1. Record Nr. UNINA9910973426603321

Autore	Kuffel E
Titolo	High voltage engineering : fundamentals / / E. Kuffel, W.S. Zaengl, J. Kuffel
Pubbl/distr/stampa	Boston, : Butterworth-Heinemann, 2000
ISBN	9786611072704 9781281072702 1281072702 9780080508092 008050809X
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (556 p.)
Altri autori (Persone)	ZaenglW. S KuffelJ
Disciplina	621.31
Soggetti	Electrical engineering High voltages Electric insulators and insulation Breakdown (Electricity)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; High Voltage Engineering: Fundamentals; Copyright Page; Contents; Preface to second edition; Preface to first edition; Chapter 1. Introduction; 1.1 Generation and transmission of electric energy; 1.2 Voltage stresses; 1.3 Testing voltages; References; Chapter 2. Generation of high voltages; 2.1 Direct voltages; 2.2 Alternating voltages; 2.3 Impulse voltages; 2.4 Control systems; References; Chapter 3. Measurement of high voltages; 3.1 Peak voltage measurements by spark gaps; 3.2 Electrostatic voltmeters 3.3 Ammeter in series with high ohmic resistors and high ohmic resistor voltage dividers3.4 Generating voltmeters and field sensors; 3.5 The measurement of peak voltages; 3.6 Voltage dividing systems and impulse voltage measurements; 3.7 Fast digital transient recorders for impulse measurements; References; Chapter 4. Electrostatic fields and field stress control; 4.1 Electrical field distribution and breakdown strength of insulating materials; 4.2 Fields in homogeneous, isotropic

materials; 4.3 Fields in multidielectric, isotropic materials; 4.4 Numerical methods; References
Chapter 5. Electrical breakdown in gases5.1 Classical gas laws; 5.2 Ionization and decay processes; 5.3 Cathode processes - secondary effects; 5.4 Transition from non-self-sustained discharges to breakdown; 5.5 The streamer or 'Kanal' mechanism of spark; 5.6 The sparking voltage-Paschen's law; 5.7 Penning effect; 5.8 The breakdown field strength (Eb); 5.9 Breakdown in non-uniform fields; 5.10 Effect of electron attachment on the breakdown criteria; 5.11 Partial breakdown, corona discharges; 5.12 Polarity effect - influence of space charge; 5.13 Surge breakdown voltage-time lag; References
Chapter 6. Breakdown in solid and liquid dielectrics6.1 Breakdown in solids; 6.2 Breakdown in liquids; 6.3 Static electrification in power transformers; References; Chapter 7. Non-destructive insulation test techniques; 7.1 Dynamic properties of dielectrics; 7.2 Dielectric loss and capacitance measurements; 7.3 Partial-discharge measurements; References; Chapter 8. Overvoltages, testing procedures and insulation coordination; 8.1 The lightning mechanism; 8.2 Simulated lightning surges for testing; 8.3 Switching surge test voltage characteristics
8.4 Laboratory high-voltage testing procedures and statistical treatment of results8.5 Weighting of the measured breakdown probabilities; 8.6 Insulation coordination; 8.7 Modern power systems protection devices; References; Chapter 9. Design and testing of external insulation; 9.1 Operation in a contaminated environment; 9.2 Flashover mechanism of polluted insulators under a.c. and d.c.; 9.3 Measurements and tests; 9.4 Mitigation of contamination flashover; 9.5 Design of insulators; 9.6 Testing and specifications; References; Index

Sommario/riassunto

Power transfer for large systems depends on high system voltages. The basics of high voltage laboratory techniques and phenomena, together with the principles governing the design of high voltage insulation.A classic text on high voltage engineeringEntirely revised to bring you up-to-date with current practiceBenefit from expanded sections on testing and diagnostic techniques