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Special Issue Reprint

Engineering Dielectric Liquid Applications

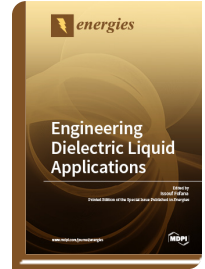
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Dielectric liquids are used as impregnates of solid insulations or filling products in many kinds of equipment, such as transformers (power, rectifier, distribution, traction, furnace, potential, current), resistors, reactors, capacitors, cables, bushings, circuit breakers, tap changers, and thyristor cooling in power electronics, etc. Their role is paramount in the sense that their presence is one of the fundamental conditions for the proper functioning of such equipment. Similar to blood in the human body, dielectric liquids hold the responsibility of maintaining the entire equipment. The greatest challenges for engineers/maintenance planners are related to the need for methods to assess the condition of the liquid, along with how to improve equipment efficiency using chemical admixtures. The demand for environmentally friendly dielectric liquids is also rising as the environmental concerns about conventional petroleum-based fluids become increasingly more apparent.

This book covers some theoretical and practical concerns related to the applications of dielectric liquids in electrical equipment. Understanding the fundamental theoretical phenomena is, therefore, important for properly designing practical liquid-filled power equipment and hardware. Graduate-level students and teachers, as well as scientists and engineers involved in power equipment design, diagnostics, and monitoring, will appreciate this systematic approach to the subject.



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