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Department of Computer Engineering, Diponegoro University
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

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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.

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Topic: Silicones | Insulating materials | Polymeric insulators

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contaminant epoxy resin Insulator leakage current

Indexed keywords

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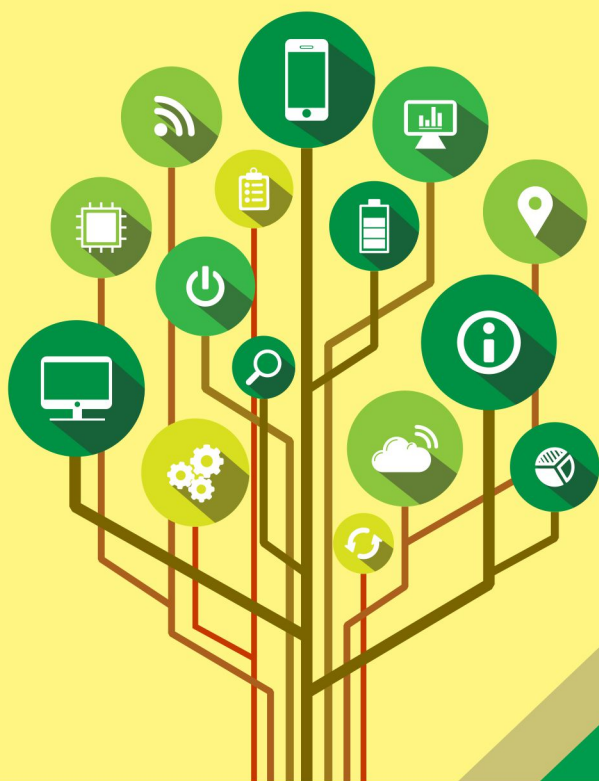
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with the hope of maintaining the Moore's exponential growth. Hence 'Beyond Moore' plan is introduced to identify alternatives to the conventional MOSFET transistor. This plan includes new device designs such as the vertical MOSFET, dual-gate FET and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

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Razali Ismail
Cambridge University, U.K.

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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.

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One of the most popular algorithms in distributed control community is consensus algorithm. The

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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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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.

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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. NH₄ Cl 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.

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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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Contents

I. Introduction

Today, how to realize sustainable development has become one of the priority issues in the face of human beings. The United Nations World Commission on Environment and Development in its 1987 report Our Common Future defines sustainable development: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Given finite natural resources and vulnerable living environment, meeting the needs of human kinds require attaining sustainability in economic development, social development and environmental protection.

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

Contents

I. Introduction

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.

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Contents

I. Introduction

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.

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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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I. Introduction

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 Capacitor (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].

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I. Introduction

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].

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