(1)
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/⧄, 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:

(2)
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:

(3)
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:

(4)
On the Building Shielding from Outside Power Frequency Electromagnetic Fields

S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(5)
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:

Published In:

(6)
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:

(7)
Corona current and field profile underneath vertical bipolar HVDC lines with bundle conductors

S Abdel-Sattar

Abstract:

For the cases of monopolar and horizontal bipolar coronas, the corona equations are solved for vertical bipolar geometry without restrictions with regard to the number of subconductors. The variation of ion mobility with lifetime, as well as the change of corona onset voltage from point to point around each subconductor, are taken into account. The lateral distribution of the field intensity and current density calculated and compared with those measured experimentally. These profiles also are compared with those for a horizontal bipolar test line. The effect of applied voltage, number of subconductors and the surface factor is studied.

Keywords:

NULL

Published In:

(8)
Electrical conditions in wire-duct electrostatic precipitators

S Abdel-Satar, H Singer

Abstract:

In this paper, a modified numerical method for calculating the electrical conditions, namely the charge density, the electric field intensity and the current density, in wire-duct electrostatic precipitators is reported. Variation of mobility for both ions and particles in the space surrounding the energized wires is taken into consideration. This method is based on numerically solving the main set of equations, defining the ionized field with presence of dust particles. The space-chargefree field is calculated using the charge simulation technique. This method is checked against published calculated and measured results, showing good agreement. The present findings are correlated to the physics of electrical corona discharge.

Keywords:

NULL

Published In:

(9)
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:

(10)
On the Wire-Duct Electrostatic Precipitator

A. A. Ibrahim S. Abdel-Sattar

Abstract:

A numerical method for calculating the ion- and particle-charge density, the electric field intensity, and, consequently, the ion- and particle-current density in a wire-duct electrostatic precipitator is reported. This method is based on numerically solving the main set of equations defining the ionized field. These include Poisson's equation, the current density equation, and the current continuity equation. The space-charge-free field is calculated using the charge simulation technique. The distribution of the electrical conditions is determined as a function of the applied voltage. Both cement and steel particles are considered. This method is checked against published calculations. Findings are correlated to the physics of corona discharge.

Keywords:

NULL

Published In:

(11)
Numerical method to calculate corona profiles at ground level and underneath monopolar lines as influenced by wind

S Abdel-Sattar

Abstract:

In this paper, the monopolar corona equations are solved numerically in flowing air for HVDC transmission lines with bundle conductors. The lateral distributions of the corona current density and field intensity over the ground surface and underneath monopolar HVDC models are calculated and compared with those measured experimentally.

Keywords:

NULL

Published In:

(12)
INFLUENCE OF GEOMETRICAL PARAMETERS UPON ELECTROSTATIC PRECIPITATOR EFFICIENCY

S Abdel-Sattar

Abstract:

In this paper a modified numerical method for calculating the precipitation efficiency of wire‑duct electrostatic precipitators is reported. Variation of mobility for both ions and particles in space surrounding the energized wires is taken into consideration. This method is based on solving numerically the main set of equations, defining the ionized field with presence of dust particles. The precipitation efficiency of the electrostatic precipitators is determined for the cement industry. The effect of different geometrical parameters on the precipitation efficiency is also reported. The precipitation efficiency of the wire‑duct electrostatic precipitator as influenced by both the applied voltage and the gas flow speed is discussed in this paper. The present findings are correlated to the physics of electrical corona discharge.

Keywords:

NULL

Published In:

(13)
Monopolar corona on bundle wires as influenced by wind

Salah E Abdel-Sattar

Abstract:

The measured corona current contributed by each subwire in various laboratory-size bundle models and the total corona current change with wind over a wide range of applied voltages are described. The lateral spacial distribution of the time-average value of windblown corona current over the ground plate is measured for different applied voltages and different bundle geometries. The obtained results are compared to previous findings and to theories of corona discharge.

Keywords:

Corona, Wires, Conductors, Voltage, Current measurement, HVDC transmission , Wind speed, Laboratories, TV interference, Testing

Published In:

Industry Applications, IEEE Transactions on , 6 , 984-989

(14)
An estimation of the wire-duct electrostatic precipitator efficiency

S Abdel-Sattar

Abstract:

NULLIn this paper, a simple and fast method for estimating the saturated profiles of the field intensity, ions and particles charge density, ions and particles current density, relative precipitated dust and the overall precipitation efficiency of the wire-duct electrostatic precipitators is reported. Both ions and particles in space surrounding the energized wires are taken into consideration. This method is based on simple expression which define the ionized field in the interelectrode spacing surrounding the HV wires of the wire-duct electrostatic precipitator in presence of dust particles and under saturated conditions. The precipitation efficiency of the electrostatic precipitators under saturated conditions is also estimated for cement industry. The effect of some parameters on the precipitation efficiency is also reported. The precipitation efficiency of the wire-duct electrostatic precipitator as influenced by both the applied voltage and the gas flow speed is discussed in this paper. The present findings are correlated to the physics of electrical corona discharge.

Keywords:

NULL

Published In:

(15)
Influence of Magnetic Field on Friction Coefficient Displayed by the Oil Lubricated Sliding of Steel

H Zaini, A Alahmadi, WY Ali, S Abdel-Sattar

Abstract:

The present work investigates the influence of magnetic field on the friction coefficient displayed by sliding of steel pin on aluminium, steel and polyamide discs lubricated by paraffin oil and dispersed by different lubricant additives such as zinc dialkyldithiophosphates (ZDDP), molybdenum disulphide (MoS2), heteropolar organic based additive (CMOC), graphite (C), detergent additive (calcium sulphonate) (DA), polytetrafluroethylene (PTFE) and polymethyl methacrylate (PMMA). The experiments showed that, aluminium as a paramagnetic material recorded higher values of friction coefficient than steel and polyamide. That observation confirms that in spite of the increase of the attractive force generated from the magnetic field for steel/steel and the electrostatic charge for polyamide/steel, oil molecules were more adhered into the surfaces of steel and polyamide than aluminium and consequently friction coefficient significantly decreased. When the oil was dispersed by additives, it was found that, friction coefficient slightly increased with increasing magnetic field for oil dispersed by ZDDP additive. For oil dispersed by MoS2 friction coefficient displayed by aluminium disc showed relatively lower values in the presence of the magnetic field than that displayed by polyamide and steel discs. Magnetic field drastically decreased friction coefficient displayed by aluminium and steel disc. As for polyamide disc friction coefficient slightly increased with increasing the magnetic field. Aluminium disc displayed the lowest friction coefficient in the presence of C, which decreased with increasing magnetic field. For steel disc friction coefficient displayed the highest values. Polyamide disc showed no change in friction values as the intensity of the magnetic field increased. For oil dispersed by DA, steel disc showed significant friction decrease. Aluminium disc showed slight friction increase with increasing magnetic field, while polyamide disc showed slight friction decrease. PTFE particles dispersed in the oil were much influenced by the magnetic field, where the friction coefficient displayed by steel drastically decreased with increasing magnetic field. Aluminium and polyamide discs showed an increasing trend as the magnetic field increased. As for PMMA particles dispersed in oil aluminium disc showed slight friction increase, while steel and polyamide discs gave decreasing trend of friction as the magnetic field increased.

Keywords:

Published In:

(16)

Influence of Magnetic Field on the Action Mechanism of Lubricant Additives

H Zaini, A Alahmadi, WY Ali, S Abdel-Sattar

Abstract:

The present work investigates the influence of magnetic field on the friction coefficient displayed by the sliding of steel pin on aluminium disc lubricated by paraffin oil and dispersed by different lubricant additives such as zinc dialkyldithiophosphates (ZDDP), molybdenum disulphide (MoS2), heteropolar organic based additive (CMOC), graphite (C), detergent additive (calcium sulphonate) (DA), polytetrafluroethylene (PTFE) and polymethyl methacrylate (PMMA). Aluminium was used as friction counterface to reduce the magnetic force acting on the contact surfaces when the magnetic field was applying. The present experiments showed that, for surfaces lubricated by paraffin oils free of additives friction coefficient increased with increasing applied load. As the magnetic field increased friction coefficient increased. In condition of application of magnetic field it was found that when the paraffin oil was dispersed by ZDDP, MoS2, DA and PTFE friction coefficient increased, while COMC, C and PMMA showed significant decrease in friction coefficient. Besides, the lowest values of friction coefficient were observed for PTFE particles dispersed in the oil.

Keywords:

Magnetic field, oil additives, polytetrafluroethylene, polymethyl methacrylate, molybdenum disulphide, zinc dialkyldithiophosphates, graphite, friction coefficient, steel and aluminium.

Published In:

(17)

Influence of Magnetic Field on the Friction and Wear Caused by the Scratch of Oil Lubricated High Density Polyamide

KA Shoush, WY Ali, S Abdel-Sattar, FM El-Lithy

Abstract:

The present work discusses the influence of magnetic field on the friction and wear of polyethylene as bearing materials scratched by steel insert in the presence of different oil. Tests were carried out at oil lubricated surfaces. Paraffin, Fenugreek, Camphor, Cress, Olive, Almonds, Sesame, Aniseed and Habet El-Baraka oils were used as lubricants. The friction coefficient and wear of the tested composites were investigated using a tribometer designed and manufactured for that purpose. It was found that, at no magnetic field, friction coefficient increased with increasing applied load. The maximum value of friction coefficient was displayed in the presence of paraffinic oil, while the minimum values were displayed by olive and Habet El Baraka oils. As the magnetic field of 0.2 mG flux intensity was applied on the sliding surface significant friction decrease was observed. The rank of the tested oils as friction reducer was Olive, Camphor, Aniseed, Habet El Baraka, Fenugreek, Cress, Sesame, Almond and Paraffin. Camphor oil was much influenced by the application of the magnetic field. Increasing the flux intensity of magnetic field to 0.3 mG was accompanied by further decrease of friction coefficient. Wear of the polyethylene lubricated by the tested oil increased with increasing applied load. In the presence of Almonds oil on the sliding surfaces wear displayed the lowest values, while Olive oil displayed the highest wear. Application of the magnetic field significantly decreased wear. The best wear resistance was displayed by Aniseed and Fenugreek oils, while Paraffin and Almonds oils displayed the highest wear values.

Keywords:

Magnetic field, scratch, friction coefficient, wear, polyethylene, vegetables oils, paraffin oil.

Published In:

(18)
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:

(19)
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:

(20)
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:

Published In:

(21)
On the saturated corona profiles at ground surface and underneath HVDC lines

Salah Abdel-Sattar

Abstract:

The author describes a simple mathematical model to calculate the saturated corona profiles (field intensity, current density and then charge density) over the ground surface and underneath HVDC monopolar lines. The relations between these saturated values and the length of the field lines are given. The results are compared with the experimental ones. (7 refs.)

Keywords:

NULL

Published In:

(22)
Monopolar corona on bundle conductors

M Abdel-Salam, M Farghaly, S Abdel-Sattar

Abstract:

In this paper, the monopolar corona equation is solved for bundle conductor using a modified iterative procedure to give the corona current contributed by each subconductor of the bundle. Some of the main underlying assumptions are waived in the present calculations. The variation of ion mobility with its life time as well as the change of corona onset voltage from point to point on each subconductor ore taken into account for the first time. The calculated corona currents from each subconduotor are compared with those measured experimentally for a laboratory model. Copyright © 1982 by The Institute of Electrical and Electronics Engineers, Inc.

Keywords:

Corona, Conductors, Nonlinear equations, Poisson equations, Differential equations, Partial differential equations, Current measurement, Propagation losses, Tellurium, Voltage

Published In:

(23)

Effect of magnetic field on the friction and wear displayed by the scratch of oil lubricated steel

MK Mohamed, A Alahmadi, WY Ali, S Abdel-Sattar

Abstract:

The present work discusses the effect of magnetic field on the friction and wear of steel scratched by TiC insert. The steel was lubricated by oil and dispersed by iron, copper and aluminium powders as well as polymeric powders such as high density polyethylene (PE), polymethyl methacrylate (PMMA) and polyamide (PA6). Molybdenum disulphide (MoS2) and graphite (C) were added to the oil as dispersant. Paraffin oil was used as lubricant. Friction coefficient and wear of the tested composites were investigated using a tribometer designed and manufactured for that purpose. It was found that application of induction magnetic field decreased friction coefficient. The decrease was significant for oil lubricated steel and oil dispersed by aluminium, copper, PMMA and PA6 + 10 wt. % C, while addition of iron, PE and MoS2 particles showed slight friction decrease. At no magnetic field friction coefficient for oil dispersed by aluminium and copper particles showed values lower than that observed for oil dispersed by iron particles. The lowest values of friction coefficient were displayed by oil dispersed by PE particles. Magnetic field caused significant wear increase for oil lubricated steel, where aluminium, copper and PA6 + C particles displayed relatively higher wear, while addition of iron, PE, PMMA and MoS2 particles showed slight wear increase. At no magnetic field wear decreased due to the action of aluminium particles which formed a continuous layer on the steel surface and consequently decreased wear. Wear of oil lubricated steel dispersed by PE particles displayed relatively low values. Magnetic field showed no significant change on wear of the steel surface.

Keywords:

Published In:

(24)
Comparing Charge and Current Simulation Method with Boundary Element Method for Grounding System Calculations in Case of Multi-Layer Soil.

Sherif Salama, Salah AbdelSattar, Kamel O Shoush

Abstract:

Grounding grid performance can be measured in terms of grounding resistance, but it is preferable to include the distribution of surface potential and, subsequently, the touch and step voltages over the area above the substation ground grid and beyond. Two methods are used in this paper to compute the grounding resistance (Rg) and the earth surface potential (ESP) due to discharging current into grounding grids. The first one is the charge (current) simulation method (CSM) and the other is the boundary element method (BEM). For BEM, commercial software TOTBEM by university of La Cournia, Spain is used for computing ESP and Rg. The owned FORTRAN code is provided to calculate the ESP and Rg. The soil is assumed to multilayer soil. The paper focuses the comparison between these two methods for calculating ESP and Rg. In case of grounding resistance, a comparison between the two methods results and IEEE Standard formula is presented.

Keywords:

Grounding grids, Earth surface potential, Step voltage, Touch voltage, Boundary element approach, Charge simulation method.

Published In:

(25)
Digital symmetrical analysis of AC/DC interactions and harmonic mitigations for multi-pulse converter systems

M Abdel-Salam, S Abdel-Sattar, A Sayed, H Ali

Abstract:

This article develops a digital mathematical model in symmetrical components to handle multi-pulse converters power system equipped with correction power factor capacitors or shunt passive harmonic filters. The model simulates AC/DC interaction system in both AC and DC sides with balanced and unbalanced AC system voltages and is adapted for general representation of converter transformers to meet Y/⧄, Y/Y, and Y/Z connections. Comparison results with previous works are given with correction power factor capacitors or shunt passive harmonic filters. The results also included the interaction of AC/DC systems resonating with shunt capacitors at one or more of harmonic power-frequency and the resulting zero sequence harmonics due to AC unbalanced voltage.

Keywords:

symmetrical components, multi-pulse converters, harmonic analysis, phase shift transformers, unbalanced AC voltage, interaction of AC/DC systems

Published In:

(26)
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. © 2001 Elsevier Science B.V. All rights reserved.

Keywords:

Published In:

(27)
Saturated corona profiles at ground surfaces and underneath HVDC lines

S Abdel-Sattar, H Singer

Abstract:

Saturated profiles of the field intensity, current density and charge density at the ground surface and underneath monopolar HVDC transmission lines are calculated by using simple expressions. These expressions give the relation between the saturated values and the length of the field lines emanating from or terminating at the energized conductor. The calculated values are compared with those previously calculated and measured experimentally. Both absolute and normalized saturated corona profiles at the ground surface and underneath HVDC monopolar transmission lines are calculated using simple expressions. Relations between the saturated values at any position on the ground surface and the length of the field line emanating from or terminating at the conductor are given. These relationships are used for both outdoor and indoor models.

Keywords:

Corona , HVDC transmission , Voltage , Transmission line measurements , Space charge , Conductors , Testing , Equations , Electric fields , Laboratories

Published In:

(28)
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:

(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)

Effect of the cross-magnetizing phenomenon on the transient -performance of a saturated synchronous machine under three phase short circuited

AS Abdallah, S Abdel-Sattar

Abstract:

In this investigation, a mathematical model for saturated synchronous machines including the effects of both the crossmagnetizing phenomenon and the saturation factors has been used. The effects of the omission of the cross-magnetizing phenomenon from this model on the transient characteristic curves of a saturated synchronous machine under a three-phase short circuit such as the armature, field and damper winding currents, the flux linkages, the electromagnetic torque and the load angle curves, are shown.

Keywords:

NULL

Published In:

(31)
ELECTRICAL CHARACTERISTICS OF DUCT ELECTROSTATIC PRECIPITATORS AS INFLUENCED BY BUNDLED DISCHARGE ELECTRODES

S ABDEL-SATTAR

Abstract:

  NULLn this paper, the electrical parameters of the duct electrostatic precipitators with bundle wires, as discharge electrodes, are calculated and reported. Variation of mobility for both ions and particles in the space surrounding the energized subwires is taken into consideration. The method used is based on numerically solving the main set of equations, defining the ionized field surrounding the subwires of the bundle wire⬚duct electrostatic precipitators (BWDEP) with the presence of dust particles. This method predicts the electrical performance in the BWDEP irrespective of the number of subwires per bundle. The corona onset voltage around the periphery of each subwire of the bundled discharge electrodes of the duct electrostatic precipitators is determined. It changes from point to point at the subwire surface. The effects of different numbers of subwires per bundled electrode, as well as the subwires arrangement, on the electrical performance of the BWDEP are also reported and discussed in this paper. The present findings are correlated to the physics of the electrical corona discharge.

Keywords:

  NULL

Published In:

(32)
Transient Behavior and Design for On-Load Tap Transformer Loaded with Capacitive and Inductive Loads

G. Girges S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(33)
Finite Element Thermal Analysis of Closely Spaced Underground Power Cables

K. G. Mahmoud and S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(34)
Simple and Fast Method for Calculating Saturated Monopolar Corona profiles Underneath HVDC Lines

H. Singer S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(35)
Induced Currents and Voltages of Isolated Object Underneath HVDC Transmission Lines with Bundle Conductors

S. Abdel-Sattar

Abstract:

In this paper, the author suggests two methods for calculating the induced currents and voltages of an isolated object located underneath or near an energized HVDC transmission line with bundle conductors irrespective of the geometry of the object. The lateral distribution of such induced currents and voltages of isolated objects situated underneath or near energized transmission lines with bundle conductors is calculated by using a simple method based on the equivalent area of such an object.

Keywords:

NULL

Published In:

(36)
Losses Charts for Determination of Power Transformer Energy Losses

S. Abdel-Sattar M. Farghally

Abstract:

NULL

Keywords:

NULL

Published In:

(37)
Fast Estimation of the Electrical Profiles at Ground Surface and Underneath HVDC Lines

H. Singer S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(38)
Electric Field Calculation on Six phase Overhead Transmission Lines.

S. Abdel-Sattar A. Ibrahim

Abstract:

Six phase power transmission has many advantages over the conventional three phase techniques. It offers an improvement in space utilization, low noise levels, high reliability and reduction in corona effects. To study and analyze the corona in six phase transmission lines, the field calculations are required as a first step. The authors describe a method to calculate the electric field in the vicinity of HV six phase transmission line conductors. The electric field is calculated at any point in the space surrounding the six phase line. The lateral distribution of the field over the ground surface and underneath the conductors of six phase HV transmission lines is calculated. The effect of different gap parameters is also studied. (10 refs.)

Keywords:

NULL

Published In:

(39)
Ions Trajectory Lines Emanating form or Terminating to HVDC Transmission Lines with Bundle Conductors

S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(40)
Wire-Duct Electrostatic Precipitator Efficiency (Effect of Geometrical Parameters)

A. A. Ibrahim S. Abdel-Sattar

Abstract:

The authors present an analysis of the performance of a wire-duct electrostatic precipitator influenced by different geometrical parameters. The precipitation efficiency is determined for both the cement and steel industries considering different inlet dust weight values. The effect of both the applied voltage and the gas flow speed on the precipitation efficiency is also studied. The present findings are correlated to the physics of corona discharge.

Keywords:

NULL

Published In:

(41)
Discussion on paper No. 82 WM 1985-6, IEEE Trans., Vol. PAS-101, p. 4047, 1982

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

Abstract:

NULL

Keywords:

NULL

Published In:

(42)
Discussion on paper No. 80 SM 712- 0, IEEE Trans., Vol. PAS-100, P.2090,1981

M. Abdel-Salam and S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

IEEE Trans., Vol. PAS-100, P.2090,1981 , NULL , 2090

(43)

Digital Study Heat Flow Closely Spaced Underground Power Transmission Cables Using Simulation Technique

M. K. El-Sherbiny, M. Abdel-Salam and S. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

Published In:

(44)
DC Corona Discharge Monoplar Bundle wires

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

Abstract:

NULL

Keywords:

NULL

Published In:

(45)
Corona in Point ⬜ Plane Gaps as Influenced by a Surrounding Dielectric Enclosure

M. Abdel-Salam, S. Abdel-Sattar, A. S. Abdallah, and A. Al-Shakiri

Abstract:

The present paper is aimed at investigating experimentally the interaction between the processes taking place in the stressed gas volume of a positivety stressed point-to-plane gap and those occurring at the walls of a surrounding dielectric enclosure. The corona current-voltage characteristics and the corona current density distribution over the ground plane are investigated in the present paper with and without the presence of the dielectric enclosure. First of all, charging of the dielectric surfaces will be briefly reviewed. Secondly, the experimental setup is described. Finally, the obtained experimental results are discussed in the tight of gasdischarge physics.

Keywords:

Corona Characteristics, Space charg⬜, Dielectric Enclosure, Electric Field.

Published In:

(46)
On the Mitigation of Electromagnetic Pollution in Buildings

S. Abdel-Sattar,

Abstract:

The primary concern with any source of electricity is the fact that electromagnetic fields (EMF) are naturally emitted as a consequence of the transmission, distribution and use of electricity. While the electric fields are relatively easy to block, the magnetic fields are difficult to block and can cause some problems including human biological effect. Since electromagnetic field is present wherever electricity is used, there is a level of EMF in any building due to multiple sources of electromagnetic fields. These sources include the structure's electrical distribution systems, lights, transformers, electric fans, copiers, underground wires, ground-mounted transformers, common sources within the home etc. Also the nearby high voltage power lines are considered one of the EMF sources. This makes the ambient level of indoor electromagnetic pollution exceeds the tolerable limits. To reduce indoor electromagnetic pollution, different electromagnetic fields mitigation methods could be used. Different mitigation methods are summarized in this paper. The cancellation method by using the correct indoor electrical wiring is discussed in this paper. The use of metal tubes as well as conduits for wires is considered, in this paper, as a way of electromagnetic fields mitigation. The effect of material shielding on the indoor electromagnetic pollution is discussed also in this paper.

Keywords:

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نحو بحث علمي لعصر العلم والتكنولوجيا (رؤية ميدانية)

صلاح الدين عبد الستار محمد

Abstract:

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Keywords:

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(48)
Electromagnetic Pollution and its Mitigation

Abdel-Sattar

Abstract:

The primary concern with any source of electricity is the fact that electromagnetic fields are naturallyemitted as a consequence of the transmission, distribution and use of electricity. While the electric fields are relatively easy to block, the magnetic fields are difficult to block and can cause some problems including human biological effect. Since electromagnetic field is present wherever electricity is used, there is a level of EMF in any building due to multiple sources of electromagnetic fields. These sources include the structure's electrical distribution systems, lights, transformers, electric fans, copiers, underground wires, ground-mounted transformers, common sources within the home and work places etc. Also the nearby high voltage power lines are considered one of the EMF sources. This makes the ambient level of indoor electromagnetic pollution exceeds the tolerable limits. To reduce indoor electromagnetic pollution, different electromagnetic fields mitigation methods could be used. Different mitigation methods are summarized in this paper. The cancellation method by using the correct indoor electrical wiring is discussed in this paper. The using of metal tubes as wall conduits for wires is considered, in this paper, a way of electromagnetic fields mitigation. The effect of material shielding on the indoor electromagnetic pollution is discussed also in this paper.

Keywords:

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Our Use of Electric Power Could be Injurious to our Health

S. Abdel-Sattar

Abstract:

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Keywords:

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(50)
review of modern references to resolve the issue of electrical energy use impact on electromagnetic pollution around us

S.Abdel-Sattar and Kamel A. Shoush

Abstract:

Electric power is the most common source of power all over the world because it is easily to be generated and transmitted to where it is used. As electricity moves through wires, technical instruments, appliances and equipment, it produces two types of fields, an electric (EFs) and magnetic (MFs) fields, which together are called an electromagnetic fields (EMFs). The EFs result from the strength of the voltage and it is easy to be shielded while the MFs are proportional to the current and it is difficult to be shielded. It is impossible to generate, transmit, distribute and use electrical energy without creating EMFs[1]. The power networks of any country consist of electrical generation, transmission and distribution facilities. Once electricity is delivered to the user, it continues to produce EMF throughout the wiring systems of offices, homes, schools, factories and other structures depending on the load. The appliances and electrical equipment - connected to these wiring systems - produce also their own EMFs[1-2]. In workplaces, the sources of EMFs include computers, laboratory devices, cell phones, fax machines, copy machines, fluorescent lights, printers, scanners, telephone switching systems, electrical instruments, motors and other electrical devices. In homes, sources of EMF include electric blankets, electric water heaters, hairdryers, electric shavers, television sets, stereo systems, air conditioners, fluorescent lights, electric can openers, telephone answering machines, cell and portable phones, refrigerators, blenders, portable heaters, clothes washers and dryers, coffee makers, vacuum cleaners, toasters, and microwave ovens[1-2]. The EMF sources are rapidly growing - as technology grows - that make the problem of EMF pollution be more complicated and more dangerous. This environmental terrorism around us is very difficult for one to be aware of its presence because one can not see it, can not smell it, can not taste it, or can not touch it. Considering that, it is important to understand what causes EMF pollution and what to look for in our everyday tour. Current literatures evidence directly associates EMF due to the use of electricity - with a lot of diseases starting with headache and ending by cancers. The review of different research results shows that the EMFs exposure should be considered as a possible human carcinogen. On the other hand, some researchers - based on a consistency in epidemiological studies associate between residence near power lines and the higher risk of leukaemia in children. This means that although the exposure to EMFs may cause cancer but it can not be excluded that it cause cancers[1-23]. In conclusion, the electromagnetic fields around us that radiated from different sources have environmental effects and hazards of various dangers on human beings, animals and plants[1-23], therefore, it is important to assess the values of the electric and magnetic fields in our environments and check against the permissible safety standards limits. The degree of electromagnetic pollution is required to be defined and then the category of the air quality in our environments will be specified. Literatures[3-16] shows also that childhood cancer might be associated with exposures to residential and occupational power-frequency extremely low frequency fields(ELFs). Numerous studies in many countries have been undertaken of possible increased cancer risks in children and adults from EMF exposures. Special attention has focused on leukemia and on brain tumours, which early reports had suggested might be increased. It has been concluded that ELFs are possibly carcinogenic to humans, based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia. Some epidemiological studies[1-23] has suggested that a link may exist between exposure to power-frequency EMFs and certain types of cancer. Other studies have found no such link. Laboratory researchers are studying how such an association is biologically possible. Several studies[17-20] have reported increased cancer risks for jobs involving work around electrical equipment. At this point, there is no scientific consensus about EMFs issue except a general agreement that better information, more data and more studies are needed. More effort, data and studies are also required to resolve the issue of the power-frequency EMF levels of exposure which are safe or unsafe. The public concern is sustained by uneven reporting on this issue by the mass media, by the inability of scientists to guarantee that no risk exists, and by statements from scientists and government officials that more research is needed. The scope of this paper is limited to review the modern references of the significant developments in the electromagnetic pollution due to the use of electricity. This paper also covers modern references available in journals, proceedings and reports. The authors have tried to select publications which - in their viewpoint - make a useful contribution to resolve the issue of electromagnetic energy use impact on electromagnetic pollution around us and its effects on public health.

Keywords:

NULL

Published In:

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(51)
Effect of magnetic field on the friction and wear caused by the scratch of high density polyethylene

S.Abdel-Sattar et. al.

Abstract:

The present work discusses the friction and wear of polyethylene as bearing materials scratched by steel insert in the presence of magnetic field. Tests were carried out at dry and oil lubricated surfaces. Paraffin, fenugreek, camphor, cress and Habet El-Baraka oils were used as lubricants. The friction coefficient and wear of the tested composites were investigated using a tribometer designed and manufactured for that purpose. It was found that, at dry sliding, friction coefficient displayed the highest values, where a value of 1.5 was approached. Application of magnetic field on the sliding surface caused significant friction decrease. As the intensity of the magnetic field increases, friction coefficient decreased. Wear of polyethylene increased with increasing applied load, and significantly increased under the application of the magnetic field. Lubricating the sliding surface by paraffin oil significantly decreased friction coefficient, while magnetic field significantly decreased friction and increased wear. Friction coefficient displayed by fenugreek oil represented relatively higher values indicating the weak lubricating properties of that oil. As the magnetic field was applied, friction coefficient decreased. Wear in the presence of magnetic field significantly decreased. Camphor oil displayed relatively lower friction and wear values than that observed for fenugreek oil. Application of magnetic field on the sliding surface caused significant friction and wear reduction. Besides, friction coefficient and wear displayed by cress oil decreased as a result of the magnetic field. Finally, Habit El-Baraka oil displayed the lowest values of friction coefficient among the tested oils. The wear resistance observed was quite good.

Keywords:

Magnetic field , oil polarity , scratch, friction coefficient, wear, polyethylene.

Published In:

(52)
Human Exposure to Electromagnetic Fields Radiated from High Voltage Transmission Lines

s. Abdel-Sattar

Abstract:

إن استخدام المعدات والأجهزة الكهربائية بالمنازل والمعامل والمختبرات والمكاتب وآافة أماآن العمل التى تشع مجالات آهرومغناطيسية يؤدي الى ارتفاع درجة التلوث الكهرومغناطيسي بتلك الأماآن مما يجعل مستخدميها أآثر تعرضا لتلك المجالات وبقيم عالية ولفترات ليست بالقصيرة مما يؤثر سلبا علي صحتهم. آما أن التوصيلات الكهربائية المنفذة بطريقة غير سليمة بالمنشآت المختلفة يصاحبها أيضا زيادة في قيمة المجالات الكهرومغناطيسية المنبعثة مما يؤدي الي ارتفاع درجة التلوث الكهرومغناطيسي واتساع مناطق التلوث. ومن ناحية أخري فإن النمو المتزايد للمدن والمجتمعات أدى إلى ظهور مجتمعات جديدة والي الزحف تجاه خطوط نقل وتوزيع الطاقة الكهربائية فأصبحت المبانى التجارية والسكنية والحدائق والمنتزهات والملاعب قريبة جدا من تلك الخطوط الكهربائية التى تشع مجالات آهرومغناطيسية التى قد تترك أثرا صحيا سيئا لمتعرضيها. فى هذه الورقة يتم إلقاء الضوء علي مشكلة التعرض للمجالات الكهرومغناطيسية بالوسط المحيط متضمنا عرض تأثير التعرض لتلك المجالات بالمناطق الملوثة آهرومغناطيسيا علي صحة الإنسان وآذلك أهم مصادر بالوسط المحيط بنا ملوثات البيئة آهرومغناطيسيا. آما يتم دراسة ومناقشة النتائج التي تم الحصول عليها بإجراء بعض القياسات لقيم المجالات المغناطيسية المنبعثة من مصادر التلوث الكهرومغناطيسي بالوسط المحيط بنا لتقنين وتحديد درجة التلوث. آما يتم مقارنة النتائج بالمناطق الملوثة آهرومغناطيسيا بالقيم المرجعية للمجال المغناطيسي المسموح بها حتى يمكن تقييمها ومعرفة ما إذا آانت قيما آمنة للإقامة والعمل الدائمين أم غير آمنة. آما يتم وضع بعض الاقتراحات والتوصيات التى تتعلق بالتصدى لهذه الظاهرة والتى تخص التلوث الكهرومغناطيسي الناتج من استخدامنا للكهرباء

Keywords:

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(53)

The Quality of Engineering Education to Meet the Requirements of the Labor market as Perceived by Graduates جودة التعليم الهندسي لتلبية متطلبات سوق العمل كما يراها الخريجون

S. Abdel-Sattar, et al.

Abstract:

The University has an important role in society in three main axes; education, scientific research and community services where the progress of nations is measured with its strength, the degree of preparation, and kept abreast of the requirements of the times. Because of the fact that the university is made up - at the end - of study plans and programs and also in order to overcome to compete with graduates locally, regionally and internationally, the most important functions of the university as a whole and departments in particular are the preparation of strong plans and study programs for all disciplines and it also works to update and continually developed to keep pace with the requirements of both the labor market and academic accreditation, as well as the requirements of the time. Therefore, and from the points of, standards setting and development of plans and study program of Electrical Engineering Department it is considered the electric power engineering as a case study and research to reach the conclusion concerning the status of the plan and the study program of this specialty, and then it can be used for the preparation, development or update any similar study program. The design of engineering education programs to ensure that an appropriate mechanism to provide the manpower of the output of this type of education required by the labor market with adequate standard, is necessary, and frequently, and it Can only be achieved through the study of labor market needs from the engineering disciplines and the requirements of the times and also to study the effect of each on the current engineering education programs, as well as a reflection on the training of students before and after graduation. It has been concluded in this study, a survey of opinion of the graduates of engineering education departments of Electrical Power Engineering allocated through the largest pool of Engineers Web site, which includes tens of thousands of engineers. They are graduated from various programs from various universities, which also led to a compilation of many of the opinions, ideas and visions that have influenced the subject. This also contributed significantly to give a true and realistic of the appropriateness of the program of engineering education to allocate electric power engineering for both of the labor market requirements and the requirements of the times. The study also concluded to a vision of what should be the education program allocates a strong electrical engineering, which looks to it concerned so as to reduce the gap between the state of graduate engineering education on the one hand and the requirements of the labor market on the other. It was also studied in this work, the relevance of engineering education program to allocate electric power engineering for both of the labor market requirements and the requirements of the times. It has also been reached in this study to confirm the role of cross between the institutions of engineering education and labor market institutions, by including study plans for the disciplines of engineering education to ensure the rehabilitation outcomes of engineering education to meet the needs and requirements of the practice of the profession and meet the requirements of current and future development, and also to make the graduate is not qualified only but competitor in the labor market in the era of globalization. At the same time this study led to lay the foundations for the development of study plans for engineering education to be compatible with the requirements of the times. According to the feedback from the fields of employment it has been reached to develop the structure of the proposed plan for the degree of Bachelor of Electric Power Engineering including the graduation requirements for the proposed program for the degree of Bachelor of Electrical Power and the distribution of these requirements on both, theoretical and practical parts. It has been introduced some important recommendations, which related to engineering education and its relationship with all of the requirements of the labor market and the requirements of the times. And also about the future of the relationship and partnership between the institutions of engineering education on the one hand, and labor market institutions on the other hand to produce a new generation of engineers and try to bridge the gap between today and the level of graduate level required by the labor market. There are also some recommendations that serve the raise the level of performance prong practical engineering education, whether during or after graduation.

Keywords:

NULL

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Journal of Alamelgawda, Electronic Journal, Egypt, No. 3, 2011 , NULL , NULL

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(54)

Engineering Education and Labor Market Requirements التعليم الهندسي ومتطلبات سوق العمل

S. Abdel-Sattar

Abstract:

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Keywords:

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(55)
Codify the Values of Magnetic Fields near Sources of Electromagnetic Pollution مصادر من بالقرب المغناطيسية المجالات قيم تقنين التلوث الكهرومغناطيسي

S. Abdel-Sattar

Abstract:

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Keywords:

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(56)
Human Exposure to Electromagnetic Fields Emitted from the Transmission Line with a High Voltage تعرض الإنسان للمجالات الكهرومغناطيسية المنبعثة من خطوط النقل ذات الجهد العالي

S. Abdel-Sattar, et al.

Abstract:

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Keywords:

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(57)
Effect of Magnetic Field on Friction Coefficient Displayed by Rolling Bearings

Abdel-Sattar S., Alahmady A. and Ali W. Y.

Abstract:

The effect of magnetic field and electric current on the friction coefficient displayed by rolling bearing greased by lithium grease dispersed by solid lubricants such as graphite, molybdenum disulphide, talc and polymeric particles is investigated. It was shown that the magnetic field had no effect on friction coefficient observed for lithium grease without additives. Addition of talc showed significant increase in friction coefficient. This increase was influenced by magnetic field. No significant effect on friction coefficient was observed for grease dispersed by molybdenum disulphide. Generally molybdenum disulphide displayed relatively lower friction coefficient than graphite and talc. Copper particles dispersed in grease displayed the lowest friction values. Friction coefficient displayed by grease significantly decreased with increasing electric voltage due to decrease of grease viscosity as the voltage increased. In the presence of graphite and talc, friction coefficient increased up to maximum then decreased with increasing voltage. Slight friction increase was observed for grease dispersed by copper. The lowest friction coefficient was displayed by molybdenum disulphide dispersing grease. The highest friction coefficient was displayed by grease dispersed by graphite and talc, while the lowest friction was shown for molybdenum disulphide dispersing grease. Grease dispersed by high density polyethylene showed friction decrease. The lowest friction reduction was observed for polymethyl methacrylate. The strong adhesion of polytetrafluroethylene particles into the sliding surfaces significantly increased friction coefficient. It seems that polytetrafluroethylene particles were adhered to surfaces of inner and outer races as well as the balls. Changing the terminal of the voltage applied to the rotating shaft cased significant friction decrease for polymethyl methacrylate. Viscosity of the grease decreased with increasing the voltage. Friction coefficient decreased for high density polyethylene and polytetrafluroethylene. The lowest friction values were observed at 6 volts which indicated that increasing voltage across the sliding surface could significantly decrease friction coefficient.

Keywords:

Published In:

(58)
On the Design of Program and Curriculum for Biomedical Engineering to Support the Quality of Higher Education تصميم نحو
برنامج وخطة دراسية لتخصص الهندسة الطبية الحيوية دعما لجودة التعليم العالي

Abdel-Sattar S., Shoush K. A.

Abstract:

Some estimate that what is happening now from the technological revolutions, scientific and medical than all that has happened in human history as a whole. The developments, especially the technological revolution, technical and entailed the development of instruments and equipment, medical diagnostic, therapeutic and restorative to the human body and the large number of patients, requires radical changes in treatment policies which led to the twinning of Engineering Sciences and Biomedical Sciences vantage about the so-called educational institutions university of Biomedical Engineering. The Biomedical Engineering of the most important requirements of the technical and human development, where a generation of graduate manpower as assistants to doctors and medical institutions, engineering and other labor market institutions. The design of programs of higher education specialty medical engineering vital to ensure the existence of an appropriate mechanism to provide the manpower of the output from this type of education required by the labor market, the level of decent, it is necessary and frequently, can only be achieved by examining all of the needs of the labor market disciplines Biomedical Engineering and the requirements of professional skills and study the effect of each on the education programs of Biomedical Engineering, as well as the current reflection on the training of students before and after graduation. In this study, the requirements of the labor market study of graduates of higher education specialization Biomedical Engineering to reach the extent of need for this type of graduates and thus open the Department of Biomedical Engineering. It is studied also design courses for specialization of Biomedical Engineering and its plan of study and emphasize the link between the content of this program on the one hand and the needs of the labor market of a strong human being, and that bridge the gap between the outputs of this type of education and labor market requirements as a requirement of the requirements of current and future development, and become outputs specialization of Biomedical Engineering is qualified and able to compete n the arena of the labor market in this day and age. As the foundation for a design specialization of Biomedical Engineering that is tailored to the requirements of the labor market and that meets the needs of technological progress and contributes significantly to support the quality of higher education.

Keywords:

NULL

Published In:

(59)

Human Exposure to Electromagnetic Fields Radiated from High Voltage Transmission Lines تعرض الإنسان للمجالات الكهرومغناطيسية المنبعثة من خطوط النقل ذات الجهد العالي

Abdel-Sattar S.

Abstract:

إن استخدام المعدات والأجهزة الكهربائية بالمنازل والمعامل والمختبرات والمكاتب وكافة أماكن العمل التى تشع مجالات كهرومغناطيسية يؤدي الى ارتفاع درجة التلوث الكهرومغناطيسي بتلك الأماكن مما يجعل مستخدميها أكثر تعرضا لتلك المجالات وبقيم عالية ولفترات ليست بالقصيرة مما يؤثر سلبا على صحتهم. كما أن التوصيلات الكهربائية المنفذة بطريقة غير سليمة بالمنشآت المختلفة يصاحبها أيضا زيادة في قيمة المجالات الكهرومغناطيسية المنبعثة مما يؤدي الى ارتفاع درجة التلوث الكهرومغناطيسي واتساع مناطق التلوث. ومن ناحية أخرى فإن النمو المتزايد للمدن والمجتمعات أدى إلى ظهور مجتمعات جديدة والزحف تجاه خطوط نقل وتوزيع الطاقة الكهربائية فأصبحت أماكن الإعاشة قريبة جدا من تلك الخطوط الكهربائية التى تشع مجالات كهرومغناطيسية التى قد تترك أثرا صحيا سيئا لمتعرضيها. فى هذه الورقة يتم إلقاء الضؤ على مشكلة التعرض للمجالات الكهرومغناطيسية بالوسط المحيط متضمنا عرض تأثير التعرض لتلك المجالات بالمناطق الملوثة كهرومغناطيسيا على صحة الإنسان وكذلك أهم مصادر بالوسط المحيط بنا ملوثات البيئة كهرومغناطيسيا. كما يتم دراسة ومناقشة النتائج التى تم الحصول عليها بإجراء بعض القياسات لقيم المجالات المغناطيسية المنبعثة من مصادر التلوث الكهرومغناطيسي بالوسط المحيط بنا لتقنين وتحديد درجة التلوث. كما يتم مقارنة لنتائج المناطق الملوثة كهرومغناطيسيا بالقيم المرجعية للمجال المغناطيسى المسموح بها حتى يمكن تقييمها ومعرفة ما إذا كانت قيما آمنة للإقامة والعمل الدائمين أم غير آمنة. كما يتم وضع بعض الاقتراحات والتوصيات التى تتعلق بالتصدى لهذه الظاهرة والتى تخص التلوث الكهرومغناطيسي الناتج من استخدامنا للكهرباء.

Keywords:

NULL

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(60)
Influence of Magnetic Field on the Sliding of Steel Against Lubricated Polyamide

Zaini H., Alahmady A., Abdel-Sattar S., and Ali W. Y.

Abstract:

The present work investigates the influence of magnetic field on the friction coefficient displayed by sliding of steel pin on polyamide disc lubricated by paraffin oil and dispersed by different lubricant additives such as zinc dialkyldithiophosphates (ZDDP), molybdenum disulphide (MoS2), heteropolar organic based additive (CMOC), graphite (C), detergent additive (calcium sulphonate) (DA), polytetrafluroethylene (PTFE) and polymethyl methacrylate (PMMA). Based on the experiments carried out in the present work, it was found that, at surfaces lubricated by paraffinic molecules friction coefficient decreased with increasing applied load. As the magnetic field increased friction coefficient increased. When the oil was dispersed by ZDDP additive significant decrease of friction was observed. The performance of ZDDP additive was not affected by application of the magnetic field. Dispersing Mo S2 or C in the lubricating oil caused significant friction increase. The effect of magnetic field on performance of MoS2 was insignificant, while magnetic field caused slight friction reduction in the presence of C. Magnetic field decreased friction coefficient when the oil was dispersed by CMOC. Under the action of magnetic field the force of adhesion significantly increased causing proper surface coating which caused the friction decrease. Oil dispersed by calcium sulphonate showed significant friction decrease due to the polarity of its molecules. Application of magnetic field caused further friction decrease. As a result of the quite good response of DA additive with magnetic field based on the values of friction coefficient observed for the oil dispersed by DA additive, it can be recommended to use this additive when magnetic field is applied. The good lubricating properties observed for PTFE additive can be from its ability to form a layer on the sliding surfaces. PTFE particles dispersed in the oil were much influenced by magnetic field, where the lowest value was displayed at the highest intensity of magnetic field. The same trend of friction decrease was observed for PMMA particles dispersed in oil.

Keywords:

Published In:

(61)
On The Tribological Studies As Influenced By Magnetic Field

Abdel-Sattar S., Ali W. Y. and Alahmadi A.

Abstract:

The present work discusses the friction and wear of polyethylene as bearing materials scratched by steel insert in the presence of magnetic field. Tests were carried out at dry and oil lubricated surfaces. Paraffin, fenugreek, camphor, cress and Habet El-Baraka oils were used as lubricants. The friction coefficient and wear of the tested composites were nvestigated using a tribometer designed and manufactured for that purpose. It was found that, at dry sliding, friction coefficient displayed the highest values, where a value of 1.5 was approached. Application of magnetic field on the sliding surface caused significant friction decrease. As the intensity of the magnetic field increases, friction coefficient decreased. Wear of polyethylene increased with increasing applied load, and significantly increased under the application of the magnetic field. Lubricating the sliding surface by paraffin oil significantly decreased friction coefficient, while magnetic field significantly decreased friction and increased wear. Friction coefficient displayed by fenugreek oil represented relatively higher values indicating the weak lubricating properties of that oil. As the magnetic field was applied, friction coefficient decreased. Wear in the presence of magnetic field significantly decreased. Camphor oil displayed relatively lower friction and wear values than that observed for fenugreek oil. Application of magnetic field on the sliding surface caused significant friction and wear reduction. Besides, friction coefficient and wear displayed by cress oil decreased as a result of the magnetic field. Finally, Habit El-Baraka oil displayed the lowest values of friction coefficient among the tested oils. The wear resistance observed was quite good.

Keywords:

Published In:

(62)
Temperature Distribution Around HV Power Cables as Influenced by Different Parameters Using Finite Elements Method

s. Abdel-Sattar

Abstract:

NULL

Keywords:

NULL

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(63)
Successive Imaging Techinque for Field Distribution Around Conductors Above a Two-Layaer Earth

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

Abstract:

The present work aims at developing a method for assessing the electric field around a charged conductor positioned in air (of zero conductivity) at a given height above a two-layer earth. The method is based on the successive imaging technique. With the knowledge of the image charges, the electric field in air and earth are assessed. An electrolytic-tank model was constructed to simulate a line conductor above a two-layer earth. The measured electric fields agreed with those calculated for one and two-layer earth models.

Keywords:

NULLSuccessive imaging technique for field distribution around conductors above a two-layer earth

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(64)
Early Detection of Weak Points in MEEC Distribution System

M. Abdel-Salam and S. Abdel-Sattar, Y. Sayed and M. Ghaly

Abstract:

This 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 loose-connection arcing. In this case, recording of acoustic signals was found to be a useful tool for such discrimination.

Keywords:

Insulation , Conductors , Hardware , Pollution measurement , Ultrasonic variables measurement , Ultrasonic imaging , Laboratories , Acoustic testing , Corona , Pediatrics

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(65)
Power Frequency Electromagnetic Pollution (Review Paper)

S. Abdel-Sattar

Abstract:

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Keywords:

NULL

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(66)

الزحف العمراني والتلوث الكهرومغناطيسي بالمباني القريبة من خطوط الجهد العالي بمدينة أسيوط بجمهورية مصر العربية

S. Abdel-Sattar

Abstract:

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Keywords:

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التوسع العمراني والتلوث الكهرومغناطيسي في المباني

S. Abdel-Sattr

Abstract:

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التليفون المحمول والتلوث الكهرومغناطيسي

S. Abdel-Sattar

Abstract:

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(69)
Indoor Electromagnetic Pollution

S. Abdel-Sattar

Abstract:

with growing coneern being expressed that exposure t0 electromagnetic fields (EMFs) may cause various health effects, everyone in the world is subjected to EMFs from man made sources. The indoor EMFs pollution is created by using electricity by means of many indoor EMF sources. The nearby outdoor EMF sources play also a great part on determining the degree of indoor EMFs pollution. The indoor electrical wiring is considered the main source of indoor EMF pollution.

Keywords:

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(70)
Electronic Engineering Education

s. Abdel-Sattar

Abstract:

التعليم الإلكتروني هو أحد الوسائل التعليمية التي يمكن استخدامها لإتاحة التعليم والتدريب والتعليم المستمر للدارسين والمهتمين بمجال معين خاصة من هم خارج دور العلم دون التقيد بالمكان والزمان. والجدير بالذكر أن عصرنا هذا عاصر ويعاصر تقدما كبيرا ومتناميا في الأجهزة والمعدات التقنية وفي تكنولوجيا الاتصالات والمعلومات وعلي قمة ذلك شبكة الإنترنت. ولقد اتجهت المؤسسات التعليمية ــ مثلها مثل باقي المؤسسات ــ إلي استثمار هذا التقدم واستخدامه كوسيلة تعليمية سواء داخل حجرة الدراسة أو خارجها والسعي إلي اعتماد التعليم الالكتروني كتعليم متكامل علاوة علي السعي في استخدامه في التدريب والتعليم المستمر. تهدف هذه الورقة إلى إلقاء الضوء على التعليم الإلكتروني عامة ، ومدي استخدامه في التعليم الهندسي والتدريب والتعليم المستمر حيث تستعرض مقدمة عن التعليم الالكتروني , ما هو, ما أنواعه, ما هي متطلباته وتقنياته, ما هي أهمية ومعوقات استخدامه، وكيف يمكن توظيفه في التعليم الهندسي.

Keywords:

NULL

Published In:

(71)
Finite Element Solution of Monopolar Corona Equations

S. Abdel-Sattar

Abstract:

In this paper, the monopolar corona equation is solved using a modified finite element method (FEM) to give the corona current caused by overhea dc transmission lines without using the commonly-used Deutsch's assumption The method is free from empiricism and entails implicitly a decrease of thsurface field intensity of the conductor with the applied voltage in the same manner as observed experimentally. This in itself represents an additional improvement for the analysis of ionized field where the approximation pertinent to the assumption of constant surface field intensity is mitigated. The calculated corona current as well as the current density at the ground plane agreed with those measured experimentally for a laboratory model

Keywords:

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(72)
On the Environmental Impact of HVDC Transmission Lines

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

Abstract:

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Keywords:

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Published In:

(73)
Losses Chafts for Determination of Power Transformer Energy Losses

M. Farghally and S. Abdel-Sattar

Abstract:

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Keywords:

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(74)
Corona on Thin wires as Influenced by wind

M. Abdel-Salam, S. Abdel-Sattar, H. Abdellah and M. Farghally

Abstract:

NULLOn the basis of the experimental analysis presented, the following conclusions may be drawn about the effect of wind on positive corona on thin wires: 1. As the applied voltage is increased, the following modes of corona are noticed on thin wires; a) burst pulses b) glow c) sparkover. 2. For thin wires, there is a critical voltage (transition voltage) at which a dc component with high frequency ripples has been observed. 3. The transition voltage confirms the inception of glow. Such a glow was termed previously ⬛ultracorona⬛. 4. The transition voltage depends not only on the wire radius but also on gap spacing. 5. For thin wires, wind decreases the transition voltage. 6. The average repetition rate of the ac component increases with the applied voltage and decreases with wind. 7. The profile of the current distribution at the ground plane changes its shape with wind. Its peak increases in value and shifts in position downstream with wind. The wind effect on current distribution profiles increases as the applied voltage decreases

Keywords:

NULLWires, Corona, Current density, Wind speed ,Strip

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(75)
Corona Current form a Needle as Influenced by Transverse Wind

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

Abstract:

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Keywords:

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(76)
Effect of Wind on Corona Current Over the Ground Plane Underneath Monopolar System with Bundle Wires

S. Abdel-Sattar

Abstract:

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(77)

An Accurate Calculation and Method of Reduction of Energy Losses of Power Transformer Along its Life Time

M. K. El-Sherbiny, M. Farghally S. Abdel-Sattar, and G. Girgis

Abstract:

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Keywords:

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(78)
Effect of Environment and Geometry on Maximum Current Carrying Capacity and Method of Improving

S. Abdel-Sattar, M. K. El-Sherbiny, and M. Abdel-Salam

Abstract:

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(79)
Induced Currents and Voltage of Isolated Objects Underneath HVDC Transmission Lines with Bundle Conductors

S. Abdel-Sattar

Abstract:

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Keywords:

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(80)
Effect of Geometric Parameters on the Corona Profiles Underneath Vertical Bipolar HVDC Line with Bundle Conductors

S. Abdel-Sattar

Abstract:

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(81)
Optimization HVDC Transmission Line Geometrries by Minimizing their Corona Profiles at Ground Surface

M. Abdel-Salam, S. Abdel-Sattar

Abstract:

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Proceedings of the Seventeenth Annual Midwest Power Symposium, IEEE Power Engineering Society, Houghton, USA, Oct. 3-4,1985. , NULL , NULL

(82)
Corona Current and Field Profile Underneath Vertical Bipolar HVDC Line with Bundle Conductors

S. Abdel-Sattar

Abstract:

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(83)
Positive Corona Pulse Repetition Rate on Bundle. W'ffes

A. Ibrahim, and S. Abdel-Sattar

Abstract:

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