

## Transformer Engineering: Design, Technology, and Diagnostics, Second Edition

By S.V. Kulkarni, S.A. Khaparde



Transformer Engineering: Design, Technology, and Diagnostics, Second Edition By S.V. Kulkarni, S.A. Khaparde

**Transformer Engineering: Design, Technology, and Diagnostics, Second Edition** helps you design better transformers, apply advanced numerical field computations more effectively, and tackle operational and maintenance issues. Building on the bestselling *Transformer Engineering: Design and Practice*, this greatly expanded second edition also emphasizes diagnostic aspects and transformer-system interactions.

#### What's New in This Edition

- Three new chapters on electromagnetic fields in transformers, transformersystem interactions and modeling, and monitoring and diagnostics
- An extensively revised chapter on recent trends in transformer technology
- An extensively updated chapter on short-circuit strength, including failure mechanisms and safety factors
- A step-by-step procedure for designing a transformer
- Updates throughout, reflecting advances in the field

A blend of theory and practice, this comprehensive book examines aspects of transformer engineering, from design to diagnostics. It thoroughly explains electromagnetic fields and the finite element method to help you solve practical problems related to transformers. Coverage includes important design challenges, such as eddy and stray loss evaluation and control, transient response, short-circuit withstand and strength, and insulation design. The authors also give pointers for further research. Students and engineers starting their careers will appreciate the sample design of a typical power transformer.

Presenting in-depth explanations, modern computational techniques, and emerging trends, this is a valuable reference for those working in the transformer industry, as well as for students and researchers. It offers guidance in optimizing and enhancing transformer design, manufacturing, and condition monitoring to meet the challenges of a highly competitive market.

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#### **Editorial Review**

Review

#### **Praise for the Previous Edition**

- "... the timely publication of this book is quite a welcome delight. ... the authors provide in-depth coverage on both theory and practical application of modern computational techniques in transformer engineering. ... this book is an easy-to-use reference source and is recommended for academic and research libraries." *?E-Streams*
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\*\*RIEEE Power Electronics Society Newsletter\*\*

#### About the Author

- **S.V. Kulkarni** is a professor in the Department of Electrical Engineering, Indian Institute of Technology Bombay. Previously, he worked at Crompton Greaves Limited and specialized in the design and development of transformers up to 400 kV class. He received the Young Engineer Award from the Indian National Academy of Engineering (INAE) for his contributions to electromagnetic field computations and high voltage insulation design in transformers. Professor Kulkarni has organized a number of training courses on the topics of transformers and computational electromagnetics for industry and academia in India. He has also delivered tutorials and keynote lectures in international conferences/workshops on transformers. He is a senior member of the IEEE. He is also a Fellow of INAE and an editor of *IEEE Transactions on Power Delivery*.
- **S.A. Khaparde** is a professor in the Department of Electrical Engineering, Indian Institute of Technology Bombay. He received his Ph.D. in 1981 from the Indian Institute of Technology Kharagpur. He is a member of the advisory committee to the Maharashtra Electricity Regulatory Commission (MERC), India and the Indian Energy Exchange. Professor Khaparde is a senior member of the IEEE and editor of the *International Journal of Emerging Electrical Power Systems*. He is also a consultant to MERC, the Indian Energy Exchange, and Power Grid Corporation of India Ltd, etc. He is a BIS (Bureau of Indian Standards) LITD-10 Committee Member and Chair of the Working Group on Common Information Model (CIM). He is member of IEC TC57 for working groups 13 and 16 representing India.

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#### **Emily Boyd:**

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