

1. Record Nr.	UNINA9910141360003321
Autore	He Jinliang
Titolo	Methodology and technology for power system grounding [[electronic resource] /] / Jinliang He, Rong Zeng, Bo Zhang
Pubbl/distr/stampa	Singapore, : Wiley, c2013
ISBN	1-118-25500-3 1-283-85893-2 1-118-25501-1
Descrizione fisica	1 online resource (575 p.)
Altri autori (Persone)	ZengRong <1971-> ZhangBo <1976->
Disciplina	621.3 621.3192
Soggetti	Electric currents - Grounding Electric power systems - Protection
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	Methodology and Technology for Power System Grounding; Contents; Preface; Acknowledgements; 1 Fundamental Concepts of Grounding; 1.1 Conduction Mechanism of Soil; 1.1.1 Soil Structure; 1.1.2 Conduction Mechanism of Soil; 1.2 Functions of Grounding Devices; 1.2.1 Concept of Grounding; 1.2.2 Classification of Grounding; 1.2.3 Purpose of Grounding; 1.3 Definition and Characteristics of Grounding Resistance; 1.3.1 Definition of Grounding Resistance; 1.3.2 Relationship between Grounding Resistance and Capacitance; 1.3.3 Shielding Effect among Grounding Conductors 1.4 Grounding Resistance of Grounding Devices1.4.1 Grounding Resistance of General Grounding Devices; 1.4.2 Grounding Resistance of Grounding Device in Non-Homogeneous Soil; 1.5 Body Safety and Permitted Potential Difference; 1.5.1 Allowable Body Current Limit; 1.5.2 Allowable Body Voltage; 1.5.3 Allowable Potential Difference; 1.5.4 Influence of Resistivity of Surface Soil Layer on Body Safety; 1.6 Standards Related to Power System Grounding; References; 2 Current Field in the Earth; 2.1 Electrical Property of Soil; 2.1.1 Soil Resistivity 2.1.2 Influence of Different Factors on Soil Resistivity2.1.3 Permittivity

of Soil; 2.1.4 Frequency Characteristics of Soil Parameters; 2.2 Basic Properties of a Constant Current Field in the Earth; 2.2.1 Current Density in the Earth; 2.2.2 Continuity of Earth Current Field; 2.2.3 Potential of Stable Current Field; 2.2.4 Current Field at the Interface of Layered Soil; 2.3 Current Field Created by a Point Source in Uniform Soil; 2.3.1 Laplace's Equation; 2.3.2 Current Field Created by a Point Source in Soil
2.3.3 Earth Current Field Produced by Two Opposite Point Current Sources on the Ground Surface
2.3.4 Earth Current Field in Non-Uniform Soil; 2.4 Potential Produced by a Point Source on the Ground Surface in Non-Uniform Soil; 2.4.1 Horizontally Layered Soil; 2.4.2 Horizontal Double-Layer Soil; 2.4.3 Horizontal Triple-Layer Soil; 2.4.4 Vertically Layered Soil; 2.5 Potential Produced by a Point Source in Multi-Layered Soil; 2.5.1 Analysis of Potential Produced by a Point Current Source; 2.5.2 Numerical Integral Method to Calculate Green's Function of a Point Current Source
2.6 Computer Program Derivation Method of Green's Function
2.6.1 Method of Obtaining Analytic Expression; 2.6.2 Expression of Green's Function Derived from Software Program; 2.6.3 Calculation of Current Field in Multi-Layered Soil; 2.7 Fast Calculation Method of Green's Function in Multi-Layered Soil; 2.7.1 Development of a Two-Stage Fitting Method; 2.7.2 Application of the Fast Calculation of Green's Function in Multi-Layered Soils; 2.8 Current and Potential Distributions Produced by a DC Ground Electrode; 2.8.1 Current and Potential Distributions of DC in Uniform Soil
2.8.2 Current and Potential Distributions of DC Current in Non-Uniform Soil

Sommario/riassunto

Grounding is the fundamental measures to ensure the safe operation of power systems, including power apparatus and control/monitoring systems, and guarantee the personal safety. Grounding technology is an interdiscipline involving electrical engineering, high voltage technology, electric safety, electromagnetics, numerical analysis, and geological exploration Methodology and Technology for Power System Grounding: Covers all topics related to power system grounding Presents fundamentals and theories of grounding systems Well balances technology a
