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Semarang, October 16th, 2015

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Morphological study of epoxy resin after electrical tracking (Conference Paper)

Syakur, A. ✉, Juningtijastuti ✉

Department of Electrical Engineering, Diponegoro University, Jln. Prof. Soedarto SH, Semarang, Indonesia

Abstract

View references (12)

Currently, epoxy resin has been developing as outdoor insulator replace ceramic and glass insulator, because epoxy resin has some dielectric properties better than the ceramic, glass and porcelain material. When epoxy resin was used as outdoor insulator, some factors affecting performance of epoxy resin insulators are like rain, humidity, ultraviolet rays, condensation and contaminant. To improve the surface properties of epoxy resin, then silicon rubber material that has the ability to repel water were added and silica sand was mixed with silicone rubber to improve the mechanical properties. When contaminant flows at the insulator surface, they can cause damage to the surface of the insulator and it was formed tracking on insulator surface and finally cause flashover. © 2015 IEEE.

SciVal Topic Prominence

Topic: Silicones | Insulating materials | Polymeric insulators

Prominence percentile: 90.851

Author keywords

contaminant | epoxy resin | Insulator | leakage current

Indexed keywords

Engineering controlled terms: Ceramic materials | Dielectric properties | Glass | Green computing | Impurities | Insulating materials | Leakage currents | Rubber | Silica | Silica sand | Silicon rubber | Silicone rubber

Engineering uncontrolled terms: Epoxy resin insulators | Glass insulators | Insulator | Insulator surfaces | Morphological study | Outdoor insulators | Silicon rubber materials | Ultraviolet rays

Engineering main heading: Epoxy resins

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October 16 - 18th, 2015

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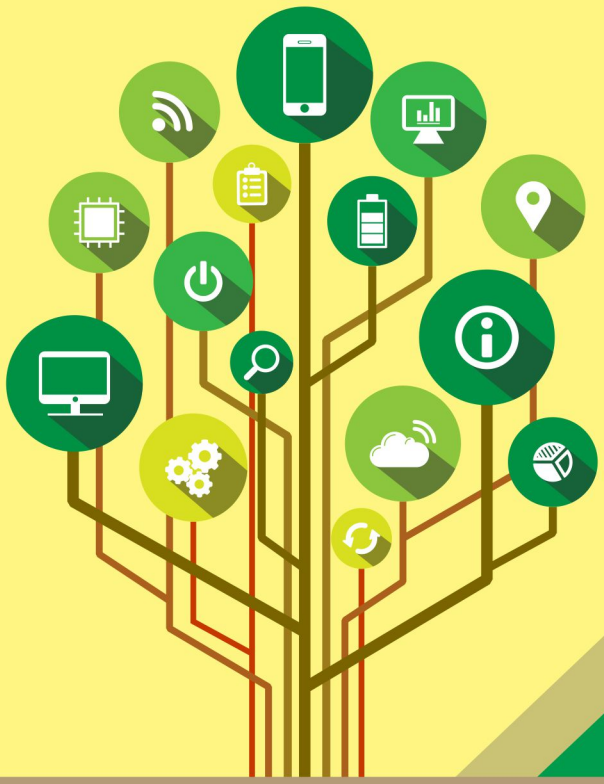

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2015 2nd International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE)

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Novel device architectures and carbon based materials for future nanoelectronics

Publisher: IEEE

1 Author(s) Razali Ismail View All Authors

Abstract: The Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET) constitutes the backbone of today's microelectronics industry. MOSFETs are the building blocks of very-larg... **View more**

Metadata

Abstract:
The Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET) constitutes the backbone of today's microelectronics industry. MOSFETs are the building blocks of very-large-scale-integrated (VLSI) circuits in microprocessors, memory chips and telecommunications microcircuits. A modern microprocessor can contain more than 2 billion MOSFETs. MOSFETs are mainly used as switches in logic microcircuits. To a large extent, the success of modern microelectronics is based on the continuous miniaturization or scaling of silicon MOSFET, which makes them smaller, faster, and cheaper. Over the past few decades, the miniaturization in silicon integrated circuits (IC's) has been well characterized and envisioned by Moore's Law, which predicted that the numbers of transistors on a chip will double every 18 to 24 months. So far, Moore's Law has been a useful way of describing the progress of ICs and the number of transistors fitted into each generation of processors. However, physical and performance limitations are encountered with the continuous downscaling of the transistor into the nanometer regime which motivates the semiconductor industry to explore alternative device technologies. Novel device architectures and materials are to be investigated in order to continue to increase the speed and scalability of MOSFET devices. This will lead to a new paradigm for future nanoelectronic device design. In conjunction, the International Roadmap of Semiconductor (ITRS) pointed out that one of the primary challenges that the industry has identified is how to decrease the size of semiconductors while increasing the performance standard to meet consumer demands

with the hope of maintaining the Moore's exponential growth. Hence `Beyond Moore' plan is introduced to identify alternatives to the conventional MOSFET transistor. This plan includes new device designs such as the vertical MOSFET, dual-gate FET and FinFET as an alternative to the existing planar transistor. In addition, it is also r...

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DOI: 10.1109/ICITACEE.2015.7437758

Publisher: IEEE

Conference Location: Semarang, Indonesia

Razali Ismail
Cambridge University, U.K.

Contents

Brief Biography

Razali Ismail received the B.Sc. and M.Sc. degrees in Electrical and Electronic Engineering from the University of Nottingham, Nottingham, U.K. in 1980 and 1983 respectively and the Ph.D. degree from Cambridge University, Cambridge, U.K., in 1989.

Authors

Razali Ismail
Cambridge University, U.K.

Keywords

Metrics

Distributed consensus control of robot swarm with obstacle and collision avoidance

Publisher: IEEE

1 Author(s) Bambang Riyanto Trilaksono View All Authors

Abstract: Summary form only given. Research on multi-robot system is receiving a great deal of attention in recent years. Multi-robot system has many advantages over a single robot... **View more**

Metadata

Abstract:
Summary form only given. Research on multi-robot system is receiving a great deal of attention in recent years. Multi-robot system has many advantages over a single robot in certain missions, such as reducing complexity, availability of redundancy, and reconfiguration capabilities. Using coordination scheme in multiple mobile robots allows them to complete tasks with higher complexity. The ability of each robot does not have to be very complete, since each robot can focus on a particular task. Therefore, in some cases, multiple robots working together to complete a certain mission can be relatively cheaper and easier to implement than a single robot. One of the main concerns in the discussion of multi-robot system is formation control. Having a group of robots moving in formation allows user to control the entire group of robots without the need to specify the commands for each robot. This is very useful in many realworld applications, such as search and rescue missions, surveillance, security patrols, military missions, and transportation. Several approaches have been proposed to solve the formation control problem : behavior-based approach to formation control, leader-follower approach, and virtual structure approach. However, in most of these approaches, there exists one group leader (either actual robot or virtual leader) that acts as the central coordination of movement for the whole group. This introduces a single point massive failure problem to the system, i.e. when the leader is disturbed, the whole group will be severely affected. Therefore, we need a distributed approach to overcome this problem. One of the most popular algorithms in distributed control community is consensus algorithm. The

algorithm is originally inspired by swarming behavior found in living systems, such as flocking behavior of group of birds. Swarm behavior specifies that in a multi agent system in which each agent acts locally by following simple rules, intelligent collective behavior...

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Conference Location: Semarang, Indonesia

Bambang Riyanto Trilaksono
School of Electrical Engineering and Informatics, Bandung Institute of Technology, Indonesia

Contents

Research on multi-robot system is receiving a great deal of attention in recent years. Multi-robot system has many advantages over a single robot in certain missions, such as reducing complexity, availability of redundancy, and reconfiguration capabilities. Using coordination scheme in multiple mobile robots allows them to complete tasks with higher complexity. The ability of each robot does not have to be very complete, since each robot can focus on a particular task. Therefore, in some cases, multiple robots working together to complete a certain mission can be relatively cheaper and easier to implement than a single robot. One of the main concerns in the discussion of multi-robot system is formation control. Having a group of robots moving in formation allows user to control the entire group of robots without the need to specify the commands for each robot. This is very useful in many realworld applications, such as search and rescue missions, surveillance, security patrols, military missions, and transportation.

Authors

Bambang Riyanto Trilaksono
School of Electrical Engineering and Informatics, Bandung Institute of Technology, Indonesia

Citations

Keywords

Metrics

Morphological study of epoxy resin after electrical tracking

Publisher: IEEE

2 Author(s) Abdul Syakur ; Juningtijastuti View All Authors

Abstract: Currently, epoxy resin has been developing as outdoor insulator replace ceramic and glass insulator, because epoxy resin has some dielectric properties better than the ce... **View more**

Metadata

Abstract:
Currently, epoxy resin has been developing as outdoor insulator replace ceramic and glass insulator, because epoxy resin has some dielectric properties better than the ceramic, glass and porcelain material. When epoxy resin was used as outdoor insulator, some factors affecting performance of epoxy resin insulators are like rain, humidity, ultraviolet rays, condensation and contaminant. To improve the surface properties of epoxy resin, then silicon rubber material that has the ability to repel water were added and silica sand was mixed with silicone rubber to improve the mechanical properties. When contaminant flows at the insulator surface, they can cause damage to the surface of the insulator and it was formed tracking on insulator surface and finally cause flashover. This paper presents the morphological studies of epoxy resin sample test after electrical tracking. The tests were conducted at high voltage laboratory with 3.5 kV AC high voltage and 50 Hz. NH_4Cl contaminant was flowed on test sample surface during 6 minutes. After electrical aging was done then samples were taken using SEM devices to be analyzed of morphological condition. The research results showed that epoxy resin material with filled mixtures of silicon rubber and silica 30% (RTV23) did not experience significant damage after electrical tracking by the Inclined Plane Tracking test method.

Published in: 2015 2nd International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE)

Statistical methods' application in Comprehensive Sustainability Index and its application in regional sustainability measurement

2 Author(s) Peihao Li ; Mingjia Liu View All Authors

Abstract: In this paper, we apply efforts to explore the insights of sustainable development of states and to develop a model based on factor analysis aiming at evaluating sustaina... **View more**

Metadata

Abstract:
In this paper, we apply efforts to explore the insights of sustainable development of states and to develop a model based on factor analysis aiming at evaluating sustainability in a qualitative and quantitative method, thus distinguishing more sustainable countries which can help elaborate sustainable development plans, and evaluate the effectiveness of such plans. We use the term Comprehensive Sustainability Index (CSI) to measure sustainability and such index is determined by a linear combination of a set of indicators. Two primary challenges of establishing such sustainability model lie in the selection of indicators and determination of weights of indicators. We select 10 representative indicators coming from three aspects: social development, economic development and environmental protection. Considering it's difficult for us to figure out the insight relations among sustainability indicators, we use factor analysis to convert observations of correlated variables into values of linearly uncorrelated variables called factors thus determining the weights of indicators. In the evaluation section, we select 15 countries to form the sample-5 least developed countries, 5 developing countries and 5 developed countries. By calculating the value of CSI of each country, we find out that there are clear differences among the CSIs of the three kinds of countries. And based on such differences, we reach classification of CSI. Furthermore, we define sustainable development by comparing CSI (whether the CSI is greater than certain value). By comparing the contribution of each indicator to the CSI and the variation trend of the indicator, which is represented by the gradient of the

regression curve, we detect disadvantageous aspects of certain countries' efforts toward a more sustainable future. Based such analysis, we put forward our 20 Year Development Plan. We also conclude with concrete values of indicators that are required to be achieved.

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Conference Location: Semarang, Indonesia

Peihao Li
School of Astronautics, Northwestern Polytechnical University, Xi'an, China

Mingjia Liu
School of Software Engineering and Microelectronics, Northwestern Polytechnical University, Xi'an, China

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Authors

Peihao Li
School of Astronautics, Northwestern Polytechnical University, Xi'an, China

Mingjia Liu

School of Software Engineering and Microelectronics, Northwestern Polytechnical University, Xi'an, China

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Keywords

Metrics

A mobile Diabetes educational system for fasting Type-2 diabetics in Saudi Arabia

Publisher: IEEE

1 Author(s) Mohammed Alotaibi View All Authors

Abstract: The diagnosis and management of Diabetes is often a complicated process. The complications especially increases during the month of Ramadan wherein Muslim patients are ob... **View more**

Metadata

Abstract:
The diagnosis and management of Diabetes is often a complicated process. The complications especially increases during the month of Ramadan wherein Muslim patients are obliged to observe fasting. Recent mobile health technologies are increasingly used in improving the self-management of chronic diseases such as diabetes and several studies have proven its efficiency. Further, research has shown that increased awareness of the disease helps the diabetics to effectively manage their disease and consequently reduce the complications arising due to diabetes. In this paper, an education program for fasting diabetes patients in Kingdom of Saudi Arabia is presented. The education program makes use of an intelligent mobile diabetes management system named SAED, tailored for Type-2 diabetes patients in Kingdom of Saudi Arabia to increase the awareness of the disease amongst the patients. The aim of the education program is to empower the diabetics with relevant knowledge about disease management during the fasting period in particular and improve their awareness about the disease in general. The proposed structure of the education program is presented in this paper which will be tested and evaluated extensively in a randomized controlled trial in Saudi Arabia.

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DOI: 10.1109/ICITACEE.2015.7437793

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Conference Location: Semarang, Indonesia

Mohammed Alotaibi
Faculty of Computer Science and Information Technology, University of Tabuk, Saudi Arabia

Contents

Globally, Diabetes Mellitus is one of the most common chronic diseases. It has been estimated that approximately 382.8 million people between the ages of 20 and 79 are suffering with this condition around the world. The worldwide costs for treatment of diabetes and its related complications in 2013 was estimated to be around $548 billion [1]. Specifically, the Kingdom of Saudi Arabia (KSA) has the seventh highest prevalence of diabetes in the world with over one-fifth of its population suffering with the disease [2]. Clearly, Diabetes is a serious public health concern and hence requires significant attention for better diagnosis and management.

Authors

Mohammed Alotaibi
Faculty of Computer Science and Information Technology, University of Tabuk, Saudi Arabia

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Keywords

Metrics

Two phase flow imaging using infra red tomography

Publisher: IEEE

4 Author(s) Sallehuddin Ibrahim ; Mohd Amri Md Yunus ; Mohd Taufiq Md Khairi ; Muh... View All Authors

Abstract: Data on flow regimes is important in measuring and analyzing industrial process flow. This paper presents an investigation on the use of an infra red tomography system us... **View more**

Metadata

Abstract:
Data on flow regimes is important in measuring and analyzing industrial process flow. This paper presents an investigation on the use of an infra red tomography system using 16 × 16 infra red sensors to monitor solid particles conveyed by a pneumatic conveyor in a vertical gravity flow rig. The sensor output is processed by a signal conditioning circuit followed by a data acquisition system before being displayed by a computer. The operation of the whole measurement is controlled by a digital timing controller. Four types of flow models i.e. single pixel, multiple pixels, half flow and full flow were experimented with. The system has been tested with solid particles at various flow rates using several algorithms and has shown to be capable of providing images of the flow concentration profiles.

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Conference Location: Semarang, Indonesia

Sallehuddin Ibrahim
Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Mohd Amri Md Yunus
Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Mohd Taufiq Md Khairi
Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Muhammad Abu Bakar Sidik
Institut of High Voltage and High Current (IVAT), Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor, Malaysia

Contents

Tomography derives from the two Greek words i.e. tomo which means slice and graph which means picture [1]. The history of tomography dated back to the discovery of x-ray. The discovery of x-ray by Wilhelm Roentgen in 1895 proved to be a significant contribution in modern medicine. Such invention enabled us to probe both non-living and living objects without invading the subject itself [2]. However this type of projection still has some flaws as the images were formed by superimposing all planes normal to the direction of X-ray propagation. Beginning from 1930s conventional tomography made use of the tomographic method based on the X-ray radiation which provided two and three dimensions of images [3]. In the late 1960s the use of tomography attracted the interest of those in the process industries including those involved in flow measurement [3]. They began to explore ways of exploiting tomography to extract vital data on flow.

A high speed low power reading scheme in DRAMs using Resonant Tunneling Diode

Publisher: IEEE

3 Author(s) Ahmed Lutfi Elgreatly ; Ahmed Ahmed Shaaban ; El-Sayed M. El-Rabaie View All Authors

Abstract: DRAM chip industry became one of the most researchers' interests nowadays for its simple structure and low power consumption. As the density of DRAM chips increased, many... **View more**

Metadata

Abstract:
DRAM chip industry became one of the most researchers' interests nowadays for its simple structure and low power consumption. As the density of DRAM chips increased, many problems occurred that affected the DRAM performance. One of these problems is the increase in the bit-line parasitic capacitance values. These large values slow down the reading operation of the cell and increase the consumed power. This problem gave a great attention to improve the performance of the sense amplifier circuit that is used in the reading operation in the DRAM cell for its great effect on both DRAM access times and overall power consumption. In this paper, we introduce an alternative circuit architecture for the CMOS sense amplifier. This proposed circuit architecture is a specially designed logic buffer using a Resonant Tunneling Diode (RTD) that can be fabricated in silicon nano-electronics. The proposed design exhibits higher read operation speed, lower power consumption, full noise margin and higher chip density. The Power Delay Product (PDP) is improved by about 62% compared with that in the conventional CMOS sense amplifier and by about 70% compared with that in the conventional RTD-CMOS sense amplifier. The CMOS technology used in this paper is 45nm technology.

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Conference Location: Semarang, Indonesia

Ahmed Lutfi Elgreatly
Dep. of Electrical Engineering, Faculty of Engineering, Port-Said University, Egypt

Ahmed Ahmed Shaaban
Dep. of Electrical Engineering, Faculty of Engineering, Port-Said University, Egypt

El-Sayed M. El-Rabaie
Dep. of Electronics and Communications Engineering, Faculty of Electronic Engineering, Minoufiya University, Egypt

Contents

Due to the simple structure of the DRAM cell as shown in Fig. 1, it can be easily implemented in arrays which make it widely used in most of recent applications. It consists of a Cell capacitance Reading (C_s) and an access transistor (M_{access}) between the bit-line (BL) and the cell capacitance which is enabled by the word-line (WL)[1], [2].

Authors

Ahmed Lutfi Elgreatly
Dep. of Electrical Engineering, Faculty of Engineering, Port-Said University, Egypt

Ahmed Ahmed Shaaban
Dep. of Electrical Engineering, Faculty of Engineering, Port-Said University, Egypt

El-Sayed M. El-Rabaie
Dep. of Electronics and Communications Engineering, Faculty of Electronic Engineering, Minoufiya University, Egypt

Assessment of TRV parameters and overvoltages in three-phase ungrounded faults

2 Author(s) Alejandro Marmolejo ; Mirko Palazzo View All Authors

Abstract: The transient recovery voltage requirements laid down in IEC/IEEE 62271-37-013 for testing generator circuit-breakers are determined for the first-pole-to-clear in case o... **View more**

Metadata

Abstract:
The transient recovery voltage requirements laid down in IEC/IEEE 62271-37-013 for testing generator circuit-breakers are determined for the first-pole-to-clear in case of a three-phase grounded fault despite it is recognized that the rate-of-rise in such case is somewhat smaller and therefore less severe than the rate-of-rise in case of ungrounded faults. The occurrence of a three-phase ungrounded fault in power stations is rare but cannot be completely ruled out. Such fault may arise, for example, inside the panel of MV-switchgear with non-segregated busducts or when active arc mitigation devices which transform an arc fault into a three-phase ungrounded bolted short-circuit are employed. The transient recovery voltage requirements for three-phase ungrounded faults are assessed in the present work. Also the voltage transients occurring at the fault location and generator neutral are investigated.

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Keywords
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Conference Location: Semarang, Indonesia

Alejandro Marmolejo
ABB Switzerland Ltd., Zurich, Switzerland

Mirko Palazzo
ABB Switzerland Ltd., Zurich, Switzerland

Contents

The requirements imposed on generator circuit-breakers (GenCBs) greatly differ from the requirements imposed on general purpose transmission and distribution circuit-breakers. Due to the location of installation, high technical requirements are imposed on GenCBs with respect to rated normal currents, short-circuit currents and fault currents due to out-of-phase conditions. Furthermore, the currents of very high magnitude which GenCBs have to deal with are associated with very steep transient recovery voltages (TRVs). The standard which covers the requirements for GenCBs is IEC/IEEE 62271-37-013 [1].

Authors

Alejandro Marmolejo
ABB Switzerland Ltd., Zurich, Switzerland

Mirko Palazzo
ABB Switzerland Ltd., Zurich, Switzerland

Figures

References

Keywords

Metrics