(1)

Ramptime Current -Controlled APF for Harmonic Mitigation, Power Factor Correction and Load Balancing

Mazen Abdel-Salam, Adel Ahmed, Mohamed Abdel-Sater

Abstract:

This paper presents a simulation for a shunt active power filter aimed at mitigation of harmonics, power factor correction and balancing of unbalanced three-phase system. The system consists of load fed though a six pulse bridge rectifier. The active power filter consists of a three-phase currentcontrolled voltage source inverter (CC-VSI) with a filter inductance at the ac output and a dc-bus capacitor. The CC-VSI is operated to directly control the ac source current to be sinusoidal and in phase with the ac source voltage. The inverter switching is controlled using ramptime current control being based on the concept of zero average current error (ZACE). The active power filter reference currents are generated using perfect harmonic cancellation (PHC) control method. The proposed filter successfully succeeded in reducing the total harmonic distortion (THD) to less than unity, correcting power factor to unity and balancing of unbalanced currents under sinusoidal and distorted supply voltages. The dynamic performance of the proposed filter is so fast to meet the dynamic load conditions.

Published In:

Proceedings of the 14th International Middle East Power Systems Conference (MEPCON□10) , , PP.144-150

(2)

Harmonic Mitigation, Maximum Power Point Tracking, and Dynamic Performance of Variable-speed Grid-connected Wind Turbine

Mazen Abdel-Salam; Adel Ahmed; Mohamed Abdel-Sater

Abstract:

This article presents a method for harmonic mitigation and maximum power point tracking for a variable-speed grid-connected 20-kW wind turbine. The wind energy conversion system consists of a permanentmagnet synchronous generator driven by variable-speed 20-kW wind turbine. The output of the permanent magnet synchronous generator is connected to a single-switch three-phase boost rectifier to generate DC voltage, which feeds a current-controlled inverter to interface the system with the electric utility. The single-switch three-phase boost rectifier is an active power factor correction technique to maintain the power factor at the permanent magnet synchronous generator side to nearly unity and mitigate the permanent mag- net synchronous generator current harmonics. To mitigate inverter output current and voltage harmonics, an LCL filter has been used. A complete analysis of the harmonic content has been done everywhere in the system. The results show that the proposed maximum power point tracking control strategy succeeded to track the maximum wind power irrespective of the wind speed. This strategy in presence of an LCL filter achieved harmonic mitigation at the permanent magnet synchronous generator and inverter output sides. The dynamic response of the wind energy con- version system is tested under a three-phase fault condition. For comparison pur- poses, an active power filter is designed and checked against the single-switch three-phase boost rectifier for harmonic mitigation at the permanent magnet synchronous generator side.

Published In:

Electric Power Components and Systems , Vol.39 , PP. 176-190

(3)

Steady-State Modeling and Control of a Microgrid Supplying Irrigation load in Toshka Area", 38th Annual IEEE Industrial Electronics Conf

M. Abdel-Salam, A. Ahmed, H. Ziedan, R. Kamel, Kh. Sayed, M. Amery and M. Swify

Abstract:

This paper is aimed at sizing solar-wind-battery standalone microgrid for supplying irrigation and domestic loads in Toshka area, Toshka, Egypt. Not only the MG system components but also the interconnection cables and feeders are sized. Steady-state power flow through the MG system is analysed at varying sun irradiation and wind speed. Modeling of the MG components and their control of system voltages, currents and powers are investigated. Power flows during different MG operation conditions including absence of wind and sun as well as sudden disconnection of the load are studied.

Keywords:

Hybrid Solar-Wind , Irrigation System , Toshka Area , control system , power flow

Published In:

IECON , , pp. 5673-5678

(4)

Monopolar Corona on Bundle Conductors

M. Abdel-SaIam. M. Farghally and S. Abdel-Sattar

Abstract:

NULL

Keywords:

Corona , Conductors , Equations , Voltage , Space charge , Electrodes , Boundary conditions , Current distribution , Density measurement , Current measurement

Published In:

IEEE Power Engineering Review , PER-2-10 , pp. 59-60

(5)

New High Voltage Grain Dual Boast Dc-DC Converter for Photovoltaic Power Systems

Kh. Sayed, M. Abdel-Salam, A. Ahmed and M. Ahmed

Abstract:

This article presents a new circuit topology of a high-voltage step-up boost DC-DC converter for photovoltaic power systems. The converter boosts the low-output voltage of the solar cell to the required voltage for the load. The proposed circuit has various advantages compared to the conventional boost converters, namely a higher boost rate with low duty cycle, lower voltage stress on components, and higher efficiency. The equations of a dual-boost converter are analyzed, highlighting the advantages of the new DC/DC converter circuit topology. The operation principle is explained using the operating intervals equivalent circuits and operation waveforms. Then, mathematical and theoretical analyses of continuous and discontinuous conduction modes of the converter are presented. Losses and thus efficiency of the proposed converter are calculated using MATLAB (The MathWorks, Natick, Massachusetts, USA). Calculations are used to compare the efficiency of the proposed topology with others available in the literature regarding the benefits of decreasing cost and complexity. A photovoltaic system simulation model is developed using PSIM (Powersim Inc., Woburn, Massachusetts, USA) to validate the proposed converter. The proposed high voltage gain boost converter has been implemented for a 100-W load and tested to verify the principle of operation.

Keywords:

DC-DC converters, power electronics, power converters

Published In:

J. Elect. Power Components & Systems , Vol. 40 , pp.711-728

(6)

Successive imaging technique for electric field distribution around conductors above a two layer earth

M. Abdel-Salam, S Abdel-Sattar,A. A. Ibrahim and M. AbdelAzim

Abstract:

Th e present work aims at developing a meth od-Jar the first time-for assesBing Ow decide jield around a chmyed conduct or posit ioned in air (oJ zero conduc tivity) at a .'liven height above a two-layer earth. The method is based on the com plex su ccessine imaging technique, being a quasi-static approximation fo r estimating the potent ial due to a lin e charge above the eart h. With the knowledge of the image charges , th e electric field uolues in air and earth are (l8ses,"w,d. A luboratoq) trans mission- line model and an electrolytic -t ank model tsere cons tructed to simulate three-phase and single-phase transmission lines above a two-layer earth. The measured electric field s agreed reasonably with those calcula ted fo r one- and two-layer earth models. Th e calculation method is extended for assessing electric fields in power substa tion» as injluenccd by earth modeling in one or two layers.

Keywords:

electric field, successive imaging technique, two-layer eart h model, electrolyt ic tank mod el , t ransmiss ion liner

Published In:

Taylor & Francis publisher, USA , Vol. 30 , pp. 723- 739

(7)

Calculation of Corona V-I Characteristics of Monopolar Bundles Using the Charge Simulation Method

M. Abdel-SaIam, and S. Abdel-Sattar

Abstract:

In this paper, the charge simulation method is applied for modeling the V-I characteristics of corona from monopolar bundled transmission lines without resort to Deutsch's assumption. The calculated results are compared with those obtained using Deutsch's assumption. The accuracy of the proposed method is discussed in the light of predicting values closer to those measured experiment ally.

Keywords:

Corona, Geometry, Conductors, Space charge, Power transmission lines, Transmission line theory, Propagation losses, Solid modeling, Transmission line measurements, Power transmission

Published In:

IEEE Trans. on Electrical Insulation , Vol. El-26 , pp. 669-679

(8)
Characteristics of Sliding Discharge in a Multi-Rod Reactor

H. Wedaa, M. Abdel-Salam, A. Ahmed, and A. Mizuno

Abstract:

This paper is aimed at investigating the characteristics of a sliding discharge (SD) including the onset voltage (VO), spark voltage (VS), and current-voltage (I-V) relationship in a multi-rod reactor stressed by sinusoidal AC or pulse voltage. The effects of various parameters (the voltage amplitude, frequency, gas flow rate, and voltage type) on the characteristics of the reactor sliding discharge (VO, VS and I-V relationship) have been studied experimentally. It has been found that the DC onset and spark voltages increase with the increase of the gas flow rate, while the effect of the frequency on them is not pronounced. The onset and spark voltages of the stressed reactor for sinusoidal AC voltage are lower than those obtained under a pulse voltage of the same peak value. Subsequently, the sliding current increases with the increase of the sinusoidal AC high voltage, the frequency, and the negative DC voltage, while, it decreases with the increase of the flow rate. It is observed that stressing the reactor with sinusoidal AC voltage gives higher values of sliding current than those obtained using a pulse at the same peak voltage. Stressing the reactor with sinusoidal AC voltage gives higher values of the NO removal efficiency than those obtained using pulse voltage.

Published In:

J. Phys. Conf. Series 301, Intern Conf. on Electrostatics, Bangor, Wales, UK , ,

(9)

Netural Networks Recognition of Weak Points in Power Systems Based on wavelet Features

M. Abdel-Salam, N. Hassan, M. Sayed and S. Abdel-Satter

Abstract:

Early locating and identifying basic weak-points (sharp-edge corona, polluted-insulator "baby arcs" and loose contact arcing) in electrical power systems significantly decrease the imminent failure, outage time and supply interruption. We previously introduced a method for detecting the basic weakpoints based on sound/waveform patterns and frequency analysis of their ultrasonic emissions. However, nonstationary patterns of the basic weak-points emitted signals and background noise frequently led to confusing discrimination. Therefore, this paper develops an effective pattern recognition scheme, employing wavelet feature extraction and Artificial Neural Network (ANN) classification, to identify the basic weak-points and two weakpoint combinations (polluted insulator stressed by a transmission line with a sharp-edge and multiple sharp-edges on the same line), based on their modulated ultrasonic emissions. Extensive testing proved that the proposed scheme achieved average recognition rate of 98% when tested using weak-points underneath 33-kV and 132-kV transmission lines with 2-second detected signals. Moreover, increasing the acquisition time (>30 seconds) and classifying the weakpoints based on majority voting over the ANN s responses of multiple (15) consecutive sections, consistently led to 100% successful recognition of the considered weak-points.

Keywords:

NULL power engineering computing; power transmission faults; feature extraction; power transmission lines; corona; neural nets; insulator contamination; wavelet transforms; arcs (electric)

Published In:

Paper # 64, Proceedings of the 18th International Conference on Electrical Distribution, Turin, Italy , NULL , NULL

(10)

A CUI Module for the Analysis of Stress-Grading Systems of High Voltage Rotating Machines

EI-Kishky, M. Abdel-Salam, and others

Abstract:

Stress-grading systems are essential for the suppression of corona in the end-turn zone of high voltage rotating machines. Unfortunately, design of stress-grading systems in industry is almost entirely based on experimental trial-and error techniques. This paper introduces a novel graphical user interface (GUI) model for the selection and design of stress-grading systems of high voltage rotating machines. The GUI model is based on two major design approaches for stress-grading systems: i: minimization of power-loss and, ii: time-domain analysis of nonlinear stress-grading systems using the describing function method. Comprehensive codes written in both FORTRAN and MATLAB® were developed for the purpose of design and analysis of linear and nonlinear stress-grading systems of high voltage rotating machines. A GUI was developed to enable the design engineer to select analyze and optimize stress-grading systems. This graphical front-end to FORTRAN and MATLAB® codes utilizes built-in functionality of MATLAB® to create graphical interface objects, interface with compiled FORTRAN functions, and generate design and analysis reports based on the data gathered from the source codes.

Published In:

Proceedings of the IEEE Conference on Elcctdcallnslllation and Diclcctdc Phenomena (CEIDP), flhuqllerque, NM , ,

(11)

Time-Domain Analysis Of Nonlinear Stress-Grading Systems For High Voltage Rotating Machines

H. El-Kishky, M. Abdel-Salam, H. Wedaa and Y. Sayed

Abstract:

This paper introduces a new approach for the design and analysis of nonlinear stress-grading systems for high voltage rotating machines. The method is based on the simulation and modeling of stress-grading systems using a nonlinear lumped circuit model. The nonlinear model is analyzed in the time domain using the describing function method. The model generates the time variation of the resistances as well as the surface electric field and potential and ultimately converges to the optimal design parameters of the stress-grading system. The model is iterative and adaptive where a deviation from the nominal uniform field and the upper and lower bounds on the resistance values as well as bounds on the nonlinearity factor can be set to generate optimal design parameters of the stress-grading system.

Published In:

Electrical Insulation and Dielectric Phenomena, 2003 Annual Report Conference on , , 482-485

(12)
Early Detection of Weak Points in MEEC Distribution System

M. Abdel-Salam, S Abdel-Sattar

Abstract:

paper is aimed at detecting the weak points in the distribution system of MEEC, "Middle Egypt Electricity Company". These include loose connections, polluted insulators and micro-roughness on line conductors and insulator hardware. The detection methodology is based on measuring ultrasound emissions from these weak points to warn against impending failures and subsequent supply interruptions. Laboratory testing made it possible to discriminate between loose-connection arcing, polluted-insulator "baby arcs" and sharp-edge corona according to the sound pattern. However, there can be occasions where sound pattern may prove confusing in discrimination between baby arcs and looseconnection arcing. In this case, recording of acoustic signals was found to be a useful tool for such discrimination.

Keywords:

NULL

Published In:

The 2001 IEEE / IAS Conference, Chicago, Illinois, USA, Sept. 30 - Oct. 4, 2001. , 4 , 2541-2545

(13)

Steady-state Modeling and Control of a Microgrid Supplying Irrigation Load in Toshka Area

Mazen Abdel-Salam, Adel Ahmed, Hamdy Ziedan, Rashad Kamel, Khairy Sayed, Mahmoud Amery and Mohamed Swify

Abstract:

This paper is aimed at sizing solar-wind-battery standalone microgrid for supplying irrigation and domestic loads in Toshka area, Toshka, Egypt. Not only the MG system components but also the interconnection cables and feeders are sized. Steady-state power flow through the MG system is analysed at varying sun irradiation and wind speed. Modeling of the MG components and their control of system voltages, currents and powers are investigated. Power flows during different MG operation conditions including absence of wind and sun as well as sudden disconnection of the load are studied

Keywords:

Hybrid Solar-Wind , Irrigation System , Toshka Area , control system , power flow

Published In:

IECON 2012 - 38th Annual Conference on IEEE Industrial Electronics Society , , 6

(14)

Design and Implementation of Stand-alone Residential PV System

Mazen Abdel-Salam, Adel Ahmed, Mahmoud Amery, Mohamed Swify, Ahmed El-kousy, Khairy Sayed

Abstract:

This paper is focused on construction of a stand-alone residential 2-kW centralized PV system to feed different domestic loads at a home including lighting loads, washing machine, TV, refrigerator and computer. The stand-alone residential 2-kW PV system consists of PV generator, storage batteries, charge regulator, inverter, filter and maximum power point tracking control system. The paper in steps includes PV modeling, software development for monitoring storage batteries, development of maximum power point tracking controller, design and implementation of an inverter and use of a filter to improve the inverter output waveform.

Keywords:

PV system, residential load, inverter, filter

Published In:

Applied Electrical Engineering and Computing Technologies (AEECT), 2011 IEEE Jordan Conference on , , 6

(15)
-NOx Removal Using Dielectric Barrier Discharges in a Wire cylinder Reactor Stressed by High Pulse Voltage

Hassan Wedaa, Mazen Abdel-Salam, Adel Ahmed and Akira Mizuno

Abstract:

This paper is aimed at investigating the nitrogen oxides (NOx=NO+NO2) removal using dielectric barrier discharges (DBD) in a wire-cylinder reactor filled with dielectric pellets and stressed by high pulse voltage. The effects of various parameters (the voltage amplitude, frequency, gas flow rate, and use of the dielectric pellets) on the discharge power and NO/ NOx removal efficiency have been studied experimentally. Two dielectric materials (-alumina and glass pellets) were evaluated for their ability to reduce NOx using non-thermal plasma. To improve the NOx removal efficiency, the output of the plasma reactor was pumped into sodium sulfite (Na2 SO3) solution with different concentrations to absorb NO2. It has been found that the discharge power and NO/ NOx removal efficiency increase with the increase of the applied peak voltage and frequency. On the other hand, the discharge power is independent of the gas flow rate, while the NO/ NOx removal efficiency increases with decreasing gas flow rate. The -alumina pellets give the best performance for removing both NO and NOx when compared with others due to their ability to oxide NO to NO2 and absorb the resulting NO2. The NOx removal efficiency increases with the increase of the concentration of sodium sulfite solution.

Keywords:

-alumina pellets , Dielectric barrier discharges , NO removal , ac high voltage , multi-rod DBD reactor , pulse voltage

Published In:

ICESP (International Conference of Electrostatic Precipitation) , , 9-13 pp.

(16)
Design of Stress-Grading Systems Based On Power Loss Minimization

H. El-Kishky, M. Abdel-Salam, H. Wedaa and Y. Sayed,

Abstract:

It is essential to use stress-grading systems to suppress corona in the end-turn zone of high voltage machines, which ensure uniform electric field distribution along the end-turn region. Since power dissipation is a major factor in the deterioration process of the grading systems, it is necessary to account for the power loss in the design these systems. This paper presents a novel technique for the design of a linear resistive stress-grading system for high voltage stator winding. This technique is based on minimization of the power loss through the stress-grading system along with equalization of potential along the end-turn zone. A one-dimension lumped circuit model was used and a non-linear constrained optimization algorithm is programmed using MATLAB®. Different discretizations of the grading system are investigated. The lumped circuit model was realized in an experimental setup that confirmed the results of the proposed technique.

Published In:

Annual Report Conference on Electrical Insulation and Dielectric Phenomena Mexico , , pp. 138-141

(17)
-Novel techniques for optimal design and analysis of corona suppression systems

H. El-Kishky, M. Abdel-Salam, H. Wedaa and Y. Sayed,

Abstract:

The use of stress-grading systems proved to be essential to suppress corona in the end-turn zone of high voltage machines. Moreover, power dissipation in the end-turn region is believed to be a major factor in the deterioration process of surface field grading systems. This paper introduces two novel techniques for the design and analysis of both linear and nonlinear corona-suppression systems of high voltage machines. The first technique is based on the design of linear stress-grading systems through power-loss minimization and equalization of electric field along the end-turn zone. The second technique is based on the simulation, modeling and analysis of nonlinear stress-grading systems in the time domain using the describing function method. This model generates the time variation of the resistances as well as the surface electric field and potential and ultimately converges to the optimal design parameters of the stress-grading system.

Published In:

Transmission and Distribution Conference and Exposition, 2003 IEEE PES , vol.2 , 841-846

(18)

NO Removal Using Dielectric Barrier Discharges in a Multi-rod Reactor Stressed by AC and Pulsed High Voltages

Hassan Wedaa, Mazen Abdel-Salam, Adel Ahmed and Akira Mizuno

Abstract:

This paper is aimed at investigating the nitric oxide (NO) removal using dielectric barrier discharges (DBD) in a multi-rod reactor stressed by ac and pulse high voltages. The effects of various parameters (the voltage amplitude, frequency, gas flow rate, use of the -alumina pellets and the voltage type) on the discharge power and NO removal rate have been studied experimentally in the multi-rod DBD reactor. When the reactor was filled with -alumina pellets, improvement in NO removal rate was observed. The pulse voltage gives higher NO removal rate in comparison with ac voltage at the same energy density. Records of the discharge photograph and the emission intensity have been made at varying voltage amplitude, frequency, and gas flow rate. The records confirm the dependency of the discharge power on these parameters.

Published In:

IEEE Transactions on Dielectrics and Electrical Insulation Germany , vol-18 , 1743-1751

(19)

ANALYSIS OF CORONA DISCHARGE IN ELECTROSTATIC MOTOR GAPS

Mazen Abdel-Salam, Adel Ahmed, Hamdy Ziedan and Fahd Diab

Abstract:

This paper is aimed at calculating corona current-voltage characteristics of a new design of an electrostatic motor with a cylindrical rotor made from aluminium foil and multi stator copper electrodes. The stator electrodes are alternately stressed positively and negatively. The corona currents emitted from positively and negatively-stressed electrodes are calculated being dependent on the applied voltage and motor geometry. The method of calculation is based on simultaneous solution of Poisson's equation, current density equation and continuity equation for current density. This calls at first for calculation of the spatial distribution of electric field within the motor volume using the accurate charge simulation technique. The calculated current-voltage characteristics of the motor agreed reasonably with those measured experimentally for three motors built-in the laboratory.

Keywords:

Electrostatic motor, corona-discharge, electric field, corona current.

Published In:

Journal of Engineering Sciences, Assiut University, Faculty of Engineering , 41-5 , 1842 - 1856

(20)

A ripple current minimisation based single phase PWM inverter

Khairy Sayed; Mazen Abdel-Salam; Adel Ahmed; Mahmoud Ahmed

Abstract:

This paper is aimed at improving the output voltage waveform of a single phase PWM inverter. Two approaches is proposed, the first approach is based on selected harmonic elimination (SHE) of order up to 7th harmonic, for minimising harmonic distortion and modulating amplitude of the fundamental component of the output voltage waveform. For the first time, the Levenberg-Marquardt algorithm (LMA) is used for determining the switching angles of the inverter switches. The second approach is based on ripple current minimisation using LMA. A simulation model is developed using PSIM for the inverter to verify the proposed approaches. An experimental system was implemented to demonstrate the effectiveness of the proposed approaches by using PIC16F877 microcontroller. Analysis of the voltage THD as influenced by the amplitude modulation index is made using MATLAB based on the computed switching angles.

Keywords:

single phase PWM inverters; pulse width modulation; LMA; Levenberg-Marquardt algorithm; switching angles; ripple current minimisation; selected harmonic elimination; output voltage waveform; harmonic distortion; amplitude modulation; simulation; microcontrollers.

Published In:

Int. J. of Power Electronics , Vol.6, No.3 , PP.201 - 223

(21)

Surface Potential and Resistance of Grounding Grid Systems in Homogeneous Soil

M. ABDEL-SALAM A. AHMED M. NAYEL ABOELSOOD ZIDAN

Abstract:

This article presents laboratory scale models developed to study the per- formance of grounding systems in uniform soil. Two parallel grids are investigated and correlated with a same mass grid having the same conductormaterial and extend- ing over the same area at a depth equal to that of the upper grid. The experimental results demonstrate how the potential profiles and ground resistance are influenced by the grounding grid design such as number of meshes, grid depth and spacing between parallel grids. The effectiveness of the two parallel grids is compared with that of the upper grid only. The measured surface potential and ground resistance agreed satisfactorily with the present calculated values

Keywords:

surface potential, step voltage, ground resistance, scale model, grounding grids

Published In:

Electric Power Components and Systems , 35 , 1093□1109

(22)

Two-dimensional modelling of dielectric barrier discharges using charge simulation technique-theory against experiment

Hassan Wedaa Mazen Abdel-salam Adel Ahmed Akira Mizuno

Abstract:

This study is aimed at calculating the discharge onset voltages and power loss of the AC discharge using the charge simulation technique in a wire-cylinder reactor with a dielectric barrier at atmospheric pressure and room temperature. The calculation of the discharge onset voltages is based on the criterion of self-sustained growth of onset streamers and Trichel pulses in positive and negative half cycles, respectively. The emission of ions (space charges) from the wire surface is assumed to take place when the magnitude of the surface charge exceeds the corresponding onset values based on pre-defined discharge onset voltages for both positive and negative half cycles. The space charges are displaced by the prevailing electric field until accumulated on the glass surface. Discharge power loss corresponds to the energy required for the displacements of emitted space charges. The calculated values of the discharge onset voltage and power loss agreed reasonably with those measured experimentally.

Keywords:

onset voltage, space charges, dielectric barrier discharges, charge simulation method, wire-cylinder DBD reactor

Published In:

IET Science, Measurement and Technology , Vol. 8, No. 5 , pp. 285293

(23)
DC Corona Discharge on Monopolar Bundle Wires

M. Abdel-SaIam, M. Farghally and S. Abdel-Sattar

Abstract:

The solution of monopolar corona equation already reported in literature is extended for bundle conductors using a modified iterative procedure to estimate the corona current contributed by each subconductor of the bundle. The solution is based on underlying assumptions, some of which are waived in the present calculations. The variation of ion mobility with its lifetime as well as the change of the corona onset voltage from point to point on each subconductor are taken into account for the first time. The calculated corona currents from each subconductor are compared with those measured experimentally for a laboratory model.

Keywords:

Applied Electric Field, Corona Discharge, Flux Line, Current Density Distribution, Space Charge Density

Published In:

Acta Physica , Vol. 54 , pp. 313-331

(24)

Positive Corona in Point-Plane Gaps as Influenced by Wind

M. Abdel-SaIam. H. AbdaIlah, S. Abdel-Sattar and M. Farghally

Abstract:

In this paper, the effect of wind on positive corona behavior up to breakdown is studied for point-plane gaps when the wind is flowing axially (against or parallel to the direction of ion convection from the point to the plane). The repetition rate of streamer pulses and its randomness as influenced by wind has been determined for different applied voltages. The spatial distribution of the current density over the ground plane has been examined for different applied voltages in still air and with wind blowing in the axial and transverse directions. The time-averaged value of wind-blown corona current as a function of the applied voltage was also determined. The results obtained are correlated with previous findings and with the theories of corona discharges.

Keywords:

NULL

Published In:

IEEE Transactions on Electrical Insulation , Vol. 22 , pp. 775 .786

(25)

Negative Corona Inception as Influenced by Steepness of the Applied Impulse Waves

M. Abdel-Salam and S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

Fourth International Symposium on Gaseous Dielectrics Knoxville, Tennessee, USA , NULL , pp. 370-375

(26)
Symmetrical Component Analysis of Multi- Pulse Converter Systems

M. Abdel-Salam, S Abdel-Sattar

Abstract:

This article describes a new method for dynamic simulation of multi-converter systems.This simulation is based on symmetrical components in time domain analysis and general representation of converter transformers to meet Y/Δ, Y/Y, and Y/Z connections. The simulation is suitable for harmonic analysis of balanced and unbalanced AC voltages. The computed currents and voltages agreed reasonably with those measured and reported in the literature for the characteristic and non-characteristic harmonics.

Keywords:

symmetrical components, multi-pulse converters, harmonic analysis, phase shift transformers

Published In:

Electric Power Components and Systems , Vol.34 , pp.867-888

(27)

Partial Discharge Classification Through Wavelet Packets of Their Modulated Ultrasonic Emission

M. Abdel-Salam, Y. Hasan, M. Sayed and S. Abdel~Sattar

Abstract:

Locating and classifying partial discharge due to sharp-edges, polluted insulators and loose-contacts in power systems significantly reduce the outage time, impending failure, equipment damage and supply interruption. In this paper, based on wavelet packets features of their modulated ultrasound emissions, an efficient novel scheme for neural network recognition of partial discharges is proposed. The employed preprocessing, wavelet features and near-optimally sized network led to successful classification up to 100%, particularly when longer duration signals are processed.

Keywords:

Hide Neuron, Weak Point, Wavelet Packet, Partial Discharge, Supply Interruption

Published In:

Proc. Of the 5th International Conference on Intelligent Data Engineering and Automated Learning - Ideal 2004, pp. 540-545, Exeter, England, U.K , NULL , NULL

(28)

Magnetic Field Distribution around a current‐carrying conductor above a two-layer ground

M. Abdel-Salam, S. Abdel-Sattar. A. Ibrahim and M. Nayel

Abstract:

The present work is aimed at calculating the magnetic field around a current-carrying conductor positioned in air at a given height above a two-layer ground. The method is based on the successive imaging technique. A three-phase transmission model was constructed to simulate three-phase transmission line above a two-layer ground. The measured magnetic fields agreed reasonably with those calculated for one- and two-layer ground models. The proposed method of calculation is extended for magnetic field assessment in AC substations. The effect of magnetic ores in the top-layer of the ground on substation magnetic field values is discussed.

Keywords:

Magnetic field; Current-carrying conductor; Two-layer ground; Successive imaging technique; Three-phase transmission line; AC substations

Published In:

Electric Power System Research , Vol. 58 , pp. 197-203

(29)
Combined Author Index IEEE Industry Applications Society Publications

A Simion, M Abdel-Salam, S Abdel-Sattar,et al

Abstract:

NULL

Keywords:

NULL

Published In:

IEEE Transactions on Industry Applications , 34 , NULL

(30)
Wavelet Based Analysis for Transmission Line Fault Location

Mazen Abdel-Salam Adel Ahmed Wael Ahmed

Abstract:

This paper presents wavelet based analysis for transmission line fault location. Faults in power transmission lines cause transients that travel at a speed close to the speed of light and propagate along the line as traveling waves (TWs). Traveling wave theory is utilized in capturing the travel time of the transients along the monitored lines between the fault point and the protective relay. This will help in proposing an accurate fault location technique based on high frequency components of fault current. Time resolution for these components is provided by the wavelet transform. This approach has the advantages of being independent of the fault impedance and fault inception angle. The application of the proposed technique for typical faults is illustrated using transient simulations obtained by MATLAB Simulink program.

Keywords:

travelling waves, wavelet transform, fault location, MATLAB Simulink.

Published In:

Innovative Systems Design and Engineering , Vol.4, No. 14 , 145-156

(31)

Characteristics of Negative Corona Discharge in Single-Needle- and Multi-Needle-to-Plane Configurations

M. Abdel-Salam A. Hashem E. Sidique

Abstract:

This paper investigates the characteristics of corona discharge in single-needle- and multi-needle-to-plane configurations including the onset voltage and the current-voltage relationship and their dependency on the number of needles, the needles' height, the needles' tip radius, the needle-to-needle spacing and the spacing between needles and the ground plate. The onset voltage is measured in the lab and calculated based on the criterion of self-recurrence of electron avalanches growing in the vicinity of the needles when stressed negatively. This calls for calculating the electric field in the vicinity of the needles using the charge simulation method. The calculated onset voltage values agree reasonably with those measured experimentally. The corona current-voltage characteristics have been studied experimentally to assess how the total corona current in multi-needle configurations is influenced by the number of needles, the needle-to-needle spacing and the spacing between needles and the ground plate.

Keywords:

Onset voltage, corona discharge, corona current, electric field, electron avalanche, single and multi-needle configurations.

Published In:

International Journal of Plasma Environmental Science & Technology , vol. 7, no. 2 , pp. 121-135

(32)
Modeling and Simulation of Fuel Cell Electric Vehicles

Mazen Abdel-Salam, Adel Ahmed, Ahmed Elnozahy and Ahmad Eid

Abstract:

Abstract - The objective of this paper is to develop a model for a fuel cell hydrogen vehicle driven by a brushless DC motor. A two leg directly coupled interleaved boost converter is used to power the motor from the fuel cell through a three-phase inverter. The studied system of the fuel-cell vehicle is designed and simulated using the commercial PSIM9 software. Due the presence of power converters, different harmonic components exist in the system, especially in the input voltage/current to the motor. The ripple contents of current and voltage at the fuel cell output and the motor input are estimated. An active power filter is designed in order to reduce the current and voltage harmonics of brushless DC motor. The instantaneous active and reactive current components id-iq control method is used in this study to lessen the harmonic contents at the input of the Brushless DC motor to the standard values.

Keywords:

Fuel cell, BLDC motor, Interleaved boost converter, Active power filter and Hybrid vehicles.

Published In:

15th International Middle East Power Systems Conference (MEPCONâŽ12) , ,

(33)

A Cost Comparison between Fuel Cell, Hybrid and Conventional Vehicles

Ahmed Elnozahy, Ali K. Abdel Rahman, Ahmed Hamza H. Ali and Mazen Abdel-Salam

Abstract:

Abstract - The objective of this paper is to present an assessment of cost for a fuel cell hydrogen vehicle (FCV) driven by a brushless DC motor (BLDC). A two leg directly coupled interleaved boost converter is used to power the motor from the fuel cell through a three-phase inverter. The power rating of vehicle motor is calculated and subsequently the rating of the fuel cell is determined. The cost of vehicle components including fuel cell stack, boost converter, brushless DC motor and hydrogen tank is estimated. The cost of FCV, the refueling cost, the market price and the efficiency of FCV are compared with those for internal combustion engine (ICE) and hybrid electric vehicle (HEV). CO2 emission from the conventional ICE and HEV vehicles as well as the CO2 tax are compared with the proposed zero-emission FCV.

Keywords:

Fuel cell, BLDC motor, Internal combustion engine (ICE), Honda Civic Sedan(DX) and Hybrid vehicles.

Published In:

16th International Middle- East Power Systems Conference -MEPCON'2014 , ,

(34)

Performance of a PV module integrated with standalone building inhot arid areas as enhanced by surface cooling and cleaning

Ahmed Elnozahy, Ali K. Abdel Rahman, Ahmed Hamza H. Ali, Mazen Abdel-Salam, and S. Ookawara

Abstract:

tThis study investigated experimentally the performance due to automatic cooling and surface cleaningof Photovoltaic (PV) module installed on the roof of a building in hot arid area as compared with thatof a module without cooling and cleaning. The module cooling is controlled automatically according tothe rear side temperature via rejection of none-converted solar-energy to the ambient to keep the PVmodule surface temperature always close to the ambient temperature. In addition, this system controlsthe cleaning period of the module front surface. The results showed a decrease of about 45.5% and 39% inmodule temperature at front and rear faces, respectively. Consequently, the cooled and surface cleanedmodule has an efficiency of 11.7% against 9% for the module without cooling and cleaning. Moreover, themaximum output power produced by cooled and cleaned module is 89.4 W against 68.4 W for non-cooledand non-cleaned module.

Keywords:

Automatic cooling and cleaning system, Control circuit, PV module, Film of water, Bernoulli equation

Published In:

Energy and Buildings , 88 , 100-109

(35)

Thermal/Electrical Modeling of a PV Module as Enhanced by Surface Cooling

A. Elnozahy, Ali K. Abdel Rahman, Ahmed Hamza H. Ali, Mazen Abdel-Salam, and S. Ookawara

Abstract:

The present work is aimed at developing thermal and electrical models which are capable of estimating the two dimensional thermal and electrical performance of a PV module under given meteorological conditions. The thermal modeling has been developed in COMSOL Multiphysics software environment and the electrical modeling has been carried out in PSIM software environment. The main objective of the electrical model is to investigate the I-V and P-V characteristics of an 80W thin film PV module with and without cooling at varying surface temperature and irradiation. In the thermal model, the dependence of module surface temperature, electrical efficiency, and thermal efficiency on water flow velocity is investigated. The results obtained from the proposed electrical and thermal models are validated experimentally. The results showed that the maximum electrical, thermal and net energy efficiency values of cooled PV module are 9.92%, 55.6%, and 65.4%, respectively. Variation of water flow velocity experiences no significant temperature change in the coolant water exiting the module and results in a slight change of both the module surface temperature and electrical efficiency.

Keywords:

Terms□COMSOL software, cooling system, electrical model, PSIM software, PV module, and thermal model.

Published In:

International Conference on Clean and Green Energy (ICCGE 2015) , , 279-286

(36)

Characteristics of DC Corona in Wire to- Plane Gaps as Influenced by Back Discharge

Mazen Abdel-Salam, A. S. Gabre, A. M. A. Amry, and Amina A. Abozeed

Abstract:

NULL

Keywords:

NULL

Published In:

15th International Middle East Power Systems Conference (MEPCON12), Alexandria University, Egypt, December 23-25, 2012, Paper ID 318 , NULL , NULL

(37)
Analysis of a Corona-Discharge Based Electrostatic Motor

Mazen Abdel-Salam, Adel Ahmed, Hamdy Ziedan and Fahd Diab

Abstract:

This paper is aimed at proposing a new design of a corona-discharge based electrostatic motor with a cylindrical rotor made from aluminum foil and multi copper strip stator electrodes. The stator electrodes are alternately stressed positively and negatively. The onset voltage of corona discharge is calculated based on the condition of discharge sustenance at stator electrodes. The corona currents emitted from positively and negatively stressed electrodes are calculated being dependent on the applied voltage and motor geometry. This calls at first for calculation of the spatial distribution of electric field within the motor volume using the accurate charge simulation technique. The calculated corona onset voltage and current-voltage characteristics of the motor agreed reasonably with those measured experimentally for three motors built-in the laboratory. The dependency of the motor speed on the applied voltage is reported for the different investigated motors.

Keywords:

Electrostatic motor, ionic wind, corona-discharge, field mapping, corona current, motor speed

Published In:

International Journal of Plasma Environmental Science and Technology, Japan , 8-1 , 60-69

(38)
-Design and Implementation of a Multifunction DSP-based Numerical Relay

Mazen Abdel-Salam, Rashad Kamel, Khairy Fathy and Mohsen Khalaf

Abstract:

This paper is aimed at proposing a multifunction numerical relay (MNR) for protection against over-current, over- and under-voltage and over- and under-frequency. The MNR serves also as a directional relay. The performance of the MNR is investigated through simulation using MATLAB/Simulink and implementation of a prototype using TMS320F28335 Experimenter Kit. The MNR trips a circuit breaker at abnormal conditions of current, voltage and frequency. The novelty of the proposed relay lies on being a numerical compact-sized relay serving multi protection functions.

Keywords:

Protection; Photovoltaic; Numerical relay; DSP

Published In:

Electric Power System Research , Volume 143 , 32□43

(39)

Effect of interfacial electrical shear stresses on hydrodynamic flows inside droplets actuated by electrowetting on dielectric

H. A. Ali, W. M. Salman, M. N. Abdelmoez, Mohamed E. Heragy, M. S. Abdelsalam, M. F. F

Abstract:

NULL

Keywords:

NULL

Published In:

10th International Meeting on Electrowetting , NULL , NULL

(40)
Optimum Sizing of Standalone Hybrid PV/Wind Power Generation System in Egypt

Ahmed ELNOZAHY, Ali KAMEL, Mazen ABDEL-SALAM, Shinichi OOKAWARA

Abstract:

In this study, the I-V and P-V curves of PV system at different solar radiations and ambient temperatures have been determined based on five-parameter equations describing the PV module. Also, the wind turbine performance model has been developed and the predicted power-speed curves have been validated against data sheet and experimental data. Both PV module and wind turbine models have been carried out in PSIM software environment. The sizing of hybrid PV/wind/storage battery power generation system has been implemented in HOMER software environment. The sizing results demonstrate that at meteorological conditions of solar radiation, wind speed, and ambient temperature in Borg Elarab area the PV/storage battery system is more feasible than hybrid PV/wind/storage battery system. Consequently, the PV/storage battery system has Net Present Cost (NPC) of $43571 against $45232 for hybrid PV/wind/storage battery system. In addition, by using fuel cell system with PV/storage battery system the excess electricity production is reduced from 1973 kWh/yr (22.4%) to 986 kWh/yr (8.7%) and NPC is reduced from $43571to $29744 which corresponds to about 31.73% reduction in system cost.

Keywords:

PV module; wind turbine; PSIM software; HOMER; fuel cell

Published In:

15th International Conference on Sustainable Energy Technologies (SET 2016) , NULL , NULL

(41)

Analysis of Corona Discharge in Wire-cylinder ESP with and without Particle Loading

M. Abdel-Salam, M. Th. El-Mohandes, S. Kamal El-deen

Abstract:

This paper is aimed at investigating thoroughly the corona performance in the wirecylinder ESP with and without loading by suspended particles in the exhaust of a diesel engine. The onset voltage of negative corona on the discharge wire is calculated based on the criterion of self-sustained discharge. The ionized space between the discharge wire and the collecting cylinder of the ESP is mathematically modeled for calculating the spatial distribution of the space-charge density due to both the ions and the charged particles as well as the components of the electric field including the applied field and the field due to the space charge. This is in addition to the calculation of the currentvoltage characteristics of the ESP with and without particle loading.

Keywords:

Electrostatic precipitator, corona discharge, particle loading, electric field, Poisson's equations

Published In:

IEEE Transactions on Dielectrics and Electrical Insulation , Vol. 23, No. 5 , NULL

(42)

A GA-based Method for Performance Improvement of Distribution Systems Using DG Sources

M. Abdel-Salam, M. Th. El-Mohandes, Ali M. Yousef, Alaa E. Abdel-Hakim and R. Ramadan*

Abstract:

This paper presents a Genetic Algorithm (GA)- based method to determine the location and size of DG sources in distribution systems using single DG placement algorithm for determining the locations at first. Then, the GA is utilized to determine the global sizes of DG sources which minimize single- or multi-objective function related to these systems. The influence of active- and reactive-power injection on the sizing and placement of DG sources is investigated. The predictions of the proposed method as regards the sizing and placement of DG sources are compared with those obtained before using particle swarm optimization at steady weather conditions.

Keywords:

NULL

Published In:

Nineteenth International Middle East Power Systems Conference (MEPCON), Menoufia University, Egypt, , NULL , NULL

(43)

Influence of N2/O2 Mixtures on Decomposition of Naphthalene in Surface Dielectric Barrier Discharge Based Reactor

A. Abdelaziz, T. Seto, M. Abdel-Salam, Y. Otani

Abstract:

NULL

Keywords:

NULL

Published In:

J. Plasma Chem. Plasma process. , 34 , 1371–1385

(44)

Influence of applied voltage waveforms on the performance of Surface Dielectric Barrier Discharge reactor for decomposition of naphthalene

A. Abdelaziz, T. Seto, M. Abdel-Salam, T. Ishijima, Y. Otani

Abstract:

NULL

Keywords:

NULL

Published In:

J. Phys. D: Appl. Phys. , 48 , 195201

(45)

An improved perturb-and-observe based MPPT method for PV systems under varying irradiation levels

Mazen Abdel-Salama,1 , Mohamed-Tharwat El-Mohandesa , Mohamed Godab

Abstract:

The present paper studies thoroughly the performance of the classical perturb-and-observe (P&O) method under fast-changing solar irradiation, including increase or decrease of the irradiation level with small or large steps, when the initial operating point lies to the right or left of the MPP. In sixteen case studies of sudden variation of solar irradiation, the classical P&O method fails to track MPP properly in four cases. The classical P&O tracker does not work properly under a ramp change of irradiation level. A modified P&O-based-MPP tracking method is proposed and tested under step and ramp changes of irradiation irrespective of the value and direction of the perturbation in irradiation level and the location of the initial operating point. The proposed method succeeds in capturing the MPP under a ramp or slow change of irradiation level. The proposed method tracks correctly the MPP in the above-mentioned case studies and shows better performance in tracking speed, steady state efficiency, dynamic efficiency and tracking accuracy when compared with the classical P&O method and other modified methods reported in the literature.

Keywords:

Maximum power point tracking Photovoltaic Perturb-and-observe Sudden variation of solar irradiation Step change Ramp change

Published In:

Solar Energy , Vol. 171 , pp. 547561

(46)

Maximum power point tracking using Hill Climbing and ANFIS techniques for PV applications: A review and a novel hybrid approach

Mohamed Lasheena,b , Mazen Abdel-Salamc,

Abstract:

The development of Maximum Power Point Tracking (MPPT) techniques is continuing in order to increase the generated energy from photovoltaic (PV) generators. A variety of MPPT techniques have been proposed and classified based on three main categories: offline, online and hybrid techniques. This paper presents a review of the most popular techniques for offline and online tracking of the Maximum Power Point (MPP), which are the Adaptive Neuro-Fuzzy Inference System (ANFIS) and Hill Climbing (HC) techniques, respectively. This is in addition to a review for all hybrid techniques reported in the literature demonstrating their main merits and shortcomings. Moreover, the present paper combines the ANFIS and HC as a hybrid technique for the first time. The proposed technique involves the features of the ANFIS and HC techniques and mitigates their shortcomings in order to increase the generated PV electrical energy. The proposed technique is a combination of two stages to assess the duty ratio (control signal) being applied to a boost converter for MPP tracking. The first stage includes a set point calculation loop to estimate the duty ratio. The second stage involves a fine tuning loop to determine the exact duty ratio corresponding to the MPP. This achieves maximum power transfer to the load even under nonuniform climatic conditions using a relatively simple control system. The proposed technique has been simulated in MATLAB/SIMULINK environment and compared with some other MPPT techniques (the Constant Voltage (CV), ANFIS, HC, Incremental Conductance (IncCond) techniques) for steady state and rapidly changing climatic conditions (Ropp and sine radiation tests) as well as load variations. The results reveal that the proposed hybrid MPPT technique outperforms other MPPT techniques in term of performances indicators, which include the tracking speed, tracking accuracy and energy gain factor.

Keywords:

Photovoltaic Boost converter Maximum power point tracking ANFIS HC

Published In:

Energy Conversion and Management , Vol. 171 , pp. 1002–1019

(47)

Adaptive reference voltage-based MPPT technique for PV applications

Mohamed Lasheen, Ali Kamel Abdel Rahman, Mazen Abdel-Salam, Shinichi Ookawara

Abstract:

The constant voltage (CV) for maximum power point tracking (MPPT) technique is considered one of the most commonly used techniques in the photovoltaic (PV) applications. This study is aimed at proposing an adaptive reference voltage-based MPPT technique (ARV) to improve the performance of the CV technique by making it adaptable to weather conditions. The RV for MPPT is adapted according to the measured radiation and temperature levels. The operating range of the radiation at a given temperature is divided into number of divisions and the corresponding RV is recorded off-line in a truth table. The difference between the reference and measured PV voltages is compensated using proportional-integral controller to generate suitable duty ratio to the boost converter. Performance assessment of the CV technique after being improved covers time response, MPPT efficiency, oscillation and stability. The results present performance improvement by fast time response to reach steady-state value, more stable operation with no oscillation and high MPPT efficiency as compared with the CV technique without the proposed improvement.

Keywords:

compensation, maximum power point trackers, photovoltaic power systems, PI control, power generation control, power system stability

Published In:

IET Renewable Power Generation , Vol.11,Issue: 5 , PP.715 - 722

(48)

Characteristics of Negative Corona Discharge in Single-Needle- and Multi-Needle-to-Plane Configurations,

M. Abdel-Salam, Azza Hashem and E. Sidique

Abstract:

NULL

Keywords:

NULL

Published In:

International Journal of Plasma Environmental Science & Technology Vol.3, No.2, 99-106, 2013. , Vol.3, No.2 , 99-106

(49)

Assessment of Induced Voltage on a Human Underneath Stressed Overhead Conductors. .

M. Abdel-Salam, A. Ahmed, and Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

International Journal of Plasma Environmental Science & Technology Vol.3 No. 2, 99-106, 2009 , Vol.3 No. 2 , 99-106

(50)
Onset voltage of corona in electrostatic filters as influenced by gas flow. M. Abdel-Salam and Azza Hashem .

M. Abdel-Salam and Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

Proceeding of the 11th International Conference on Electrostatic Precipitation. Hangzhou, China, Oct. 21- 24,, 2008 , v.1 , 121-124

(51)

Onset Voltage Corona in Conductor-to-Plane Gaps as Influenced by underneath Grounded and Negatively-Stressed Metallic Grids (theory versus experiment).

Azza Hashem, M. Abdel-Salam, A. Turky and A. Abdel Aziz

Abstract:

NULL

Keywords:

NULL

Published In:

International Journal of Plasma Environmental Science & Technology , Vol.1, No.2, , 151-158

Corona Performance of Conductor-to-Plane Gaps as Influenced by underneath Grounded and Negatively Stressed Metallic Grids.

M. Abdel-Salam Azza Hashem, A. Turky and A. Abdel Aziz

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Physics D: Applied Physics Vol.40, 1684-1693, 2006 , Vol.40 , 1684-1693

(53)

17. Corona Characteristics in Conductor-to-Plane Gaps as Influenced by Nearby Floating Metallic Grids.

Azza Hashem, M. Abdel-Salam, A. Turky and A. Abdel Aziz

Abstract:

NULL

Keywords:

NULL

Published In:

Proceeding of the Annual Report on Electrical Insulation and Dielectric Phenomena, Kansas City, USA, , vol 1 , 764-767

(54)
On The Pitfalls of Charge Simulation Technique in Field Calculations.

M. Abdel-Salam, Azza Hashem and A. Ahmed

Abstract:

NULL

Keywords:

NULL

Published In:

Proceeding of the 41st International Universities Power Engineering Conference, Newcastle, UK, , vol. 1 , 936-940

(55)

16. Positive Corona Inception in Point-Plane Gaps as Influenced by a Surrounding Dielectric Enclosure.

M. Abdel-Salam and Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Physics D: Applied Physics, , Vol. 39, , 5169-5175

(56)

14. Optimum Operating Conditions for Ozone Generation in AC Corona and AC Silent Discharge Reactors. .

Azza Hashem, M. Abdel-Salam, A. Yehia, A. Mizuno, A.A.Turky, and A. Gabr

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Institute of Electrostatics, Japan, , Vol. 27, no. 3, , 129- 134,

(57)

13. Charging of Spherical Particles in Unipolar Ionized Electric Fields.

M. Abdel-Salam, Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

Proceeding of the IEEE 10th Technical Exchange Meeting, Dhahran, Saudi Arabia, , Technical Exchange Meeting, Dhahran, Saudi Arabia, , p. 1-6

12. Characteristics of Corona and Silent Discharges as Influenced by Geometry of the Discharge Reactor.

M. Abdel-Salam, Azza Hashem, A. Yehia, A. Mizuno, A.A.Turky, and A. Gabr

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Physics D: Applied Physics , Vol.36, , 252-260

(59)

8. Current- Voltage of Corona on Bare and Coated Conductors.

M. Abdel-Salam, A.A.Turky, and Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

AMSE France , Journal Vol. 72, Nº 2, , 1-14,

(60)

7. Onset Voltage Characteristics of Corona on Bare and Coated Conductors.

M. Abdel-Salam, A.A.Turky, and Azza Hashem

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Physics D: Applied Physics , Vol. 31 issue 19, , .2550-2556

Dynamic performance of wind turbine conversion system using PMSG-based wind simulator

Sayed, Khairy; Abdel-Salam, Mazen

Abstract:

NULL

Keywords:

NULL

Published In:

Electrical Engineering , v 99, n 1 , p 431-439

(62)
-An Experimental Study of Lightning Overvoltages on a Small scale Wind Turbine Model

Zalhaf, A.S.; Abdel-Salam, Mazen; Mansour, Diaa-Eldin A.; Ahmed, Mahmoud; Ookawara, S.

Abstract:

NULL

Keywords:

NULL

Published In:

Energy Procedia , v 156 , p 442-446