

**ACADEMIC YEAR**  
**2018-2019**



# SAI SPURTHI INSTITUTE OF TECHNOLOGY

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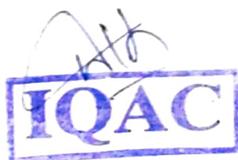
Number of papers published per teacher in the Journals notified on UGC website during the year. Number of research papers in the Journals notified on UGC website during the year.

## List of the Paper Publications during Academic Year 2018-19

S.No	Name of the Paper Publication
1.	Start-Up Companies Marketing Strategies: A Systematic Review of The Literature
2.	Adaptive Beam Forming of MIMO System Using Optimal Steering Vector With Modified Neural Network For Channel Selection
3.	Area Of HVDC Primary Frequency Control Input Adits Control By Using VSC Based Control Scheme
4.	Design And Implementation Of The Fuzzy driven SRF Theory For Res Connected Utility Grid
5.	Controlled Reactive Power In Wind Connected Grid With And Without Stat com Using Matlab/Simulink
6.	Fast Energy Storage With By Directional Converter Controller
7.	Fuzzy Logic Based Torque Ripple Minimization And PFC of BLDC Drive Using Bridgeless- Lou Converter
8.	Fuzzy Logic Based Torque Ripple Minimization And PFC of BLDC Drive Using Bridgeless- Lou Converter
9.	Performance & Emission Characteristics of Di-Ci Engine Fueled With Methanol Blended Diesel Fuel.
10.	Experimental Investigation On Characteristics of Di-Ci Engine Fueled With Shea Olein Bio Diesel
11.	Experimental Investigation of Si Engine Characteristics With Methanol Blended Petrol
12.	Experimental Investigation on Performance & Emission Characteristics of Di-Ci Engine Fueled With Preheated Shea Olein Bio Diesel
13.	Low Power And Low Area VLSI Implementation of Radix- 8 Carry Look Ahead Adder FIR Filter For DSP Applications
14.	Dynamic Secure Reduplications in Cloud Using Genetic Programming
15.	Dynamic Secure Reduplications in Cloud Using Genetic Programming
16.	Adaptive Dynamic Resource Utilization in Cloud Computing Based on Linear Regression
17.	Integrated Key Management Procedure To Handle Multiple Data Sharing in Cloud Computing
18.	IoT Sensors: Applications And Perspectives
19.	IoT Sensors: Applications And Perspectives
20.	IoT Sensors: Applications And Perspectives
21.	Spectroscopic And Electrical Investigations of Copper Ions in Pbo-Geo2 Glasses

  
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## START-UP COMPANIES MARKETING STRATEGIES: A SYSTEMATIC REVIEW OF THE LITERATURE

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**Abstract:** Products, whether new or old, have no value to society until they leave the factory. Until the product is made available to people who can utilise or consume it, it is of no value. Marketing promotion strategy is a practise used by corporations to spread information about their goods to potential customers and encourage them to buy their items. A company's marketing promotion efforts include a variety of activities aimed at increasing sales by raising consumer awareness, encouraging purchases, and ultimately encouraging consumers to buy from the company again and again. Research on how the marketing and promotional tactics used by start-up companies effect consumers' cognitive processes and their purchase decisions is examined in this study.

**Index Terms:** Marketing Promotion Strategy, Start-up enterprise, Sales growth, Brand Loyalty

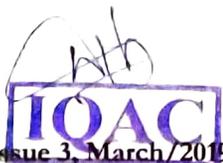
### I. INTRODUCTION

As a business owner, your ultimate aim is to increase sales of your products. Marketing is essential to the long-term viability and success of a business (Bresciani & Eppler, 2010). Marketing For every firm to succeed in today's competitive market, marketing is a necessary and unavoidable activity. It is the most widely and extensively used component of business today, according to Ahmed and Fatawu (2014). (Felix & Wijaya, 2014). The promotion's marketing efforts will enhance customer purchases and improve the efficiency of intermediaries and merchandisers. When a firm is properly promoted, it will be more likely to succeed (Rizwan & Javed, 2015). A product's ability to influence a customer's purchasing choice is the primary goal of promotional activity (Kotler & Armstrong, 2010). To entice customers to buy more or plan to buy a service or product, merchants and manufacturers use promotion as a marketing tactic (Ashraf & Rizwan, 2014). In order to ensure that a company's services or products are well-received by its customers, it uses promotional tactics.

It is the mixture of the numerous channels that may be used to convey the same promotional message to the buyer and to the resellers. (Ahmed and Fatawu, 2014). An organisation may be on the lookout for new and innovative methods to market itself in order to get their target audience's attention and ensure that they are aware of the company's existence and the products and services it offers. The (Reed, 2013). Strategy for promoting a product or service includes the following elements: advertising, sales promotion, personal selling, public relations, and direct marketing (Czinkota and Ronkainen, 2004). If businesses want to keep up with the competition and the changing demands of their customers, they must use effective promotional techniques in order to encourage expansion outside their borders and increase awareness and usage rates. Promotional methods may be used to attract and keep consumers, as well as to increase the company's return on investment (Kotler, 2007).

### II. CONCEPT OF START-UP ENTREPRENEURIAL MARKETING

Entrepreneurial marketing for start-ups is a word used to describe the marketing strategy used by businesses looking for new prospects in an uncertain market (Becherer et al., 2006). In the words of Stokes (2000), "start-up marketing" is "the marketing carried out by entrepreneurs of start-up entrepreneurial companies" in order to attract new business. Carson and Gilmore (2000). "Entrepreneurial marketing" was described by Hacıoglu et al. (2012) as a method infused with an entrepreneurial spirit (marketing by founder entrepreneur). Entrepreneurial marketing is defined as "an organisational function and a set of processes for creating, communicating, and providing value to customers and for managing customer relationships in ways that benefit the organisation and its stakeholders," according to Kraus et al. (2010), who defined it as "characterised by innovativeness; risk taking, proactiveness; and may be performed without resources currently controlled." In addition, the researchers found that in today's environment, buzz marketing, guerilla marketing, and viral marketing are three of the most well-known kinds of start-up entrepreneurial marketing.



## Adaptive beamforming of MIMO system using optimal steering vector with modified neural network for channel selection

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Received 16 November 2018

Revised 5 February 2019

Accepted 13 February 2019

Published 20 March 2019

The forming of adaptive beam can improve the throughput of the system to a great extent by means of matching the parameters of transmitters to that of the wireless channels that are time-variant. The quality of the channel state is very crucial to the adaptive forming. The Multiple-Input Multiple-Output (MIMO) systems are known to provide some very significant gains in the spectral efficiency as well as its reliability. This has been based on an assumption that the transmitter and the receiver will have knowledge of the coefficients of the channels. In reality, however, they will have to be estimated or sometimes predicted. There are some popular methods that are used for the estimation of the channel which is made by means of using the pilot symbols and also the Space-Time Block Codes (STBCs). Both these methods will not avail the time-learning channels even during the transmission of some meaningful data. In this work, a light weight neural network is proposed for the channel selection. The proposed Artificial Neural Network (ANN) is duly optimized with the Particle Swarm Optimization (PSO) and the Bacterial Foraging Optimization (BFO)-based algorithms for enhancing the predictions. The method is popular and is robust adaptive as a beamforming technique



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# INTER AREA MODES OF HVDC PRIMARY FREQUENCY CONTROL IMPACT AND ITS CONTROL BY USING VSC BASED CONTROL SCHEME

Mr. G. Pavan

**Abstract**—This paper presents a modified control scheme to compensate the reactive power. Mainly the reactive power is existed due to the presence of Inductive loads and hence lagging nature is obtained. In order to minimize the lagging nature some compensation techniques has to be implemented such as, Active Power Filter Control (APF), Synchronous Reference Frame and Sensitivity Method. By implementing these techniques / methods the power quality at point of common coupling will be increased. The Integration of Smart and Nano Grids is done to reduce the reactive power component. The results show the decreasing of harmonics and lagging nature in the power system.

**Keywords**—Active Power Filter Control, Synchronous Reference Frame, Sensitivity Method.

## I. INTRODUCTION

Central station by Edison using dc After, Second world war, countries all over the world have become independent and are showing a tremendous rate of industrial development. The very rapid strides taken by the development of DC transmission & playing major role in extra – long distance transmission, to develop the country's economy.

Five level of transmission voltage from 1950 133, 275, 345, 400, 500, 750, 1000, 1200 for 180km 230v, 440v, 750v, 1000v, 1200v & more (10KMW) of 1500Kv have been introduced in different countries and the work studied in BPA (Bourneville power Administration) has introduced (USA) and research work continued in USSR and the other countries regarding the different effects that are involved.

- A) Vibration of Bundled conductors
- B) Effects of resistances
- C) Inductance & capacitance calculation
- D) Ground return parameters
- E) Modes of preparation
- F) Psycho – acoustics problems
- G) Lightning effects

The Rapid development of power system generated by increased demand for electric energy initially in industrialized countries & subsequently in emerging countries led to development & different technical problems in power systems stability limitations & voltage problems. Intake the development of FACTS has come in to existence.

The first large-scale thyristor for HVDC were developed decades ago, & HVDC became a conventional technology in the area of back – back & two terminal long – distance & sub – marine case linked.

Our paper entitled discuss with three sections

1. HVDC – link with VSC technology & development
2. HVDC – VSC link for non-synchronous Ac grids for presenting cascading outages.

With three sections, by involvement of HVDC-grids had became enagling the conditions.

## II. CONVERTER CONTROL

(A single-pole of an HVDC system)

$$i_d = \frac{v_d1 + v_d2}{R_d}$$

$$P = v_d \cdot i_d$$

1. power reversal is also possible power can be transformed from load side end to supply side end.
2. Ac back of rectifice
3. Voltage at sending at rated end
4. Control power deliver
5. Frequency exrol
6. P. f at high level
7. Reduces the stress on damping exists
8. Minimise voltage drop

Constant

First commercially used HVDC link (20Mw, 100Kv) 1954 Sweden & island of gotland 1970 thyristor valves replaced by Hy. Technique (Mer-Arc-tear).

# DESIGN AND IMPLEMENTATION OF THE FUZZY DRIVEN SRF THEORY FOR RES CONNECTED UTILITY GRID



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## Abstract

This paper provides sophisticated control structural design of photovoltaic to conventional utility grid interconnection by means of fuzzy interfacing system. In this proposed architecture PV solar generated output is fed to the DC-DC power converter and the duty cycle of converter is operated by the incremental conductance method based maximum power point tracking controller and dc link capacitor is placed in the circuit configuration to improve the resultant power quality. In this proposed configuration fuzzy based synchronous reference frame theory is proposed to get the optimal control characteristics for the

proposed network. Total circuit configuration is modeled and simulated using MATLAB SIMULINK.

**Keywords:** Fuzzy Inter facing System, SRF, MPPT, IC Method, Duty Cycle Control

## INTRODUCTION

Conventional renewable energy sources like photovoltaic utilization is improved gradually from the few decades concurrently the need of advanced controlling methods for the victorious synchronization and the improved power quality characteristics at the utility side of the conventional utility grid network configuration. So many research articles

**Controlled Reactive Power in Wind Connected Grid With And Without  
STATCOM Using MATLAB/SIMULINK****M.PRATHIMA ASS** T. PROF, A.NAGA JYOTHI, B.NEELAVENI, P.ASHWANTH KUMAR, G.ANUSHA  
Guided by M. PRATHIMA,

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**Abstract—** Voltage Stability and reactive power balance could be a key challenge for the stable operation of grid connected wind farm through-out the faults and grid interruptions. When the wind farm is directly connected to grid, the voltage stability is that the main issue for squirrel cage induction generator (SCIG) because of intermittent nature of wind velocity. Voltage stability drawback is sorted out with the help of flexible AC transmission system (FACTS) devices like static synchronous compensator (STATCOM). A STATCOM is used to counter problems like transient stability support in network including Squirrel Cage wind generator. The wind power system model is implemented using SIMULINK. The STATCOM results are better than static var compensator (SVC) for the stable operation of SCIG. STATCOM improves the stability problem and so help the wind generator system to remain in service throughout grid faults. In order to minimize the lagging nature some compensation techniques has to be implemented such as, Active Power Filter Control (APF), Synchronous Reference Frame and Sensitivity Method

**Keywords:** Wind Farm, STATCOM, Reactive Power, Squirrel Cage Induction Generator, Active Power Filter Control, Synchronous Reference Frame, Sensitivity Method. Matlab/Simulink.

**I. INTRODUCTION**

In recent days, Problem of pollution from fossil fuels during power generation has become severe. Since, their capacity is limited; so that they might not available in future. Consequently, it is become essential to adopt clean energy sources such as wind energy, solar energy for electric power generation. These renewable sources are intermittent in nature. In result of this, these sources create instability in power system. However, renewable sources like wind power being intermittent in nature have proved themselves as a feasible solution to the current problem. As the wind turbine technologies are growing rapidly, many wind power farms are getting synchronized with the traditional systems [1]. one of the straight forward techniques of running a wind generating system is to apply the squirrel cage induction generator (SCIG) connected directly to the grid system. The SCIG has inherent benefits of cost usefulness and but SCIG need reactive power for magnetization. When the generated active power of SCIG is changed because of the wind and absorbed the reactive power and its terminal voltage of SCIG can be influenced substantially. Capacitors are considered to generate reactive power, whereas inductors consume it. So when both are placed in parallel connection, the current flowing through them cancels out. This is essential when controlling the power factor of a circuit and has become a fundamental mechanism in electric power transmission. Adding both capacitors and inductors in a circuit helps partially compensate for the reactive power consumed by the load. The formatter will need to create these components, incorporating the applicable criteria that follow.

FACTS are described by a group of power electronic devices. This technology was specialized to perform Comparable functions if ancient electrical power grid controllers just like device tap changers, phase shifting transformers, passive reactive compensators, synchronous condensers and many more. A STATCOM is introduced in wind energy which is planned below conventional operating condition to enable the proper control over the active and reactive power output, reaching speed, torque steady state values. A STATCOM is employed the machine speed not to reach below certain safe limit by injecting current based mostly control technology has been projected for improving the power quality

**II. WIND TURBINE INDUCTION GENERATOR (WTIG)**

A wind turbine is a device that converts the kinetic energy from the wind into electric power. Wind turbine is use squirrel cage induction generator (SCIG) output power to its nominal value for high wind speeds. so as to generate the power of induction speed should be slightly more than the synchronous speed, so the WTIG is considered to be a fixed-speed wind generator.

# Fast Energy Storage with Bi-Directional Converter controlled Super Capacitor based UPQC

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**Abstract**—Modern power grids must be highly reliable and provide power with a high quality. Power quality issues like voltage sags or current harmonics must be minimized. In order to achieve high levels of reliability in the system. One possible way to overcome such problems is through the utilization of active power filters like a Unified Power Quality Conditioner (UPQC). On the other hand, Superconducting Magnetic Energy Storage (SMES) are one of the most promising superconducting devices, considering its possible applications in power systems. This concept contains a combination of a SMES with a UPQC for power quality improvement in an electric grid. Through the utilization of a SMES unit, it is possible to increase the stored energy in the DC link of the UPQC, thus improving the system capacity to overcome power quality issues. Voltage sags and current harmonics are simulated and the system behavior is demonstrated.

**Keywords**—UPQC; SMES; Power Quality.

## I. INTRODUCTION

The modern equipment's that are used in home are very sensitive and prone to harmonics as well as voltage disturbances with poor power factor. The power quality problem is also due to the different faults conditions occurring on the power system network. These conditions cause voltage sag or swell in the system and malfunctioning of devices which damages the sensitive loads [1]. The mitigation of these on the source and load sides is most important for improving the reliability as well as performance on the system. Unified Power Quality Conditioner (UPQC) is expected to be one of the most powerful solutions to large capacity loads that are sensitive to the changes in supply voltage, flicker or imbalance. The UPQC has a single topology that combines series active power filter and shunt active power filter with a common DC link. These two are connected in a back to back configuration [2]. Shunt active power filter compensates all current related distortions and series active power filter compensates all voltage related distortions. The compensation can be done effectively, if there is an effective DC link. The operation of both series active power filter and shunt active power filter are based on voltage source converter technique. The shunt compensator takes care of reactive power compensation, current harmonic compensation, loadun balance compensation and power factor improvement. The series

compensator acts for voltage harmonics, voltage sag or swells, flickering etc., with the harmonic isolation between load and supply [3-4].

The super-capacitor is used as a battery storage device across the DC link for short time duration. The energy can be stored in the form of batteries, flywheels, compressed air, hydraulic systems and super conducting energy storage systems [5]. A configuration with STATCOM-super capacitor energy storage system is used to enhance power system stability and quality [6]. Super capacitors are also find applications in metro vehicles and hybrid electric vehicles [7], also in traction [8]. The battery has a high storage capacity but unreliable and flywheels requires a lot of maintenance. The discharge rate is slower in batteries because of slower chemical process. But now the future is turned to higher rate of charging and discharging the energy which is possible with the super capacitors. The super capacitors stores less energy however the power transfer capability is high compared to the conventional batteries. The rate of discharge while compensation is fast and it takes only a small current for charging [9]. Use of super capacitor is proposed in UPQC scheme as it is characterized by less weight, faster charge/discharge cycle time, higher power density, higher efficiency and almost maintenance free. The paper [10-11] explains the power circuit modeled as a 3-phase 4-wire system with a non-linear load that is composed of 3-phase diode-bridge rectifier with RC load in the DC side [12-13].

## II. SYSTEM OVERVIEW

The designed system is depicted in Fig. 1. The simulated grid contains a power source, which was simulated using a three phase programmable power source in Simulink, a pure resistive load and the hybrid system consisting of the UPQC+SMES. The series active filter that builds the UPQC is placed close to the power source and the shunt filter is placed close to the load. Although it is possible to choose a reverse configuration (shunt filter close to the source and series filter close to the load) this arrangement was chosen because it allows a better controllability of the DC bus voltage. This is a fundamental characteristic in this hybrid system because the SMES is connected to this DC bus.

# Fuzzy Logic based Torque Ripple Minimization and PFC of BLDC Drive using Bridgeless- Luo Converter

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**Abstract-** A PFC based BL-Luo converter-fed BLDC motor drive has been proposed for a wide range of speeds and supply voltages. A single voltage sensor-based speed control of the BLDC motor using a concept of variable dc-link voltage has been used. The PFC BL-Luo converter has been designed to operate in DICM and to act as an inherent power factor pre-regulator. An electronic commutation of the BLDC motor has been used which utilizes a low-frequency operation of VSI for reduced switching losses. The speed of the BLDC motor is controlled by an approach of variable dc-link voltage, which allows a low-frequency switching of the voltage source inverter for the electronic commutation of the BLDC motor, thus offering reduced switching losses. The proposed BLDC motor drive is designed to operate over a wide range of speed control with an improved power quality at ac mains. Fuzzy logic controller, in most instances, provides a superior performance to PI controller. However, it needs to be trained properly; anything that doesn't pertain to the behavior of intended system will fail you. Fuzzy is more forgiving than PI when the system deviates from its expected operating state. Fuzzy logic is widely used in machine control. The term "fuzzy" refers to the fact that the logic involved can deal with concepts that cannot be expressed as the "true" or "false" but rather as "partially true". Although alternative approaches such as genetic algorithms and neural networks can perform just as well as fuzzy logic in many cases, fuzzy logic has the advantage that the solution to the problem can be cast in terms that human operators can understand, so that their experience can be used in the design of the controller. The proposed concept can be implemented to fuzzy based torque ripple minimization in MATLAB/SIMULINK software.

**Index Terms**—Bridgeless Luo (BL-Luo) converter, brushless dc (BLDC) motor, power factor correction (PFC), power quality, voltage source inverter (VSI).

## I. INTRODUCTION

Since 1980's a new plan idea of changeless magnet brushless engines has been created. The Changeless magnet brushless engines are ordered into two sorts based upon the back EMF waveform, brushless Air conditioning (BLAC) and brushless DC (BLDC) engines [1-2]. BLDC engine has trapezoidal back EMF and semi rectangular current waveform. BLDC engines are quickly getting to be well known in businesses, for example, Appliances, HVAC industry, restorative, electric footing, car, airplanes, military gear, hard plate drive, mechanical computerization gear and instrumentation due to their high effectiveness, high power element, noiseless operation, minimized, dependability and low support [3-5]. To supplant the capacity of commutators and brushes, the

BLDC engine requires an inverter and a position sensor that distinguishes rotor position for legitimate substitution of current. The revolution of the BLDC engine is in light of the criticism of rotor position which is gotten from the corridor sensors [6]. BLDC engine ordinarily employsments three lobby sensors for deciding the recompense Grouping. In BLDC engine the force misfortunes are in the stator where warmth can be effectively exchanged through the edge or cooling frameworks are utilized as a part of expansive machines [7-8]. BLDC engines have numerous focal points over DC engines and prompting engines. A percentage of the favorable circumstances are better speed versus torque qualities, high element reaction, high proficiency, long working life, quiet operation; higher pace ranges [9]. Up to now, more than 80% of the controllers are PI (Relative and vital) controllers on the grounds that they are effortless and straightforward. The velocity controllers are the routine PI controllers and current controllers are the P controllers to accomplish superior commute [10]. Can be considered as scientific hypothesis joining multi esteemed rationale, likelihood hypothesis, and counterfeit consciousness to recreate the human approach in the arrangement of different issues by utilizing an estimated thinking to relate diverse information sets and to make choices [11]. It has been accounted for that fluffy controllers are more powerful to plant parameter changes than traditional PI or controllers and have better clamor dismissal capacities [12]. This paper presents a BL Luo converter fed BLDC motor drive with variable dc link voltage of VSI for improved power quality at ac mains with reduced components and superior control [13].

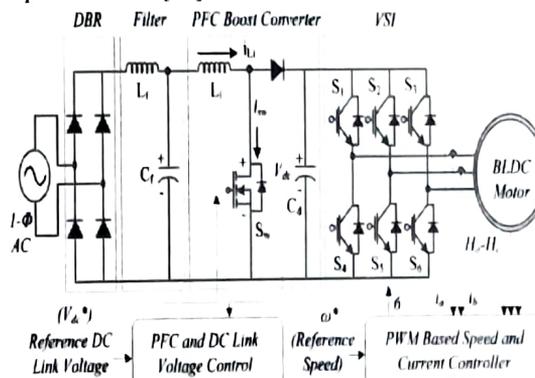
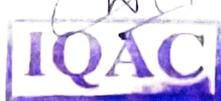


Fig 1. Conventional PFC-based BLDC motor drive



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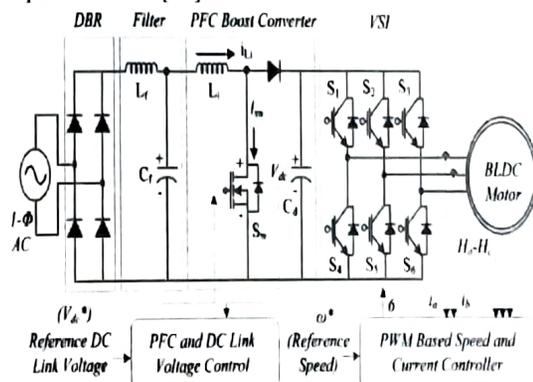


Fig. 1. Conventional PFC-based BLDC motor drive



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## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES PERFORMANCE AND EMISSION CHARACTERISTICS OF DI-CI ENGINE FUELED WITH METHANOL BLENDED DIESEL FUEL

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### ABSTRACT

Fossil fuels are one of the major sources of energy in the world today. Their popularity can be accounted to easy usability, availability and cost effectiveness. But the limited reserves of fossil fuels are a great concern owing to fast depletion of the reserves due to increase in worldwide demand. So efforts are on to find alternative sources for this depleting energy source. Even though new technologies have come up which have made solar, wind or tidal energy sources easily usable but still they are not so popular due to problems in integration with existing technology and processes. So, efforts are being directed towards finding energy sources which are similar to the present day fuels so that they can be used as direct substitutes. Diesel fuel serves as a major source of energy, mainly in the transport sector. The present work is carried on the DI- CI with different blends of diesel blended methanol. In this work performance characteristics like brake specific fuel consumption, brake thermal efficiency and emission characteristics like hydrocarbons, carbon monoxide, oxides of nitrogen at various loads ( 4kg, 8kg, 12kg, 16kg ) were studied. The results observed that all the characteristics of engine with methanol blended diesel are very close to characteristics of engine with baseline petroleum diesel.

**Keywords:** Diesel, Methanol, Engine and Emissions.

### I. INTRODUCTION

Alcohols such as ethanol and methanol also received a wide attention from the researchers due to its oxygenate nature. Alcohols derived from bio resources widely used in compression ignition engine as a supplementary fuel to that of petroleum diesel. However, methanol has an advantage because of its low price and higher oxygen fraction. But as reported by several researchers there is some difficulty to form a homogeneous diesel methanol mixture, hence the research on this area is very limited. Methanol is produced from synthesis gas (carbon monoxide and hydrogen), itself derived from oil, coal or, increasingly, biomass. It may become central to the development of bio refineries as an intermediate in the conversion of biomass to useful products. Diesel comprising 10 percent of methanol can be utilized in the majority of modern autos bereft of modification [1] Khalil Ibraheem Abaas, et al conducted the tests on steady state conditions in a four-cylinder DI diesel engine at full load at 1500-rpm engine speed. The experimental results showed that diesel methanol blends provided 12.7% increase in brake-specific fuel consumption due to its lower heating value. The results indicated that methanol may be blended with diesel fuel to be used without any modification on the engine. [2] T Yusaf, I Hamawand, et al conducted test on a four-stroke four-cylinder diesel engine. The results showed that mixing methanol at different fractions with diesel fuel has a significant effect on the engine performance. The methanol to diesel ratio of 10:90 exhibited the lowest exhaust temperature and achieved an improvement in the output power of approximately 70% compared to the other ratios. Also, the brake thermal efficiency improved at all the mixing ratios used. Furthermore, the BSFC of pure diesel fuel registered a lower value than any other mixing ratio. [3] Joshua Marcus Paul, Balamurali S, et al conducted tests on 4stroke, single cylinder DI-CI water cooled engine. In their study, they found that, increased oxygen percentage as a result of methanol addition there is an improvement in the combustion efficiency and hence the brake thermal efficiency increases by 1.4% and 5.5% at 80% load for the M10 and M30 blends. [4] P B Ingle, et al conducted tests on 4stroke 4cylinder diesel engine using methol-diesel blend. In their study, they concluded that methanol/diesel blend can be used in diesel engines. The output power and torque for diesel fuel is lower compared to methanol-diesel blended fuel at any ratio, the exhaust temperature for diesel fuel was higher compared to any mixing of the blended fuel, the brake specific fuel consumption for the three mixing ratios was not varying.



# EXPERIMENTAL INVESTIGATION ON CHARACTERISTICS OF DI-CI ENGINE FUELED WITH SHEA OLEIN BIODIESEL

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## ABSTRACT

*The Scarcity for the petroleum resources is getting increasing and its exhaustion makes to search for other alternative fuels. Among the number of other alternate ways of searching the substitution fuels for diesel engines one way is attempting development of Biodiesel as alternative fuel. Here also an attempt was made to develop Shea olein biodiesel and experimental investigation is focused on the DI-CI with different blends of shea olein biodiesel. In the present work performance characteristics like Brake thermal efficiency, Specific fuel consumption, exhaust gas temperature, combustion characteristics like pressure variation, and emission characteristics like CO, NO<sub>x</sub> and HC have been investigated. From the results it is observed that all the characteristics of the diesel engine with shea olein methyl ester are similar to that of petroleum diesel fuel. Hence shea olein methyl ester can be used in the existing diesel engine without any modifications.*

**Keywords:** Performance, Combustion, Emission, Shea olein biodiesel and diesel engine

**Cite this Article:** K B Mutyalu, V C Das and K Srinivasa Rao, Experimental Investigation on Characteristics of DI-CI Engine Fueled with Shea Olein Biodiesel, International Journal of Mechanical Engineering and Technology, 9(7), 2018, pp. 1014–1021.

<http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=7>



# Experimental Investigation of SI Engine Characteristics with Methanol Blended Petrol

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**Abstract-** Today many countries in the world are facing a serious issue of pollution as well as increased global consumption of fossil fuels. A petrol engine is an internal combustion engine with spark ignition, designed to run on petrol and similar volatile fuels. This current work present the scenario of petrol engines characteristics when used with alcohol fuels like methanol in blended form with petrol. Experiments are carried out for analyzing various parameters such as break thermal efficiency, specific fuel consumption, and emissions of CO, HC, and NO<sub>x</sub> gases in exhaust for different fuel blends at different engine conditions. All these characteristics which are found by experimenting methanol blended petrol fuel are compared with characteristics obtained by pure petrol. The experimental results revealed the considerable improvement in reduction of exhaust emissions with little compromise in performance.

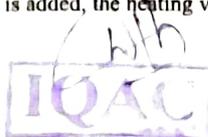
**Keywords-** SI Engine, petrol, methanol, performance and emissions

## 1. INTRODUCTION

The world's fossil fuel reserves are limited and there has been intensive research to find out alternatives to fossil fuels. Hence, there is a progressive interest related to using non-fossil sources in vehicle. The alcohols are major renewable energy sources to supplement declining fossil fuel reserves. This work presents comparative as well as experimental studies of the SI engine using methanol blends with petrol. There are many alternatives for petrol, among them methanol to be most useful one because of higher octane value and more volatility in nature for effective vaporization during carburation process.

In recent years several researches have been carried out to the influence of methanol on the performance of spark ignition engines. Among the alcohols, methanol has the lowest combustion energy. However, it also has the lowest stoichiometric or chemically correct air-fuel ratio. Therefore, an engine burning methanol would produce the maximum power. A lot of research has been done on the prospect of methanol as an alternative fuel. Methanol, CH<sub>3</sub>OH, is the simplest of alcohol and originally produced by the destructive distillation of wood. However, methanol can be produced from many fossil and renewable sources which include coal, petroleum, natural gas, biomass, wood landfills and even the ocean [1]. Saugirdas Pukalskas & Juozas Grabys [2] studied the influence of gasoline-ethanol blends on parameters of engines. Their results showed that when ethanol is added, the heating value of the blended fuel

decreases, while the octane number of the blended fuel increases. Also the engine power and specific fuel consumption of the engine slightly increase with blends. M.V.Mallikarjun and Venkata Ramesh Mamilla [3] carried out study on four cylinders, SI engine by adding methanol in various proportions in gasoline under different load conditions of the engine. For blends(0-15) pertaining to performance of engine it is observed that there is an increase of octane rating of gasoline along with increase in brake thermal efficiency, indicated thermal efficiency. A. Kowalewicz [4] investigated the use of methanol as a fuel for spark ignition engines. He concluded that a neat methanol engine has 30% more efficiency than a regular engine, not only due to high compression ratio but also due to methanol's higher heat of vaporization that cools the air in the engine to a larger extent, thus increasing the density and allowing more air in. This results in a leaner fuel mixture, possibly lowering emission of CO due to more complete combustion. Turkcan et al.[5] reported the effect of methanol diesel and ethanol/diesel fuel blends on the combustion characteristic of an IDI diesel engine at different injection timings by using five different fuel blends (diesel, M5, M10, E5 and E10). The tests were conducted at three different start of injection. Liu Shenghua et al. [6] worked on a three-cylinder SI engine with different ratios of methanol (10%, 15%,20%, 25% and 30%) in gasoline under the full load condition. Their results showed that the engine power and torque decreased, while the brake thermal





# EXPERIMENTAL INVESTIGATION ON PERFORMANCE AND EMISSION CHARACTERISTICS OF DI- CI ENGINE FUELED WITH PREHEATED SHEA OLEIN BIODIESEL

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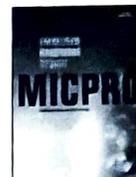
## ABSTRACT

*The world is searching for other alternative fuels due to the exhaust of fuel reserve resources as increase of diesel engines usage daily. Due to the increase of diesel engines there is damage, danger and threat to the global environment. As a result several researchers attempted and investigated other fuels like biodiesels to meet the requirements of the present world to have low fuel consumption, high efficiencies and effect to the environment pollution to be negligible. Present work is carried on DI- CI engine fueled with Sheaolien biodiesel (SBD/B100), preheated shea olein biodiesel (SBDPH/B100PH), B20 (20% SBD+ 80% Diesel), B20PH and B0 (Pure diesel/PD) to explore the engine performance and emission characteristics. The results noticed preheated shea olein biodiesel performance and emission characteristics are almost similar to diesel fuel.*

**Key words:** Engine, Shea olein biodiesel, Diesel, Performance and Emission.

**Cite this Article:** K B Mutyalu, V C Das and K Srinivasa Rao, Experimental Investigation On Performance and Emission Characteristics of DI- CI Engine Fueled with Preheated Shea Olein Biodiesel, International Journal of Mechanical Engineering and Technology, 9(11), 2018, pp. 2006–2014.

<http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=11>



## Low power and low area VLSI implementation of vedic design FIR filter for ECG signal de-noising



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### article info

#### Article history:

Received 28 May 2019

Revised 7 August 2019

Accepted 29 August 2019

Available online 30 August 2019

#### Keywords:

Carry look ahead-adder

Electrocardiogram

Finite impulse response

Signal processing

Vedic design

### abstract

In recent years, Finite Impulse Response (FIR) filter plays a major role in signal processing applications. Earlier many research papers are described the different types of FIR filter design. But, none of the paper explained about signal denoising application with an effective multiplier design. In this paper, Vedic Design - Carry Lookahead Adder FIR filter architecture is introduced to perform the FIR filter operation with Electro Cardiogram (ECG) signal de-noising application. By using the MATLAB program, the input ECG signal is read and Additive White Gaussian Noise (AWGN) is added to the input signal. The denoising process is implemented in Verilog and the obtained output is written in text files. For de-noising the signal, the binary text values are read in MATLAB. With the help of Verilog code, FPGA performance (LUT, flip flop, slices, and frequency) and ASIC performance (area, power, and delay) are evaluated. For ASIC implementation, 180 nm and 45 nm technology are used and for FPGA implementation Virtex-4, Virtex-5, and Virtex-6 devices are used to evaluate the performance. The Mean Square Error (MSE), Bit Error Rate (BER), and Signal to Noise Ratio (SNR) performance are calculated from the de-noised signal. In 180 nm technology, 42.39% of the area, 29.53% of delay, 43.89% of APP, 70.41% of ADP reduced in VD-CLA-FIR. In 45 nm technology, 13.2% of the area, 32.25% of the delay, 24.37% of APP, and 39.02% of ADP reduced in VD-CLA-FIR method compared to the conventional methods.

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### 1. Introduction

Nowadays, FIR filter is a major building block in signal processing application. Normally, the FIR filter is implemented in the transposed direct form [1]. The FIR filter is implemented in FPGA to evaluate the hardware utilization of the entire architecture [2]. Multiplier plays an important role in FIR filter design. If the FIR filter contains more multipliers, total architecture required more area to perform the filter operation. Hence, the reduction of the area of multipliers is a significant task in the FIR filter design [3]. The FIR filter provides several benefits like computational efficiency in multi-rate applications, attainable linear phase response and desirable numerical property to perform finite precision and fractional arithmetic [4,5]. The digital multi-standard RFIR filter is implemented in wireless applications to decrease Bit Error Rate (BER) [6,7]. The Discrete FIR filter is used to design an efficient filter with low-power consumption and high-performance [8].

There are a number of existing architectures such as FIR filter design using system generator [9], normal FIR filter [10], Decimator FIR filter [11], linear-phase FIR filter [12], GA based FIR filter [13], parallel based FIR filter [14], low power multiplier FIR filter [15], and DA based FIR filter [16]. All the architecture has more hardware utilization and less efficiency. Moreover, these existing architectures not concentrated on the applications. To overcome this problem, VD-CLA-FIR filter method is introduced in this paper. Input and co-efficient are required to perform the processing element. Those two inputs are multiplier with the help of Vedic multiplier. In the accumulator module, CLA is used to perform the addition process. Due to the usage of VD, and CLA, the FPGA, and ASIC performances are improved in the proposed method than conventional methods. This architecture is applicable to the ECG signal denoising process. MATLAB is used to read the ECG signal and showing the de-noised signal. Finally, all the performance is evaluated and tabulated in the resulting section.

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# Dynamic Secure Deduplication in Cloud Using Genetic Programming

K.V. Pandu Ranga Rao, V. Krishna Reddy and S.K. Yakoob

**Abstract** Cloud Data Storage reduces trouble on customers concerning their neighborhood outsourcing data are new issues with respect with data duplicates in the cloud. But some earlier systems deals with the issue of completing an approach to manage handles cloud security and execution with respect to de-duplication by properly applying together in the cloud with record signature recognizing verification methodology using standard Hash based Message Authentication Codes (HMAC). As a result of these hash code counts like SHA-1 and MD5 the record dependability qualities are epic inciting absence of movement variable at the de-duplication estimation. In view of this above issue the limit show obliges prior dependability hash codes inciting execution issues. In this paper, we propose a Genetic Programming approach to manage record deduplication that joins several unmistakable bits of confirmation expelled from the data substance to find a deduplication point of confinement that has the cutoff see whether two segments in a store are copies or not. As showed up by our trials, our procedure beats a present bleeding edge strategy found in the written work. Moreover, the proposed limits are computationally less asking for since they use less affirmation. Moreover, our inherited programming technique is set up to do thusly changing these abilities to a given settled duplicate ID limit, freeing the customer from the heaviness of picking and tune this parameter.

**Keywords** Hybrid cloud computing • Cloud security • SHA • MD5 • Message authentication codes • Genetic programming • Cross-over mutation • Similarity function • Checksum

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© Springer Nature Singapore Pte Ltd. 2018  
S.C. Satapathy et al. (eds.), *Data Engineering and Intelligent Computing*,  
Advances in Intelligent Systems and Computing 542,  
DOI 10.1007/978-981-10-3223-3\_48

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# Dynamic Secure Deduplication in Cloud Using Genetic Programming

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S.C. Satapathy et al. (eds.), *Data Engineering and Intelligent Computing*,  
Advances in Intelligent Systems and Computing 542,  
DOI 10.1007/978-981-10-3223-3\_48

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# Adaptive Dynamic Resource Utilization in Cloud Computing based on Linear Regression

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## Abstract

For efficient resource usage of customers with their requirements cloud computing is required to process these representations in outside environment. To define resource provisioning in cloud model with virtualization aspects based on different applications to support resource utilization in distributed proceedings in cloud. "Skewness" is an efficient approach to process efficient provisioning with multi dimensional resource of server representations in cloud. In "Skewness", maintain different workloads to increase provisioning of server resources. To improve dynamic resource scaling for different applications with efficient resource utilization in cloud computing. However a novel and innovative virtual instance in cloud is required to process dynamic resource provisioning in cloud computing. So we propose and develop stochastic based resource provisioning prediction & management (SRPPM) based on linear regression to satisfy resource provisioning and utilization in distributed computing. It is an approach to provide demand based services with efficient resource allocation and utilization in cloud computing. Our experimental results show efficient resource provisioning to share different services in cloud computing.

**Keywords:** Resource Provisioning, Cloud Computing Environment, Linear Regression, Prediction, Measurement and Resource Allocation, and Support Vector Machine.

## I. INTRODUCTION

Now a days, cloud computing is the most and popular data outsourcing procedure. An inborn element of the cloud that separates it from customary facilitating administrations is its apparently boundless sum of asset limit (I/O, CPU and Memory utilization, plate and so forth.) offered at an aggressive rate. It gives chances to new businesses to have their applications in the cloud, in this way, taking out the overhead of securing customary framework assets which regularly takes a while.

Flexibility of different offered concepts in cloud computing from different outsourced organizations. It is the great and extensive deal to maintain cloud services for different users to share their individual data on cloud data storage. Here, we discuss about alternative way to outsource cloud data using virtual machines based on physical representations with great deal of cloud demonstrate to share services using multiplexing. For this, more number of fixed and dynamic services are regular to maintain resource provisioning for placement of

different operations under data resourcing in cloud computing. Cloud computing displays required operations to take services based on client requests utilized in resource provisioning other than decreasing the refined operations on additional presentation focused on different sources like power representations based on cloud properties.

In any case, a close unending asset pool for scale and adaptability isn't the main capability of the cloud. Cloud facilitating suppliers offer this close limitless asset on request utilizing diverse estimating methodologies based on pay as u service demonstrate for work based on load qualities, saved on required methodology presentation with long haul duty of accessibility and spot case show loads in terms of adaptable fruition time. In this way, application suppliers can pick a proper evaluating model in light of the expected workload qualities and arrangement the assets likewise in the cloud. In incentive application development, if dynamic framework is representative then heavy load is loaded with impact of data processing [2] or sudden increase



  
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# Integrated Key Management Procedure to Handle Multiple Data Sharing in Cloud Computing

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## ABSTRACT

Cloud computing is real time business IT infrastructure facilities to solve high usage and source of processing, data storage and programs, and allow users to enjoy popular, efficient & on-demand services in access control to a distributed share of configurable processing sources with great performance and little economic expense. Privacy in multiple data sharing for different users in multi data sharing is a progressive concept in real time distributed environment. Broadcast group key management schema (BGKM) explores different user access control user operations like upload, download and revoke in data sharing applications present in outsourced development. BGKM defines present approaches used to access data in real time scenario to achieve and access different cloud data in real time scenario in cloud. But one major limitation in BGKM. for multi file security, BGKM maintains different keys to provide privacy in cloud computing, for that memory storage and maintenance in data sharing is a complex task in distributed environment. So that, in this document, we implement and propose an Aggregated Key Management and Cryptosystem (AKM&C) to provide security in multi file sharing with single aggregate key in distributed environment. Our proposed approach combine with Single key for multi-file sharing and multiple keys for multiple files to share data to multiple users. Our experimental results show efficient security with multi file sharing between different users in distributed environment.

**Key Words:** Distributed Computing, Transmitted Team Key Management, Integrated Key Cryptosystem, Aggregate Key, Cloud Environment.

## 1. INTRODUCTION

Cloud computing is a replica for efficient authentication extensive system access to share the configurable PC assets. Multiplied figure and accumulate choices furnish customer and organizations with different ability to load and system their data in vistor data offices [1]. It relies on upon talking about of sources to expert reasonability and monetary frameworks of extent, like an application (like the force network) above a framework. At the base of cloud preparing is the more extensive thought of consolidated offices and disseminated administrations.

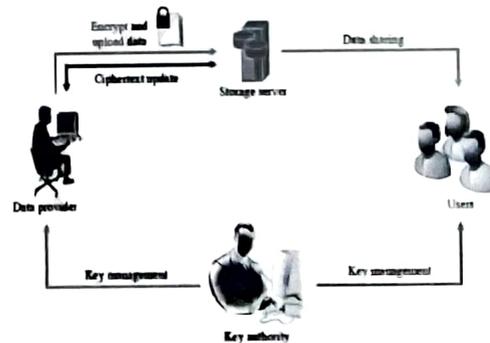


Fig 1: Distributed secure file sharing between different users. [15].

As shown in above diagram, distributed computing defines and provides three services regarding cloud setup and process different services in distributed environment. SAAS (Software as a

## IOT SENSORS: APPLICATIONS AND PERSPECTIVES

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**Abstract:** IoT is defined as smart machines collaborating and communicating with a variety of gadgets, objects, environments, and frameworks, resulting in a large amount of data being generated and processed into useful actions that can be used to command and control things, thereby assisting humans in making their lives easier. IoT platforms play a crucial role in this growth because they provide important building pieces. Sensors are important IoT building components. Sensors are crucial in the Internet of Things (IoT), since they gather data to help people make better choices. This study examines several kinds of IoT sensors and their applications..

**Keywords:** Blocks, Command, control, Internet of Things, smart, machines

### I. INTRODUCTION

Today's world has a strong need for internet applications, which may be met with IoT. IoT may be used to create a variety of helpful applications. The internet of things (IoT) is a network in which any physical items may be linked to the internet via network devices such as routers and exchange data. It is an intelligent technology that lowers human effort and allows any equipment to be operated without the need for human intervention. The Internet of Things has major hurdles in providing termless network connectivity, including obsolete hardware and software, malware, data protection, and security. Due to the rising number of devices, these devices are protected at the time of purchase, but as additional devices are added, they become obsolete and more vulnerable to assaults. Cyber threats are also on the rise as more gadgets are developed. It might be difficult to determine if a gadget has been attacked. As a result, keeping track of a large number of IoT devices is tough. These challenges will be taken into account while developing smarter apps. Edge computing has been used to transfer just the data that is valuable to the cloud, lowering processing costs.

The lower cost of sensors makes it more profitable to install additional IoT devices. In today's society, there are an increasing number of

As the use of connected devices grows, working spaces will become more crowded with smart items, ushering in a new age.

### II. IOT LAYERED ARCHITECTURE

The Internet of Things (IoT) architecture has two primary components: the Internet and physical devices (like sensors and actuators). Sensor connection & network is the bottom layer of the IoT system, which contains sensors (which transform information from the outside world into data required for analysis) and a network to gather data. The lower layer is an important part of the IoT system since it provides network access to the gateway and network layer.

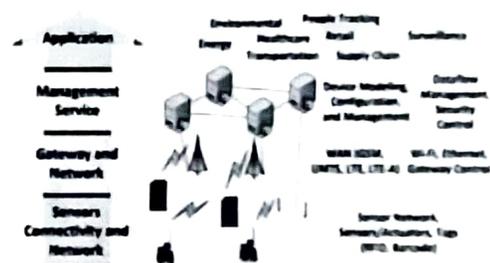


Fig. 1. Block diagram of IoT design architecture

Sensors are used to collect information from the surrounding environment. Sensors, or 'things' in the IoT system, make up the front end. Sensors may be linked to IoT networks directly or indirectly after signal conversion and processing. Sensors are classified according to their use in IoT applications. In comparison to analogue sensors, digital sensors are easier to interface.

### III. IOT SENSOR TYPES

A sensor is a device that detects changes in the environment. Sensors are used to transform physical quantities such as light, heat, motion, moisture, pressure, and temperature into electrical pulses. Sensitivity, resolution, and range are all characteristics of sensors.

A) **Temperature sensors are the most common kind of sensor.**

It has applications in industrial (to monitor production processes) and agriculture, as well as the health care business. These sensors are used to keep track of machine temperatures

## IOT SENSORS: APPLICATIONS AND PERSPECTIVES

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**Abstract:** IoT is defined as smart machines collaborating and communicating with a variety of gadgets, objects, environments, and frameworks, resulting in a large amount of data being generated and processed into useful actions that can be used to command and control things, thereby assisting humans in making their lives easier. IoT platforms play a crucial role in this growth because they provide important building pieces. Sensors are important IoT building components. Sensors are crucial in the Internet of Things (IoT), since they gather data to help people make better choices. This study examines several kinds of IoT sensors and their applications..

**Keywords:** Blocks, Command, control, Internet of Things, smart, machines

### I. INTRODUCTION

Today's world has a strong need for internet applications, which may be met with IoT. IoT may be used to create a variety of helpful applications. The internet of things (IoT) is a network in which any physical items may be linked to the internet via network devices such as routers and exchange data. It is an intelligent technology that lowers human effort and allows any equipment to be operated without the need for human intervention. The Internet of Things has major hurdles in providing termless network connectivity, including obsolete hardware and software, malware, data protection, and security. Due to the rising number of devices, these devices are protected at the time of purchase, but as additional devices are added, they become obsolete and more vulnerable to assaults. Cyber threats are also on the rise as more gadgets are developed. It might be difficult to determine if a gadget has been attacked. As a result, keeping track of a large number of IoT devices is tough. These challenges will be taken into account while developing smarter apps. Edge computing has been used to transfer just the data that is valuable to the cloud, lowering processing costs.

The lower cost of sensors makes it more profitable to install additional IoT devices. In today's society, there are an increasing number of

As the use of connected devices grows, working spaces will become more crowded with smart items, ushering in a new age.

### II. IOT LAYERED ARCHITECTURE

The Internet of Things (IoT) architecture has two primary components: the Internet and physical devices (like sensors and actuators). Sensor connection & network is the bottom layer of the IoT system, which contains sensors (which transform information from the outside world into data required for analysis) and a network to gather data. The lower layer is an important part of the IoT system since it provides network access to the gateway and network layer.



Fig. 1. Block diagram of IoT design architecture

Sensors are used to collect information from the surrounding environment. Sensors, or 'things' in the IoT system, make up the front end. Sensors may be linked to IoT networks directly or indirectly after signal conversion and processing. Sensors are classified according to their use in IoT applications. In comparison to analogue sensors, digital sensors are easier to interface.

### III. IOT SENSORSTYPES

A sensor is a device that detects changes in the environment. Sensors are used to transform physical quantities such as light, heat, motion, moisture, pressure, and temperature into electrical pulses. Sensitivity, resolution, and range are all characteristics of sensors.

**A) Temperature sensors are the most common kind of sensor.**

It has applications in industrial (to monitor production processes) and agriculture, as well as the health care business. These sensors are used to keep track of machine temperatures.

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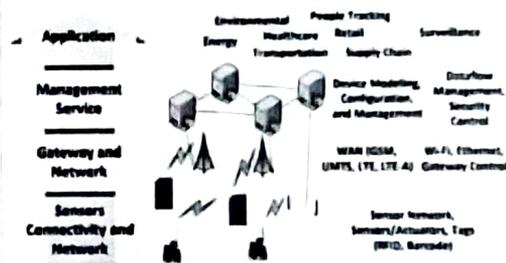


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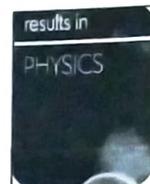
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## Spectroscopic and electrical investigations of copper ions in PbO–GeO<sub>2</sub> glasses

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### ARTICLE INFO

#### Keywords

XRD  
SEM  
DSC  
Spectroscopic  
Dielectric properties

### ABSTRACT

Small concentrations of copper oxide doped PbO–GeO<sub>2</sub> glasses were prepared by melt quenching technique. The characteristics of the samples were analyzed by X-ray diffraction, scanning electron microscopy and DSC techniques. The analysis of XRD spectra established the disorderly nature of the glass composition and no specialized crystalline species are observed. The surface morphology of the glass samples has also been systematically investigated by scanning electron microscopy. The optical absorption and ESR spectral studies have revealed probable presence of Cu<sup>2+</sup> ions that act as modifiers and induce non-bridging oxygens (NBO's) in the glass network. The observed decrease in the optical band gap with the increase in the concentration of CuO is attributed to the gradual reduction of Cu<sup>2+</sup> ions into Cu<sup>+</sup> ions. The presence of GeO<sub>4</sub>, GeO<sub>6</sub>, Ge–O–Ge and PbO<sub>4</sub> structural blocks has been verified by means of IR spectral bands. The overall inference of optical, ESR and IR studies is that the Cu<sup>2+</sup> ions might have changed from ionic environment to covalent environment progressively. The dielectric parameters viz., dielectric constant,  $\epsilon'$ , loss,  $\tan \delta$ , and ac conductivity,  $\sigma_{ac}$ , were studied by varying frequency and temperature. The values of  $\epsilon'$  and loss  $\tan \delta$  were enhanced where as  $\sigma_{ac}$  values are dipped. It is proved that the more is the number of Cu<sup>2+</sup> ions in the samples, the higher are the values of dielectric parameters.

### Introduction

PbO is a heavy metal oxide. It has attractive optical properties when used in the glasses. Its atomic number is high and hence it raises density of the glasses. The structure of the glass material changes in the glass network due to its modifying nature. It has dual role in the glasses as modifier and glass former [1]. Lead oxide glasses have high refractive index and relatively low melting points [2]. The significant characteristic property of electrical conduction of the lead containing glasses with different network formers is of great interest [3]. GeO<sub>2</sub> glass has less transmission loss in optical fibers; it is an attractive property in glasses [4]. In the absence of non bridging oxygen, conversion of germanate groups [GeO<sub>4</sub>] into [GeO<sub>5</sub>]<sup>−</sup> or [GeO<sub>6</sub>]<sup>2−</sup> is possible at low modifier content [5]. Thermal stability of GeO<sub>2</sub> glasses are more, incorporation of these into lead oxide glasses increases the transition temperature of the glass [6]. PbO–GeO<sub>2</sub> glasses are widely used in high speed optical switches, broad band optical amplifiers and

non liner optical devices [7]. When the modifier PbO is added to GeO<sub>2</sub> network, it acts either as network former or as modifier; it is a modifier if Pb-O is ionic else as a glass former if Pb-O is covalent. Because of high polarizability, the Pb<sup>2+</sup> ion forms a stronger covalent bond with O<sup>2−</sup> ion [8].

CuO doped glasses exhibit semiconducting properties so these are mostly used in pure and applied science, electronics and in other potential applications [9]. The copper atom has electronic configuration [Ar] 3d<sup>10</sup>4s<sup>1</sup>. The coloring of a glass does not depend on Cu<sup>+</sup> (cuprous) ion while the color of a glass is fixed by the content of Cu<sup>2+</sup> ions [10]. Different tints (ruby, blue and emerald green) can be produced by Cu<sup>2+</sup> ions. The color also depends on coordination and composition of the glass. Colors in glass can be explained by ligand field theory [11,12]. Copper ions can influence dielectric, spectroscopic properties of glasses; generally Cu<sup>2+</sup> ions are paramagnetic in nature [13]. The degree of disorder determines the information about the local structure and properties of materials. Paramagnetic probes of copper ions are used to

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<https://doi.org/10.1016/j.rinp.2018.10.012>

Received 8 June 2018; Accepted 9 October 2018

Available online 24 October 2018

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