Electromagnetic Transients in Transformer and Rotating Machine Windings

Editor, Charles Q. Su (Charling Technology, Australia)

Electromagnetic transient phenomena in transformers and rotating machines are complicated by their winding structures, with transient phenomena caused by either external events such as lightning, or by internal events such as switching operations and faults.

Electromagnetic Transients in Transformer and Rotating Machine Windings explores relevant theoretical frameworks, the latest empirical research findings, and industry-approved techniques in this area. Written for professionals who want to improve their understanding of the electromagnetic transient phenomena in transformer and rotating machines windings, this research volume is also useful for university research students in power system protection, insulation condition monitoring, and incipient fault diagnosis.

Topics Covered:
• Transmission Line and Capacitive Ladder Networks
• Single Layer Transformer Windings
• Transformer and Generator Stator Windings
• Z-transform Transformer and Generator Models
• Partial Discharge Detection
• Electromagnetic Transient Phenomena
• Lightning protection of substations
• Detection of transformer faults
• Impulse voltage distribution
• Ferro-resonance

Market: This premier publication is essential for all academic and research library reference collections. It is a crucial tool for academicians, researchers, and practitioners and is ideal for classroom use.

Received his MEng in 1981 and PhD in 1990 (University of New South Wales, Australia). He was a tests and operations engineer during the period 1971-78, and an Honorary Research Associate at the University of Western Australia in 1985. From 1991 to 2001 he was Senior Lecturer, Associate Professor, and Head of the High Voltage and Insulation Condition Monitoring Group at Monash University. Commencing in 2002 he worked as Chief Technologist in Singapore Power Ltd for five years. From 2007 to 2011, he was a Professor at the Petroleum Institute UAE. Dr. Su holds two Australian patents and has published around 150 journal and conference papers. He co-authored a book with Prof. R.E. James on Condition Assessment of High Voltage Insulation, which was published in the Energy & Power series by IET in 2008. He has conducted many engineering short courses and provided consulting services for a number of utilities round the world. He is a member of CIGRE A2, a Fellow of IET, and a Senior Member of IEEE since 1991.