be useful to a diverse spectrum of persons.

Contents of the book:

Eskom

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 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 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?

Contact: Sanjeev Bisnath

Email: bisnats@eskom.co.za

Tel +27 11 629 5072

Visit our website: www.eskom.co.za

Eskom Holdings SOC Limited
Reg No 2002/015527/06