



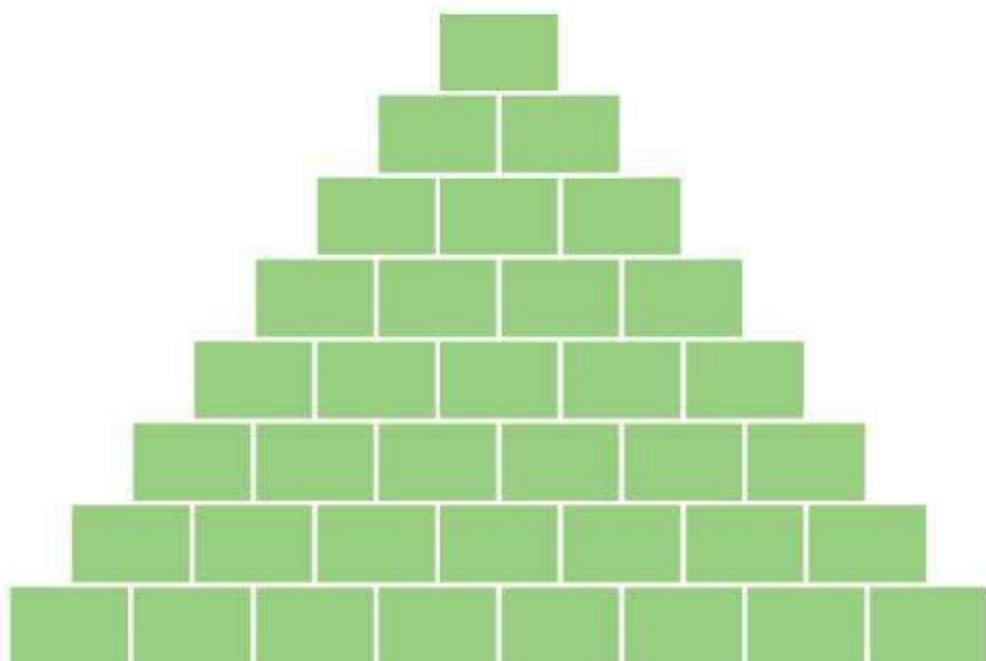
VIGNANA BHARATHI
Institute of Technology

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Where Quality Matters...

Project . VBIT

2012-13



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A Guest Lecture by Mr.K.S.Benarjee, Assistant Vice - President, on "International Business."



Ms.Renu Sud Karnad, M.D., HDFC, Mr.Debashish Ganguly, Sr.Vice President, POLARIS and Mr.Rakesh Jain, C.E.O., HDFC, Education Initiative Inaugurating "The Pilot Project :HDFC Graduate Employability Program" (GEP@IT) at VBIT Campus. A total of 26 students completed the program followed by placements in companies like CAPGEMINI BUSINESS SERVICES (INDIA) LIMITED, DARK HORSE TECHNOLOGIES PVT. LTD and SONATA INFORMATIONTECHNOLOGY LIMITED



FOREWORD

Project. VBIT talks about the ideas and abstracts of the best of its selected quality.

The collection of ideas and abstracts of students are edited and compiled by academically competent people in the Institute. It is, every year, expected to have more and more projects to be added into the system. Students would like to show their curiosity to exploit the latest technology and trends in the market and create projects based on the need.

Engineering requires men and women of imaginary power, who can plan and create things adroitly. The engineer's resources include an intimate knowledge of scientific laws and their applications to engineering problems. An ability to use mathematics and computers and, above all, imaginative and inquiring minds are primary weapons in the toolbox of an engineer.

Students do not devote their attention solely to innovations in technology. They look beyond their inventions and conceptions to consider the societal effect of their work, including its economic, aesthetic, safety, and environmental aspects.

Engineers can mould their careers in many functional roles such as designer, test engineer, manufacturing engineer, sales engineer, researcher, or the combination of all these and other roles. Engineering has become one of the best professions that often leads to executive management positions. As more and more of the decisions of management in government and business are based on technical considerations, engineers with the necessary background, are called upon to make these choices.

For all engineers, continuing professional competence in the midst of our constantly changing technology requires educational renewal and a life-long dedication to continuing education. The College offers seminars, institutes and off-campus programs designed to meet this need. Besides, regular college courses are available on an elective, post-degree basis.

The evolution of our civilization has always been closely associated with technology and science. Now, and in the future, this association will become even more imperative. New knowledge has necessitated and inspired advances in technology, resulting in new career opportunities. Far-reaching developments have been made in communications and instrumentation technology. Highly sophisticated machine tools and manufacturing processes have come into being. New energy sources and new man-made materials have been developed. Computer applications have revolutionized the techniques of industrial manufacturing and management.



As the challenges are increasing in the era of LPG - Liberalisation, Privatisation and Globalisation - it is no longer possible for one person to master all of these skills and knowledge necessary to execute technical projects. Quite often, a team effort is required – with each member of the team highly trained in a specific area. Today's engineering teams involve engineers and engineering technologists and may also include technicians, scientists, physicians, craftsmen, and other specialists.

Engineering technology supports engineering activities through the combination of scientific and professional knowledge with technological skills and concentrates on the industrial applications of engineering. Because of the extensive variety of functional opportunities, and the wide variety of industrial enterprises available to the engineering technologist, there has been a great deal of specialization. An engineering technologist can specialize in three related ways: i) discipline, ii) function, and iii) industry. For example, the discipline could be mechanical, the function could be design, and the industry could be automotive; or the discipline could be electrical, the function field installation, and the industry electric power generation. Through its undergraduate and graduate programs, the four years of engineering study allows students to gain the specialization that they desire to contribute to interdisciplinary teams as engineering technologists.

At VBIT students are encouraged and advised to develop their inclination towards research orientation since the first year of engineering through a technical seminar competition - *Avishkar*. Hands-on research experience provides important preparation for graduate school as well as professional opportunities.

This book, *Project VBIT*, showcases the VBIT's selected undergraduate research projects and allows student researchers the opportunity to share their knowledge and work through panel and presentations. Students begin working on a career plan the day they enter the Institute that culminates in year four when they do a project. This deals with the summation of their undergraduate work and becomes the first step toward a postgraduate career.

VBIT graduates are well prepared by the virtue of career-building experiences beginning with the freshman seminar including undergraduate research projects, and faculty mentoring. These experiences are expected to help them out not only in applying for employment, but in graduate / professional study.

- Prof. B. Brahma Reddy
Head, Dept. of ECE

- Prof. J.S.N.Mruthy
Principal



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**DEPARTMENT
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Automatic Train Approach Warning System at the Level Crossing

G. Sravan Kumar Reddy and VenkateswaraReddy

Abstract

Objective: Automatic train approach warning at the railway level crossing

Abstract: Railways being the cheapest mode of transportation are preferred over all the other means when we go through the daily newspapers we come across many railway accidents occurring at unmanned railway crossings. This is mainly due to the carelessness in manual operations or lack of workers. We, in this project, have come up with a solution for the same. Using simple electronic components we have tried to automate the control of railway gates. As a train approaches the railway crossing from either side, the sensors placed at a certain distance from the gate detects the approaching train and accordingly controls the operation of the gate. Also an indicator light has been provided to alert the motorists about the approaching train

The objective of this project is to manage the control system of railway gate using the microcontroller. When train arrives at the sensing point, alarm is triggered at the railway crossing point so that the people get intimation that gate is going to be closed. Then the control system activates and closes the gate on either side of the track. Once the train crosses the other end control system automatically lifts the gate. For mechanical operation of the gates DC motors are employed. Here we are using embedded controller built around the 8051 family (AT89C52) for the control according to the data pattern produced at the input port of the micro controller, the appropriate selected action will be taken. The logic is produced by the program written in Embedded C language. The software program is written, by using the KEIL micro vision environment. The program written is then converted in HEX code after simulation and burned on to microcontroller using FLASH micro vision.





Design of Cryptographic Processor for Security Algorithm Operations

R. Ashwitha, N. Jyosna and M. Pavani

Abstract

Introduction: Data hacking has become more prominent during the data transmission because of increase in the technology here comes the necessity of the secure data transmission. Cryptography is the science of protecting the data, which provides means and methods of converting data into unreadable form. Cryptography refers to encryption and decryption of data. It's used to maintain confidentiality, data integrity, non-repudiation, authentication of data. We can provide security by performing some operations such as modulo addition, modulo multiplication, mix column transformation etc depending on the algorithm used.

Project Scope: All the operations can be performed in a normal processor but instructions in a normal processor require more number of addressing modes, lower throughput and more power consumption. So we have designed our own cryptographic processor. In the processor designed by us we don't have addressing modes we just use load and store instructions for performing the calculations. We are using 32 bit registers for performing the operations and storing the results. Hardware is simplified and the machine cycles time is reduced.

Methodology: The project consists of 8 modules. They are 1. Sixteen 32-bit general purpose registers, Multiplexer, Instruction Register, Program Counter, Memory, Buffer, Control and Decoder, ALU with basic arithmetic and logical operations. The data flow starts from the memory which consists of a text file. It sends the data to the registers and the multiplexers selects the operands from the 16 registers and gives it as an input to the ALU which performs the operations based on the selection line given to it by the control and decoder. The obtained output is also stored in the registers.





Implementation of Interleaving Switch Based Architecture for System on Chip

G Akhila, B Dharani and V Joel Frank

Abstract

Introduction: System-on-chip is an integration of almost all components of a computer into a single integrated circuit (chip). The SoC consists of both the hardware (HW) components of the computer as well as the software (SW) that controls the microprocessor and peripherals. There are various benefits with the implementation of SOC which is capable of integrating all the components into single unit. The benefits include reduce in the cost, even the power consumption by the components can be reduced, the operation speed can be improved, also involves the security and also reduction in size.

Project Scope: This project proposes and implements the interleaving mechanism to overcome the output delay (latency) while operating one-to-one and one-to-many data communication. When we transmit a data from source then it might be sent to all the source nodes or only few may receive the data or no node will receive the data. This is what we have proposed to implement and have successfully implemented. When we have sent a data from the source node we could see that few nodes received the data at one instance and at another instance all the nodes received the data.

Methodology: The project is performed in "Modelsim 10.1d" software and is implemented in three modules namely (i) Input module (ii) Output module and (iii) Switch module. First a 16-bit data is taken and is split into 10 bits and 6bits in the input module. Then in the output module multiplexer functions and round-robin components are used. Switch module combines the input module and output module.





Performance Analysis of Spread Spectrum Techniques over AWGN Channel

M.Deepthi,V.Mounika and R.N.Saranya

Abstract

Introduction: With the ever-growing advancements in the technology, the field of communication has taken a new phase. Digital communication systems are becoming increasingly attractive and flexible for a secure form of data communication. Spread Spectrum technique, which provides a hostile environment, overcomes the severe levels of interference that are encountered in the transmission of the digital information.

Project Scope: This project is in accordance with the design of Spread Spectrum techniques, namely Direct Sequence Spread Spectrum (DSSS) and Frequency Hopped Spread Spectrum (FHSS). These techniques involve spreading the bandwidth of the signal using a Pseudo-Noise(PN) sequence and transmission of messages through AWGN channel. It further elaborates about the performance analysis of these techniques using Signal-to-Noise(S/N) ratio parameter, when the transmitted signal is corrupted in the channel by the addition of white Gaussian noise.

Methodology: Performance analysis of Spread Spectrum techniques is done using MATLAB and OCTAVE tool. The project involves 2 modules. Firstly, the data is transmitted and received over AWGN channel using DSSS technique, FHSS techniques .These techniques are then evaluated using SNR Vs.BER plot.





Area Efficient High Bit Rate Multiplier

Ch.Dinesh Reddy, K.Manasa and K.Namrata

Abstract

Objective: This project is aimed to design and implement area efficient high bit rate multiplier using radix-8 booth encoding algorithm.

Existing System: In the existing system, when a two 'n' bit inputs are multiplied, then a multiplier has to multiply with each bit of multiplicand, since 'n' bits are present in multiplier we get 'n' number of partial products. These 'n' partial products have to be added to get the final product.

Proposed System: The aim of this project is to build an alternative to reduce number of partial products for this we use booth's radix-8 algorithm. Radix-8 Booth recoding applies the same algorithm as that of Radix-4, but now we take quartets of bits instead of triplets. Each quartet is codified as a signed digit using radix-8 booth encoding algorithm. Radix-8 algorithm reduces the number of partial products to $n/3$, where n is the number of multiplier bits. Thus it allows a time gain in the partial products summation.

MODULES:

- Booth's encoding
- Partial product generator
- Wallace tree
- Carry look ahead adder

Booth's encoding: In this module we append a '0' at the LSB of multiplier and consider the quartets from back. Each quartet is assigned with an integer from -4 to +4 using radix-8 booth's table.

Partial product generator: In this module, the obtained integer from each quartet is multiplied with the multiplicand, we obtain 3 partial products for two 8 bit inputs.

Wallace Tree: In this module, the partial products generated are added using Wallace tree. The Wallace tree gives its output as two rows, one as a row of sum and other as row of carry.

Carry look ahead adder: In the last module the obtained rows of sum n carry should be added as fast as possible without waiting for previous bit's carry, this is implemented by carry look ahead adder.





Implementation of Amba AHB to APB Bridge for System on Chips

N Shravanthi, M Tulasi Rani and G Vinisha

Abstract

Objective: to facilitate the right-first-time development of embedded microcontroller products with one or more CPUs or signal processors and to be technology-independent and ensure that highly reusable peripheral and system macro cells can be migrated across a diverse range of IC processes and be appropriate for full-custom, standard cell and gate array technologies

Description: The AHB-APB bridge is used for the connecting the AHB Slave interface and APB Master interface signals. The Advanced Microcontroller Bus Architecture (AMBA) AHB, the AHB Slave is connected to high frequency devices, the APB Master are connected to low frequency devices. The low frequency devices cannot directly communicate with the high frequency devices. So the AHB slave converts the incoming AHB transfers protocol which is given to Bridge. The APB Master is also connected in the same manner to Bridge. The AHB slave is responds to a read or write operation within a given address space range. The bus slave signals back to the active master the success, failure or waiting of the data transfer.

The APB providing latching of all address, data and control signals. The AMBA APB should be used to interface to any peripherals which are low bandwidth and do not require the high performance of a pipelined bus interface. The APB bus is optimized for minimal power consumption and reduced interface complexity. The AHB-APB Bridge is mainly used for the data transfers and synchronization between the high performance bus to low performance bus. The bridge is used for the interfacing the two different frequency devices for the communication between them.





Design & Implementation of Encoder for (15, K) Binary BCH Code

Sandeep Reddy, Shivaraj and Raju

Abstract

Objective: To design and implement binary encoder for multiple error correction BCH code (15, k).

Existing System: Codes are used for data compression cryptography error correction and more recently also for network coding, such codes are Hamming codes, Cyclic codes, Reed–Solomon code. Now, we are implementing the bch codes for more reliable data transferring and most error free communication purpose.

Proposed System: One of the key features of BCH codes is that during code design, there is a precise control over the number of symbol errors correctable by the code. In particular, it is possible to design binary BCH codes that can correct multiple bit errors. Another advantage of BCH codes is the ease with which they can be decoded

MODULES:

1. Xilinx ise for vhdl code
2. Generating the BCH CODE in VHDL
3. Generating LFSR Block Diagram
4. Dumping in the FPGAKit

Methodology:

- Generated Polynomial of Binary Generated BCH Code over GF(24)
- Block length: $n = 2m - 1$
- 2. Number of information bits: $k \geq n - m \cdot t$

- 3. Minimum distance: $d_{min} \geq 2t + 1$

- 4. $g(x) = \text{LCM} \{ \phi_1(x), \phi_2(x), \dots, \phi_{2t}(x) \}$ These above steps mainly involving in the coding of the bch codes, after generating the codes are dumping in the fpga kit for verification.





Design and Implementation of Two Variable Multiplier Using Vedic Mathematics

S.Shyam Kumar and P.Ramulu

Abstract

Objective: This project is aim is to design and implement the Implementation of high speed and area efficient KCM Multiplier using Vedic Mathematics. Description: In this paper, a novel multiplier architecture based on ROM approach using Vedic Mathematics is proposed. This multiplier's architecture is similar to that of a Constant Co-efficient Multiplier (KCM). However, for KCM one input is to be fixed, while the proposed multiplier can multiply two variables. The proposed multiplier is implemented on a Cyclone III FPGA, compared with Array Multiplier and Urdhava Multiplier for both 8 bit and 16 bit cases and the results are presented. The proposed multiplier is 1.5 times faster than the other multipliers for 16×16 case and consumes only 76% area for 8×8 multiplier and 42% area for 16×16 multiplier.

Proposed System: The inputs of the multiplier is variables Multiplicand is 'a' and multiplier is 'b'; First we have to find the difference between 'a' and 'b'; $\text{Diff} = a - b$ based on the difference, the product is calculated many Indian Secondary School students consider Mathematics a very difficult subject. Some students encounter difficulty with basic arithmetical operations. Volumes have been written on the diagnosis of 'learning difficulties' related to Mathematics and remedial techniques. Learning Mathematics is an unpleasant experience to some students, mainly because it involves mental exercise. Of late, a few teachers and scholars have revived interest in Vedic Mathematics which was developed as a system derived from Vedic principles.



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Logic and Simulation Based Automatic Synchronization

B.Mallika Reddy, P.Navin and V.Swetha

Abstract

In an alternating current electric power system, synchronization is the process of matching the speed and frequency of a generator or other source to a running network. An AC generator cannot deliver power to an electrical grid unless it is running at the same frequency as the network. If two segments of a grid are disconnected, they cannot exchange AC power again until they are brought back into exact synchronization. And for a proper synchronization process there are five conditions that must be met by the incoming AC generator and the existing electrical grid. The incoming AC generator must have equal line voltage, frequency, phase sequence, phase angle, and waveform to that of the system to which it is being synchronized. In this work we are developing Logic and Simulation based Self Synchronizer using Matlab Simulink diagram. We are simulating four conditions using logic gates and they are

- (1) Detection of negative phase sequence in the voltages of the two machines.
- (2) To obtain an output signal if the frequencies of both the system voltages are the same.
- (3) To obtain an output signal if the magnitudes of the phase/line voltages of both the systems are the same.
- (4) To coincide the Positive or negative zero crossings of voltage wave forms of both the systems.

We are obtaining a logical output if all the four conditions are fulfilled and then they are studied by tracing the wave forms by simulation. After the simulation is successful we have to rig up a circuit making use of the different components used in the simulation work. The output of this board will be used to energize a relay and indicate "Ready to close the Paralleling Breaker". The output can also be Power amplified to energize a Three Phase Packet type Contactor to automatically close all the Three Phase Contacts to parallel the two machines automatically.





Enhancement of Power Quality by Upqc in Scig Wind Farm to Weak Grid Connection

K.Lalithya, G.Mahesh and T.Gowtham

Abstract

Introduction: In modern wind energy generation wind farms are directly connected to grid at medium voltage distributions by using squirrel cage induction generators. This wind farms are connected to weak grids for power stability, with this connection a problem commonly occur is poor power quality at point of common coupling (PCC) with the change in load and wind fluctuations. With this fluctuations occurred the power quality of the system is very greatly affected with which the system performance, reliability is worsen, which is undesirable and has to be compensated.

The compensation is done at two levels primarily at squirrel cage induction generator that is at generator level and secondly at point of common coupling. By using second technique the power quality is at most improved by implementing custom power device technology and result very useful for this kind of application. In this paper is proposed a compensation strategy based on particular CUPS devices, the unified power quality compensator UPQC is employed. A customized internal control scheme of the UPQC device was developed to regulate the voltage in the WF terminals, and to mitigate voltage fluctuations at grid side.

With implementation of UPQC power quality is improved at WF terminals and at grid side. Here in UPQC internally active power and reactive power both are compensated by using shunt and series converters, which exchanges power in DC-link. A model of wind farm with SCIG connected to a weak grid systems, including detailed UPQC compensator were developed on MATLAB/ Simulink software. Then simulations were conducted in order to compare the proposed compensation strategy. Results show a better wind farm performance in proposed strategy then that found in magnitude only compensation schemes. Also, the power rating of the compensators used in the proposed strategy is similar than the one that would be required.

Thus, considering the improvement in performance by using proposed compensation strategy is recommended for power quality improvement in modern wind generation stations WF connected to weak grids.





Designing, Analysis and Torque Ripple Reduction of 6/4 Switched Reluctance Motor

Sikta Suchismita , Vishal Goud ,B. Sai Satish and Ram Jakkula

Abstract

Introduction: Switched reluctance motor is an old member of the electric machine family. The main advantages of SR motors are simple structure, ruggedness and they are relatively inexpensive to manufacture. So to know more about the motor we have taken up a project where we have designed a 6/4 (no. of stator poles/no. of rotor poles) Switched Reluctance Motor using a software called Ansoft Maxwell. After constructing the motor in RMxpert (a tool of Maxwell), we simulate the motor giving the desired specifications and a 3 phase analysis of the motor is done which gives us a brief idea about the torque, flux linkages and other factors about the motor.

To carry in depth analysis of the 6/4 SRM it is converted into a 3D Model and given an excitation to find out the magnetic flux density, torque, flux linkages and inductances. The motor is analyzed at 5 different rotor positions and a detailed report of the magnetic flux density at these positions is provided.

SRM is supposed to have wide uses. But due to some disadvantages, the use of SRM is limited. The major disadvantages of SRM are high torque ripple, acoustic noise; vibrations and difficulty in controlling it prevent it from being accepted by the industry extensively. The doubly salient structure of the machine is the reason for torque ripple. Because the torque production mechanism of SR motors is basically successive excitation of each stator phase, the doubly salient structure inevitably results in the torque pulsations between two successive pulsations. Hence here a step is taken to reduce the torque ripples of the 6/4 SRM. So here three circuits are used

- 1)Position Controller
- 2)Speed Controller
- 3)Converter Circuit.

Implementing the above circuits the torque ripple is minimized. There are many other techniques by which the torque ripple can be minimized. But using the above method it can be minimized in an effective way.





Power Quality Improvement in Microgrids Using Apc Based on Renewable Energy

P.Rajashree , K.Ramachandraiah , N.Sravan Kumar and G.Vijay Reddy

Abstract

Introduction: This project presents power quality improvements in Micro grid using three-phase Active Power Conditioner. A micro grid is a weak electrical grid which can be easily subject to disturbances. In a micro grid, large and sudden changes in the load may result in voltage transient of large magnitudes in the AC bus. Moreover, the proliferation of switching power converters and nonlinear loads with large rated power can increase the contamination level in voltages and currents waveforms in a micro grid,

The Active Power Conditioner (APC) presented in this project acts as an interface between renewable energy sources and the AC bus of a micro grid and uses an improved control strategy, which makes possible to inject energy in the micro grid, compensate the current harmonics and correct the power factor. Moreover, the proposed control strategy allows the line current at the point of common coupling (PCC) to be balanced and sinusoidal even when the load is unbalanced. Consequently, the voltage at the PPC becomes balanced. Simulation results show the validity of the innovative control strategy.

This project presents an APC used to improve the power quality in a micro grid. The attention will be mainly focused on the innovative control strategy, which allows injecting energy in the micro grid, compensating the current harmonics, correcting the power factor and balancing the supply voltage at the PCC. The validity of the control strategy has been proved through many simulation tests using Sim Power Systems from MATLAB.





Power Quality Improvement Using DVR

M.Naresh Kumar, Y. Raju and A.Sai Divya

Abstract

Introduction: Power quality is one of major concerns in the present era. It has become important, especially, with the introduction of sophisticated devices, whose performance is very sensitive to the quality of power supply. Power quality problem is an occurrence manifested as a nonstandard voltage, current or frequency that results in a failure of end use equipments. One of the major problems dealt here is the power sag.

To solve this problem, custom power devices are used. One of those devices is the Dynamic Voltage Restorer (DVR), which is the most efficient and effective modern custom power device used in power distribution networks. Its appeal includes lower cost, smaller size, and its fast dynamic response to the disturbance. This presents modeling, analysis and simulation of a Dynamic Voltage Restorer (DVR) using MATLAB.

Voltage sags and swells in the medium and low voltage distribution grid are considered to be the most frequent type of power quality problems based on recent power quality studies. Their impact on sensitive loads is severe. The impact ranges from load disruptions to substantial economic losses up to millions of dollars. Different solutions have been developed to protect sensitive loads against such disturbances but the DVR is considered to be the most efficient and effective solution.

This describes the DVR principles and voltage restoration methods for balanced and/or unbalanced voltage sags and swells in a distribution system will be simulated. Simulation results were presented to illustrate and understand the performances of DVR under voltage sags/swells conditions.





Capacitor Placement for Power Factor Correction in Radial Distribution System

Ch.Umarani , B.Pranaya ,A.Deepika

Abstract

Introduction: Power Factor Improvement is the growing issue of concern. Within power quality framework, one of the important aspects is reactive power control.

Consumer load requires reactive power that varies incessantly and increases transmission losses while affecting voltage in the transmission network. To prevent unacceptably high voltage fluctuations or the power failures that can result, this reactive power must be compensated and kept in balance. This function has always been performed by passive elements such as reactors or capacitor, as well as combination of the two that supply inductive or capacitive reactive power. The more quickly and precisely the reactive power can be compensated, the more efficiently the various characteristics of transmissions can be controlled. Since most loads in modern electrical distribution systems are inductive, there is an ongoing interest in improving power factor.

The low power factor of inductive loads robs a system of capacity and can adversely affect voltage level. As such, power factor correction through the application of capacitors, Synchronous Alternators, TCR SVC , Power Electronic DC-DC convertors etc. is widely practiced at all system voltages. As utilities increase penalties, they charge customers for low power factor system performance will not be the only consideration. The installation of power factor correction circuits improves system performance and saves money.





A Single-phase Voltage-controlled Grid-connected Photovoltaic System with Power Quality Conditioner Functionality

Akash Singh, K.Rajashekar Reddy and B.Kiran

Abstract

Introduction: Among the renewable energy sources, a noticeable growth of small photovoltaic (PV) power plants connected to low-voltage distribution networks is expected in the future. Future ancillary services provided by photovoltaic (PV) systems could facilitate their penetration in power systems. As a consequence, research has been focusing on the integration of extra functionalities such as active power filtering into the PV inverter operation. Distribution networks are less robust than transmission networks, and their reliability, because of the radial configuration, decreases as the voltage level decreases. Hence, usually, it is recommended to disconnect low-power systems when the voltage is lower than 0.85 pu or higher than 1.1 pu.

For this reason, PV systems connected to low-voltage grids should be designed to comply with these requirements but can also be designed to enhance the electrical system, offering "ancillary services". Hence, they can contribute to reinforce the distribution grid, maintaining proper quality of supply that avoids additional investments. However, low-voltage distribution lines have a mainly resistive nature, and when a distributed power generation system (DPGS) is connected to a low-voltage grid, the grid frequency and grid voltage cannot be controlled by independently adjusting the active and reactive powers. This problem, together with the need of limiting the cost and size of DPGS, which should remain economically competitive even when ancillary services are added, makes the design problem particularly challenging.

This paper proposes to solve this issue using a voltage controlled converter that behaves as a shunt controller, improving the voltage quality in case of small voltage dips and in the presence of nonlinear loads. Shunt controllers can be used as a static var generator for stabilizing and improving the voltage profile in power systems and to compensate current harmonics and unbalanced load current. This paper presents a single-phase PV system that provides grid voltage support and compensation of harmonic distortion at the point of common coupling thanks to a repetitive controller. In this paper, the PV inverter not only supplies the power produced by the PV panels but also improves the voltage profile. The presented topology adopts a repetitive controller that is able to compensate the selected harmonics. Among the most recent Maximum Power Point Tracking (MPPT) algorithms, an algorithm based on the incremental conductance method has been chosen. It has been modified in order to take into account power oscillations on the PV side, and it controls the phase of the PV inverter voltage. The designed PV system provides grid voltage support at fundamental frequency and compensation of harmonic distortion at the point of common coupling. An inductance is added on the grid side in order to make the grid mainly inductive.





A Two Level, 48-pulse Voltage Source Converter for HvdC Systems

K.Laxman Rao, A.Charan Raj and J.Dhileep Reddy

Abstract

Introduction: This paper deals with an analysis, modelling and control of a two level 48-pulse voltage source converter for High Voltage DC (HVDC) system. A set of two-level 6-pulse voltage source converters (VSCs) is used to form a 48-pulse converter operated at fundamental frequency switching (FFS).

The performance of the VSC system is improved in terms of reduced harmonics level at FFS and THD (Total Harmonic Distribution) of voltage and current is achieved within the IEEE 519 standard. The performance of the VSC is studied in terms of required reactive power compensation, improved power factor and reduced harmonics distortion. Simulation results are presented for the designed two level multipulse converter to demonstrate its capability. The control algorithm is disused in detail for operating the converter at fundamental frequency switching.





Transmission Line Multi Fault Detector and Indication to Substation Using Rf

R.N.V.S.S Sri Krishna, L.Chaitanya Kumar, N.Santhosh Reddy and Y.Bhagya Raj

Abstract

Introduction: Electric power transmission or "high voltage electric transmission" is the bulk transfer of electrical energy from generating power plants to substations located near to population centers. This distinct from the local wiring between high voltage substations and customers, which is typically referred to as electricity distribution.

In an electric power system comprising of different complex interacting elements, there always exists a possibility of disturbance and fault. In generating stations and highly interconnected power systems make difficult in fault detection occurs in the transmission line. In this paper, the status of the transmission lines are transmitted to substation using wireless communication and its status are displayed using LCD displays.

Our project aims at monitoring parameters like Low voltage, High voltage, over load at various areas especially rural sites associated with the substation. Any problems in those areas will be automatically intimated to the substation. In the transmitter unit the transmission lines through substation will be monitored, If any fault is sensed, then the corresponding data is transmitted through RF transmitter.

In the receiver side, the data is retrieved by the RF receiver, which can be read by the controller and the datas are displayed in LCD. If any fault occurred in transmission line, the alert message displayed in LCD as well as alarm will be raised.





Fuzzy Logic Closed Loop Control of 3phase Induction Motor

P.Venkat Srikanth, K.Jayasree and Arshad Ayyub

Abstract

Introduction: This paper presents a detailed study of fuzzy logic closed loop control of 3phase induction motor, a multi-level inverter (PWM control technique) is fed to 3 phase induction motor as input and a fuzzy logic controller is fed to multi-level inverter, with current inner loop and speed outer loop from motor which forms a closed loop. This closed loop controls the induction motor with specified inputs to motor from FIVE LEVEL multi-level inverter which improves the performance characteristics of the motor in real time process.

The multilevel inverter is to get a synthesized sinusoidal voltage from several levels of DC voltages, typically obtained from capacitor voltage sources. As it has a multi-level this reduces the dv/dt stress of output and hence the sharp edges are eliminated. The synthesized output waveform adds more steps, producing a staircase wave which approaches the sinusoidal wave with minimum harmonic distortion. Using fuzzy logic controller with the feedback loops from motor the inverter is controlled with proper triggering. The simulation results show the performance characteristics of 3phase induction motor.



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Securing SMS Using Ecc in Android

N. Sai Ram, Sri Rangarajan and P. Rohit

Abstract

Objective : The main objective of the project is to send messages from one mobile phone to another in a secure and authenticated manner.

Existing System: The necessity of providing security to SMS has been imperative since a long time and many algorithms and techniques have been implemented in various platforms to try and provide security to the messages. At present there are many algorithms based on symmetric cryptography that provides security to the messages transferred based on a shared secret key. The main disadvantage of a secret-key cryptosystem is related to the exchange of keys. Symmetric encryption is based on the exchange of a secret. Therefore problem of key distribution arises. Private-key systems need to use keys that are at least as long as the message to be encrypted. Symmetric encryption requires that a secure channel be used to exchange the key, which seriously diminishes the usefulness of this kind of encryption system when we talk about SMS.

Proposed System: The proposed system uses the concept of elliptic curve cryptography along with AES to encrypt the message and send it over a common channel. The sender writes a message and gives the recipient's number, when he sends the message the algorithm is triggered on both the devices. The keys are generated and shared among the devices and the encryption takes place at the senders end. After encryption, the message is sent to the receiver and he decrypts it using his key to read it.

Modules

- ☐ Sender
- ☐ Receiver

Sender: The sender types in the receiver's contact number and the message and sends the public key to the receiver. Once he receives the public key of the receiver, he accepts it then the message is encrypted and sent to the receiver.



Receiver: The receiver first receives the public key of the sender accepts it and sends his own public key to the sender. When the encrypted message is received, it is decrypted and displayed to the receiver.



Authenticated Mutual Communication Between Two-Nodes in MANETs

Dega Ravi Kumar Yadav, K Nikitha and B Thamika

Abstract

Objective: The objective of the project is to define a PKC based new efficient two-party mutual authenticated key agreement protocol suitable for MANETs.

Existing System: In order for two parties to communicate securely over a public network, they must be able to authenticate one another and agree on a secret encryption key. To accomplish this, key establishment protocols are used at the start of a communication session in order to verify the parties' identities and establish a common session key. There are two basic categories of protocols. The first includes so-called key transport protocols, in which the session key is created by one entity and is securely transmitted to the other. A second category includes key agreement protocols, where information from both entities is used to derive the shared key.

Proposed System: This project proposes a PKC based new efficient two-party mutual authenticated key agreement protocol suitable for MANETs. Its security is based on the elliptic curve logarithm assumption.

Implementation Steps : Consider a TTP and communication is between node A and node B. And notations used in protocol.

Q	A large prime number.
AReq	Authentication Request Packet
BRes	Authentication Response Packet
P	Point on elliptic curve
a	Long term secret of node A
b	Long term secret of node B
SKAB	Session key generated between node A and B
SKBA	Session key generated between node B and A

Table 6.2 Notations used in protocol.

Step 1: TTP calculates the token and distributes it among node A and node B.

Step 2: On receiving token from TTP. Node A selects r_A randomly, where $1 \leq r_A \leq q - 1$ and then computes $Q_A = r_A \cdot P$. And node A sends an Authenticated request packet AReq (tokenA, Q_A).



Step 3: After receiving AReq message, node B first verifies node A's token. If the A's token is verified using the B's token given by TTP.

Step 4: Node B selects randomly an integer r_B in the range $1 \leq r_B \leq q-1$ and computes $Q_B = r_B \cdot P$. It then computes $SK_{BA} = H((r_B + b) \cdot (Q_A + Pub_A))$ as a session secret key between A and B.

Step 5: Node B computes $HMAC_B = H(SK_{BA} || H((Q_A.x + Q_B.x) || (Q_A.y + Q_B.y)))$. It then constructs a message m consists of $HMAC_B$ and Q_B , that is, $m = HMAC_B || Q_B$ and generates a signature $sig_B(m)$ on m as $sig_B(m) = (r, s)$ using the private long-term key b of B with the help of ECDSA signature generation algorithm. Node B finally sends BRes $(m, \text{sign}(m))$ as an authentication reply message to node A.

Step 6: After receiving BRes message, node A first verifies the signature $sig_B(m)$ using the public key of node B with the help of ECDSA signature verification algorithm. Node A then computes $SK_{AB} = H((r_A + a) \cdot (Q_B + Pub_B))$ as a session secret key between A and B.

And then calculates $HMAC_A = H(SK_{AB} || H((Q_B.x + Q_A.x) || (Q_A.y + Q_B.y)))$

Step 7: Node A compares both $HMAC_A$ and $HMAC_B$ for integrity check and if the check holds then as an initiator node A sends an authentication acknowledgement message to node B. And the Authentication acknowledgement message consists of both $HMAC_A$ and $sin_A(HMAC_A)$. In this way both node A and node B use the secret key for future communication.





E- Mandi

Tallapalli Rohith, Ch.Vivekananda Reddy and N.Harsha Vardhan

Abstract

Objective : The main objective of this project is to build a website which will help the civilians, retailers, whole sellers and the farmers to get the best from his inputs. With the help of this a farmer will be able to get the best value for his products and will not be fooled by the mediators. It will help in keeping the transparency between the farmer and whole seller and also the selection for civilian for his requirement become easy. So this will help in eradicating black marketing and inflation.

Existing System: In the existing system farmers sell their goods to the mediators who are present in the market. These mediators in turn sell those goods to consumers. But in most cases they do not pay farmers according to the rate fixed by government. They buy products at less price and sell them at very high prices, making the farmer and consumers loose their money.

Proposed System: In the proposed system we intend to eliminate the barriers between the sellers and buyers by creating a web application where the sellers directly sell their goods to the government representative where the sellers get the correct amount for their goods and the consumers also get goods for minimal prices, and there is no profit dominance, both get benefitted equally.

Modules: The project is mainly divided into four modules:

- Seller Module
- Buyer Module
- Government Representative Module
- Distributor Module

Seller Module : The seller gets the products he harvested and gives them to the government representative and gets the amount from him. He also can view his sale history and provide feedback to the government and also can update his profile.

Buyer Module: Buyer can order goods directly from home and collect them. The goods are sold to civilians at a minimal price. Buyer can also vie his previous purchase history and provide feedback about the application and also can update his profile.

Government Representative Module: Government representative is the one who collects good from farmers and sells then to the civilians. He regularly updates the product details and maintains the catalog of products. He also views the feedback provided by other users and generates consumer reports.

Distributor Module: Distributor is the one who delivers the products to consumers home. He can give feedback and update his profile.





Simulation of Humoral Immune Responses Using Agent-based Modeling

M.V.Bala Bhavana

Abstract

Objective : The project develops a simulator which emulates the humoral immune responses i.e., the antibody-mediated immunity in the human body. The simulator describes how the immune system provides defense through the mechanism of humoral immunity.

Scope : The simulator shows how the immune system provides defense by humoral immunity (antibody-mediated immunity) in normal conditions, when no pathogen is present and also in infectious conditions i.e. when a pathogen enters the body. Only the antibody-mediated immune mechanism is shown and the other mechanisms- cell-mediated immunity, complement system, interferon's etc are not described.

The simulator shows the humoral immune responses in the lymphatic fluid and the circulatory system (blood). The interactions in the lymphatic system, generation and activation of B-Cells and T-Cells are also represented. The immune responses are shown for two types of pathogens- bacteria and virus and also for two kinds of antigens, the T-dependent and T-independent antigens. Only the primary humoral immune responses are shown and how the secondary humoral immune responses are generated is not considered.

Techniques: Agent-based modeling technique is used to create the model of the immune system. The simulation study is done with the objective of studying the immune responses. Though the immune system works continuously to provide defence, the immune responses are produced only when the event of pathogen or virus entering the body occurs. Otherwise, the immune system would be in its normal state. This whole mechanism involves different state variables. Thus, the system contains different state variables and the states are altered only in response to particular event. So the system is modeled in terms of state variables which change instantaneously at separate points in time due to occurrence of events. This event-driven mechanism which describes the system at discrete points of time is the technique of Discrete-Event Simulation.



Model : The model is a dynamic simulation model i.e., it represents the immune system as time proceeds. The model contains random components in the form of arrangement and motion of the agents and the number of agents and the processes occur at random time ticks. Hence, it is a stochastic simulation model. The system is modeled in terms of state variables which change instantaneously at separate points in time giving rise to Discrete-Event Simulation.

Output Analysis : All the events and the processes in the model are recorded in the form of charts. The behavior of the model can be analyzed using the data recorded in each experimental run. Each chart describes some aspect(s) of the model with respect to time ticks during the whole simulation run. The chart contains an element plotted for each time tick as the simulation progresses. The chart describes how the element varies or behaves at each time tick and the whole simulation run can be studied. All the observations derived from each chart are compared between each simulation run and combined together and the whole behavior of the model is analyzed.



Hrms Employee Separation Process

L. Sai Hari, G.Ramesh and A.Ramesh

Abstract

Objective: This system will facilitate the automation of the employee separation process. The application will automate the existing task of the employee to initiate the separation process and get clearance from all the departments online. Human Resource Development can process the separation online and Reporting Manager Department check whether the employee is currently assigned to any work and the Reviewer is finally responsible for giving conclusion after getting clearance from Human Resource Department and Reporting Manager Department.

Existing System : Existing system is the manual system. The procedure whatever is working under this system will be done manually. In earlier days also employees separated from companies for their life extensions, otherwise the problem with the company. The termination of employment in the establishment is generally classifiable as the termination of employment initiated by employees or the termination of employment initiated by superiors. In earlier systems this procedure is maintained by superiors manually. If the employee wants to separate from the company then he needs to initialize his separation then it may take no. of days time to close that issue. Lot of time taking procedure will be carried out. If company wants to maintain the separation data it may not possible in a secured manner.

Proposed System: Proposed system is the automated process. The entire separation process happens smoothly without the separating employee feeling harassed. Smooth transitions and return of company property is ensured. Valuable insights about the organization from departing employee are received through exit interviews that help the organization reduce future attrition. Employee exists are natural part of the employee life cycle. Whether caused by voluntary resignation, retirement or company induced termination, employee separations need to be efficiently managed by HR. Employee separation needs to be handled with sensitivity, discretion and speed so that exits can happen without burning bridges with the employee. Exiting employees, present an opportunity to glean a wealth of valuable feedback and insights on the organization strengths and weaknesses as an employer and employee engagement levels. Not all separations are the same. Some are more "regrettable" than the others.

Modules

- Employee
- Reporting Manager
- Reviewer
- HR



Employee: This module is used by employee to login. This module facilitates the employee to apply for separation by providing reason for separation. Before the employee gets access to apply for separation, it gets the conformation from the employee whether he really wants to apply for separation if so the employee will get access to apply for separation.

When employee selects the option to apply for separation, he needs to give some details during this process. The details like email id, request date and reason for separation.

Reporting Manager : This is one of the crucial modules in this application. This module allows Reporting Manager to login. After getting login into account Reporting Manager can go for Pending Requests, where he is able to see all the pending request; The Reporting Manager will process the request based on the request date and the reason for separation.

The Reporting Manager has the rights to process or reject the request. During the process of processing the request he is responsible to see whether the employee is currently assigned to any project, if not the decision of the Reporting Manager is accepted. If the employee is currently assigned to any project the request will not be accepted.

Reviewer : This module allows the reviewer to process the employee request. The request is forwarded to the reviewer only after it is process by both HR Department and Reporting Manager. The Reviewer has to accept the request. Since it is already get cleared from the HR and Reporting Manager Department.

Once the reviewer accepts the request, the login right of the employee is no longer allowed. i.e after the Reviewer is accepted the login id of the employee becomes invalid, which indicates that the employee is separated out from the organizations.

HR Manager : This is one of the crucial modules in this application. This module allows HR department to login. During this process the HR will go for exit interview, where he interacts with the employee who wants to leave the organization. The interview is purely conducted by taking the remarks from both the interviewer and the hr. Based on the reason the hr will take the decision whether the, accept the request or not. The clearance process include to return the company property like cell phone, laptops, company car, loan pending, bond pending etc. which is given to the employee at the time of joining the organization or during the process of his working.





Employee Appraisal Tracker

E.Bhanu Prakash, Ch.Bhavya and V.Prashanthi

Abstract

Objective : Main idea of this project is to obtain, analyze and record information about the relative worth of an employee. The focus of appraisal is measuring and improving the actual performance of the employee and also the future potential of the employee. Its aim is to measure what an employee does.

Existing System : Existing system is a manual system, the employees appraisal rating will be given in Excel sheets by manually entering the rating values from 1 to 5. After completion of employees self appraisal and supervisor's appraisal, they manually calculate the overall percentage of appraisal rating, and the supervisor will call for open discussion, where they will review all the appraisal sheets to take future decisions.

Proposed System : The proposed system is to develop a web based application, which will overcome all the above limitations of Existing System, where the user can feel easy. and automate all the activities of basic Appraisal system. This will satisfy all the requirements of a manager to trace his employees performance.

Modules :

- Employee
- Reporting Manager
- Reviewer
- HR

Employee : Employee can view the task descriptions given by his Reporting Manager, The employee needs Rate himself in this page for each task and self rating can also be done. Employee needs to update the performance done by him and rate for at the time of updating the performance.



Reporting Manager : Reporting Manager allocates task for the employees. Then rating can be given to the task whose end date is completed and employee rating is done by the Reporting Manager.

Reviewer : Reviewer main function is to rate the employees who are working under the Reporting Managers of the Reviewer. This rating is considered for the final rating calculations.

HR Manager : HR sets the appraisal cycle for a period of time. He gives rating to the employee performance whose employee performance rating is completed and after the performance rating the final rating is calculated.



Securing Desktop Files Using Aes Algorithm

Abhinav Saxena, Aditya Rayarapu, Diksha Mundhra

Abstract

Objective : Nowadays information systems are playing a vital role in organizations and for individuals, where the security is given high priority. Often, solutions are developed for very similar problems over and over again. The main important feature in this is to encrypt the file by giving a password and asking for the password while decrypting and deleting the file. In encryption some of the characters are inter changed by using AES algorithms with key and data in it cannot be modified because the encrypted file is only readable file. AES is a symmetric block cipher with a block size of 128 bits. Key lengths can be 128 bits uses 10 rounds. The scope of the project is to provide security to files which has the plain text by encrypting and storing it. To secure the confidential files in the system, the application is used for the desktop where the encrypted files are stored in a disk and cannot be deleted unless the password is correct.

Existing System : The necessity of providing security to files on the desktop has been essential since many of them implemented different algorithms and techniques to provide security. At present there are many algorithms such as DES, IDEA, and RSA. The main disadvantage is the above algorithms are breakable at certain point. There exists the problem for decrypting the file unless the secret key entered for encryption and decryption are similar.

Proposed System : The proposed system uses AES to encrypt the files with a secret key to secure the confidential data on a desktop. Consider a user has multiple bank account details stored on the desktop. To provide security to the desktop files, the proposed system is used. Initially user will browse the text file for encrypting it. The user has to give 16 bytes of SecretKey twice to confirm the Secret Key. If the Secret Key entered by user matches then the file is encrypted successfully else, a pop up message will be displayed as File cannot be Encrypted. After encryption process, the file is stored on a disk with Filename Encrypted.txt. In this case, there is a chance of manipulating the data in to the encrypted text file. In order to overcome, the encrypted file is set as read only such that the file is not modified. At a time three files can be encrypted and stored it in a disk. Once the file is encrypted, during the process of decryption, the userd has to enter the same Secret Key which is used for the encryption of file. If the Secret Key entered is same while encryption process, then file will be decrypted successfully else, file cannot be decrypted message is displayed. In



all the existing system, the encrypted files can be deleted where there is no security for the files where the data is lost. In order to overcome this drawback, the delete option in the right click menu is disabled in the right click menu for all the encrypted files. By this the encrypted files cannot be deleted from the disk. Hence, the important information in the drive after encryption is secure.

Modules

☐ Encryption

☐ Decryption

Encryption : Encryption is a way to enhance the security of a message or file by scrambling the contents so that it can be read only by someone who has the right encryption key to unscramble it. For example, if you purchase something from a website, the information for the transaction (such as your address, phone number, and credit card number) is usually encrypted to help keep it safe. Use encryption when you want a strong level of protection for your information.

Decryption : Decryption is the reverse operation of encryption. For secret-key encryption, you must know both the key that was used to encrypt the data. Decryption is the process of taking encoded or encrypted text or other data and converting it back into text that you or the computer are able to read and understand. This term could be used to describe a method of un-encrypting the data manually or with un-encrypting the data using the proper codes or keys.





Online Medical Insurance System

B.Ravikiran Reddy, S.Samaya and M.Sandhya

Abstract

Objective : To avoid all the complications coming in manual system, a new computerized system should be generated which should be capable of making the stored information easily available to the customers and agents. Creating a user-friendly interactive place where customers can apply for the policy and interact with admin and agent if any problem occurs. The medical insurance providers often offer useful services. These services include emergency health assistance and services. The medical expenses outside India are normally pretty high. There are some countries where the doctors may not check a person if he or she is not covered in a health insurance policy.

Existing System : The existing system is the manual system. The manual system is prone to error. It is time consuming it is very difficult to produce the report for any person and there is a chance for changing the scheme report by doing malpractice. Usage of paper in the payment process leads to less efficiency, less accuracy and less productivity. Customer, agent and admin should meet manually and it is difficult if they are in other country.

Proposed System : Proposed system is to eliminate the drawbacks of the existing system. It is designed in order to provide a permanent solution of the problem. It helps the customer to view their own insurance status system analysis focuses on the application is require to do. The system allows to see the logical elements from the physical components it uses (computer, terminals and storage system). This helps the agent and manager also to know about their customer details. A new agent can also be registered by entering details into the agent form. Admin will be able to provide them username and password for registered agent and customer. So that customer and agent can login website. Admin only approves the customers and agents and claims also.

Modules :

- Admin module
- Agent module
- Customer module
- Manager module



Admin : Admin generates id's to customer, agent, manager and also responsible in sending mails and maintain database.

Agent : Agent can be able to view all the personal details. Agent can view all the policies done by him/her which are completed or going to be completed. Agent can know that how many policies are pending so that he/she can inform to that customer and manager. Agent can have privilege to claim his/her customer from the insurance company.

Customer : Customer can login into website by entering login and password. New user can register from the homepage. Customer can apply for the policy and apply for the claim. Customer can view the policy details.

Manager : Manager can be able to view all the personal details. Manager can view all the policies done by him/her which are completed or going to be completed. Manager can know that how many policies are pending so that he/she can inform to that customer and agent.





E-cops

M.Manasa, Md.Fahaduddin and Md.Ibrahim

Abstract

Objective : The main aim of this project is to create a web application which maintains the Database and the information about various services which can be useful for various gated way communities.

Existing System : E-cops is a web based application which will be available for every citizen to lodge a complaint and report a crime even when user is in move. At present police department is following manual procedure which takes lot of time and citizen should follow different procedure, to file a case, or give information on case which is reducing faith on police department in public. This application uses technology to increase faith of police department in public. Using this application data maintenance, generation of reports, analysis of data, planning and coordination will be fast and easy. As the growth of information filed is increasing by developing these types of applications will be easy and help full.

Modules :

- Citizen
- Police
- Admin





Highly Confidential Security System

A.Bhaskar Reddy, P.Nagaraju and SP.Praneeth Kumar

Abstract

Objective : To develop a highly secure web application to store all confidential data in a single credential.

Existing System : Other security systems just provide the facility of storage and backup of digital property, they don't care about its security and safety.

Now-a-days, confidential information is storing in personal computers or mobile wallets, whenever hardware fails the entire data will be lost.

We don't have a simple recovery option for hardware failures of system and Mobile applications such as data wallets have no proper security function and in case of mobile loss, data will be lost.

Proposed System : This system will fix those problems and also included some functionalities

- Security System (Effective algorithm will be used for encryption and decryption)
- Text locker including Bank, PAN, Passport, Aadhar, Insurance, Driving license, Mail id and Password.
- Video locker
- Image locker
- Audio locker
- Admin management
- User management
- Virtual keyboard for safe and secure login
- Viewable and downloadable reports.



Modules

- Administrator
- User

Administrator : Admin has the authentic power to add or Delete users, grant permission to User, to generate and view reports.

User : Users have their own profiles in HCSS and can upload any kind of Data, for that provided a unique type based lockers.

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Location Tracking and Alarm System

Farah Naaz, Karishma Rao and Sonal Pathak

Abstract

Android based location tracking and alarm system enables the users to access the location of the person via GPS and is also used to set alarm based on location.

It is an application that allows the person to monitor other person's cell phone. Our aim is to develop an efficient and improved geographical asset tracking solution and conserve valuable mobile resources by dynamically adapting the tracking scheme. This system uses Android based mobile phones for the application to run.

This application also provides location based alarms. In current system, alarms are set for particular time. Many times there are situations where the alarm/reminder is based on your current location and not based on time. The Mobile application installed on the mobile can give a alarm based on a particular location. Additionally, the application would help user to find out how far the user is away from particular reminder location on the map.





Application for Accident Plan Insurance

Jhothikiran ,Karthikeya and Hari Krishna

Abstract

The objective of this project is to develop an application which helps to manage claim for Medical Insurance particularly for Accident cases.

Personal accident covers a person for one or more of the four contingencies event of accident: Death, permanent total disability, permanent partial disability and temporary total disability. In the event of such contingencies, personal accident policies will provide for payment of either the full sum insured or a percentage of it.

This insurance policy covers nursing, diagnostic and medicine expenses for a person who met with an accident.

It also covers pre and post hospitalization expenses, subject to conditions and limits. Medical insurance policy aims to serve the customers by providing an over treatment areas known to have long waiting lists and which can have marked impact on quality of life.

This application also enables the customer to have an account of his own which has the details of the insurance he has claimed, paid amount history and other related insurance plan details.





Railway Routing Optimization

Swetha.G, Jhansi Bantu and Sheetal B

Abstract

Railway Route Optimization System is a product to serve to users who are tourists.

The Main purpose of the project is to let the end users or passengers to know the shortest path to reach the destination with in short period and with amount as minimum as possible and as early as possible when more than one Railways route is to there to reach the destination. This optimization system shows the graphical representation of the train route from starting point to ending point, this is very useful in now a days to know the train details i.e. train starting point and ending point, Starting time and arrival time charge from a starting point to ending point.





Game Engine

Raja Mahendra, Harikrishna.G and Sandeep Reddy

Abstract

A game engine is a system designed for the creation and development of video games. The leading game engines provide a software framework that developers use to create games for video game consoles and personal computers. The core functionality typically provided by a game engine includes a rendering engine ("renderer") for 2D or 3D graphics, a physics engine or collision detection (and collision response), sound, scripting, animation, artificial intelligence, networking, streaming, memory management, threading, localization support, and a scene graph. The process of game development is often economized, in large part, by reusing/adapting the same game engine to create different games, or to make it easier to "port" games to multiple platforms.

Game engines provide a suite of visual development tools in addition to reusable software components. These tools are generally provided in an integrated development environment to enable simplified, rapid development of games in a data-driven manner. Game engine developers attempt to "pre-invent the wheel" by developing robust software suites which include many elements a game developer may need to build a game. Most game engine suites provide facilities that ease development, such as graphics, sound, physics and AI functions. These game engines are sometimes called "middleware" because, as with the business sense of the term, they provide a flexible and reusable software platform which provides all the core functionality needed, right out of the box, to develop a game application while reducing costs, complexities, and time-to-market critical factors in the highly competitive video game industry. Gamebryo, JMonkey Engine and Render Ware are such widely used middle ware programs.





Internet Based Transportation System

Manasa K and Swathi

Abstract

The main objective of this system is to provide a system to the user where the user can find his best way of transportation as per his requirements.

Internet based transportation system is an internet based methodology that allows public transportation users to find routes between pairs of origin and destination addresses. In the existing system the users can know the information about the routes and details of the transportation system from required source and destination in the form of an individual system. The transportation system includes different ways of transportation like roadways, railways and airways. In order to provide more service and comfortability to the user, our proposed methodology will include all the ways of transportation. Our system gives the details about each transportation type at a single place. This is a search process which gives the details about the roadways, railways and airways for a given source and destination. With this system the user can select the best way of transportation by comparing all the three types of transportation according to his convenience and can book a ticket. The methodology is intended to be easily accessible and available through standard browsers on the client machine and be interoperable with respect to data and software facilitating integration to other data and software





Online Vehicle Insurance System

Mounica and Keerthana

Abstract

To avoid all the complications coming in manual system, a new computerized system should be generated which should be capable of making the stored information easily available to the customers, agents and to the company.

Insurance is the equitable transfer of the risk of a loss, from one entity to another in exchange for payment. Its primary use is to provide financial protection against physical damage and/or bodily injury resulting from traffic collision. Global Insurance has all insurance products but works mainly in vehicle insurance. Vehicle insurance provides financial protection against the losses incurred as a result of unavoidable instances and damage to your motor vehicle. It provides insurance to all type of commercial and private vehicles. Currently all insurance work is done manually through agents. But company wants to make all the work online to make the information secure and easily available to customers, agents and also to the company. It requires the development of an application for Global Insurance to make the vehicle insurance online.





Design and Development of Home Insurance System

Nandiswar, K.Chaitanya and Naveen Kumar

Abstract

The objective of the project is to develop an application which helps to manage claim for Home Insurance particularly for Accident cases.

This project aim to develop a home insurance. The house holder's insurance policy insures you against the loss/damage to your house and home appliances .The uses of this system are admin, policy holder, insurance agent ,surveyor, insurance officer ,manager.

There are two main types of home Insurance cover: Buildings insurance and content insurance. In building insurance covers the actual permanent structure s of the home as well as any land you may own.

Content insurance is designed to protect items that are not part of the fabric of your home including: Entertainment equipment, Furniture, Books etc.,

This application also enables the customer to have an account of his own which has the details of the insurance he has claimed, paid amount history and other related insurance plan details .





My Browser

Praful Raj, Sai Deepika and Vishaka Reddy

Abstract

A web browser is the most commonly used software program. Its basic function is for retrieving presenting and traversing information resources on the World Wide Web. It can also be defined as the program designed to enable users to access retrieve and view documents and other resources on the internet. The information resource is identified by the uniform resource locator (URL) and it may be an image, video, or any other piece of content. Hyperlinks present in resources enable users easily to navigate their browsers to related resources.

The efficiency and the speed of our online work greatly depend on the web browser we use. As the market is flooding with new browsers there is lot of confusion in everyone's mind. "My browser" aims to provide the basic features of a browser by selected benchmark points to retain the simplicity and avoid overload of features in a browser. The primary purpose of the web browser is to bring information resources to the user, allow them to view the information and then access the other information (navigation, following links). The most typical use of the web browser is to load and view websites on the internet. Browsers can also be used to view the local files on a computer. For example, open text documents or highly formatted documents such as XML or HTML. The web browsers may also be used to access the media and for communication. Also, the web browsers provide the users with security





Product and Services Management System

Arun Kumar, Mukesh Chama and Pramod Kumar

Abstract

The system is modeled to be used by a Manufacturing company, whose main activity is manufacturing different products & then selling the finished goods through a network of Dealers

The system is a web based Manufacturing System that enables a Manufacturing company to schedule its manufacturing operations based on the daily update of sales from its dealers. The system modeled to be used by a Manufacturing company, whose main activity is manufacturing different products & then selling the finished goods through a network of Dealers. To start with, the Stocks of all the Products manufactured by the company and held in the company warehouse are stored in a Database. The details that are stored include the quantity of each product held with the company dealers who hold the stocks of finished products for sale.

The system incorporates Intelligent Order Processing System which checks and intimates the required Higher-ups in the Company about any discrepancies in the orders that were placed. For example if an Order is placed with a Supplier whose rates are not the least then an automatic Event-generation will send the details of the Order & the person who placed it to the Managers or Directors who are supposed to oversee the process.





Cloud Based Game Management System

Alekhyia L, Vishnu and Vivek Boga

Abstract

A cloud is a virtual space available for the users to deploy their applications. A cloud service has three distinct characteristics that differentiate it from traditional hosting.

It is sold on demand, typically by the minute or the hour; it is elastic- a user can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider (the consumer needs nothing but a personal computer and Internet access). Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet and a weak economy, have accelerated interest in cloud computing.



**DEPARTMENT
OF
MECHANICAL
ENGINEERING**



Analysis of Pin-fins of Variable Cross- Sectional Areas

P Dixith, V Adithya, A Vignan, Bh Vijay Aditya and Varma Krishna Kumar

Abstract

Introduction: This project is mainly dealing with heat transfer through conical fins composed of three different materials that are Aluminum, Mild steel and Stainless steel respectively. Whenever generation of excess heat takes place in a confined area, then we need to dissipate this heat into atmosphere, for this purpose extended surfaces (fins) are used. These surfaces can be triangular, annular, square, rectangular or circular in cross- section. The rate of heat transfer from these fins depends on various parameters such as shape, size, thermal conductivity etc. This project model can be used to find effectiveness, temperature profile, and actual heat transfer and tip temperature of the fins.

Project Scope: The experiment is used to analyze the performance of uniform cross sectional fins and variable cross sectional fins and is compared by plotting the graphs between heat input and efficiency, heat input and effectiveness.

Methodology: A heating element operating through a dimmerstat is connected to one end of the pin fin and five thermocouples are connected equidistant all along the length of the fin. A Blower is used to supply air at different flow rates for forced convection.

First the pin-fin is placed inside the duct provided and then the required heat input is provided by adjusting the values of voltmeter and ammeter. Then the blower is switched on. Air then flows perpendicular to the fin and forced convection takes place from the fin surface to the air. Surface temperatures of the fin are noted for every five minutes and after steady state is achieved the values are tabulated. The same procedure is repeated with different fins and varying heat input.





Design and Fem Analysis of Steam Turbine Blades on Different Materials

B.Murali Krishna, B.Lokeshwar Rao, M.Uday Kumar and B.Kalyan

Abstract

Introduction: Turbine is a prime mover which converts thermal energy into mechanical energy the steam turbine is a machine in which a rotator motion is obtained by the gradual change of momentum of fluid, the operation of steam turbine depends on the dynamic action of steam. The turbine is an ideal prime mover and has got a variety of sizes. Blades are considered as the heart of steam turbine. Blades are the one which are responsible for converting the steam energy to rotational energy.

Project Scope: The output of the turbine mainly depends upon the blade design and blade material. So here selection of the material also plays a vital role. The materials generally used for blades are chromium, stainless steel, nickel alloy and titanium alloy. Here we are taking materials such as stainless steel and titanium alloy. The main aim of this project is to perform structural, thermal, modal analysis and compare the results obtained and to show that which material is best suited according to our design parameters.

Methodology : Here we are designing a blade with fork root by using PRO-E software and the data is taken from CMM .

The analysis part includes thermal, structural, model. The analysis part is done in ansys software. Firstly after designing the file is saved as IGES and then it is opened in ansys .

The parameters include the value of pressure young modulus, poissons ratio for structural analysis and thermal includes temperature, bulk temperature ban film co-efficient. The thermal analysis is done on saturated and super staured conditions.





Finite Element Simulation of Deep Drawing of Alluminium Alloy Sheets

V.Ravi Kanth, G.Ragni and E.Vijay Kanht Reddy

Abstract

Introduction: This project is mainly dealing with the formability behaviour of aluminium alloys AA 6061 and AA 7075. Although aluminium alloys have high strength to weight ratio, good corrosion resistance, the low formability of aluminium sheets limits their use in some products with complex shapes, such as automotive body parts. The elevated forming process is intended to overcome this process. An insight into such a study will throw light on different temperatures required by the above materials when they are made into TWBs.

Project Scope: The experiment is used to analyze the formability behaviour and cup height of aluminium alloy sheets in the temperature range of 200-5000C. The cup height for the two materials is compared by drawing graph between cup height and temperature.

Methodology: The geometric model is created using ANSYS by taking a solid brick of 8 node 185 to make the problem simple and easy. Then the volume has been meshed with global meshing tool there by discretizing the entire volume into finite elements. Then the model is constrained in respective directions after which the boundary conditions like load and temperature are applied and the entire model is analyzed and the results are generated.





Design, Modeling and Analysis of Hydraulic Actuator in a Typical Aerospace Vehicle

P.Threenadh, A.Rahul, P.Uday Kumar Raju and M.Ravindar

Abstract

An Aerospace Vehicle is capable of flight both within and outside the sensible atmosphere. An Actuation System is one of the most important Systems of an Aerospace vehicle. This project study involves detailed study of various controls Actuation System and Design of a typical Hydraulic Actuation Systems.

An actuator control system is any electronic, electrical, or electro mechanical system used to activate an actuator and control the direction, extent, and duration of its output. Actuator control systems may take the form of extremely simple, manually-operated start-and-stop stations, or sophisticated, programmable computer systems.

Hydraulic Actuation System contains Electro Hydraulic Actuators, Servo Valves, Feedback Sensing Elements, Pump Motor Package, Hydraulic Reservoir, Accumulator, various safety valves, Filters etc.,

In this project an elaborate study has been made with regard to the design of Hydraulic Actuator using Aerospace vehicle. Further the criteria for the selection of materials have been analyzed. Design of the system includes design of Hydraulic actuator and also the Modeling and Analysis of actuator using sophisticated Software.





Performance Evaluation of a Single Cylinder Fourstroke Diesel Engine Using Blends of Diesel and Palm Stearin Oil

S.Vandana, N.B.Sarika, A.Naga Nitish and R.Anusha

Abstract

Introduction: A Diesel Engine, also known as a Compression-Ignition Engine, is an Internal Combustion Engine that uses the heat of compression to initiate ignition to burn the fuel that has been injected into the combustion chamber. As the name indicates, these engines work on the Diesel cycle. And the fuel used is generally Diesel. The name was given after its inventor Rudolf Diesel.

Vegetable Oil as a Fuel: Diesel's strong belief in renewable and affordable energy made him an advocate for the use of vegetable oil as a fuel. In 1912 he stated that,

"The use of vegetable oils as engine fuels may seem insignificant today but such oils may become, in the course of time as important as petroleum and the coal-tar products of the present time."

Palm oil has pleasant odour and taste. It is stable and resistant to rancidity. The color of palm oil varies from yellow to deep orange. Inter esterification of palm oil produces two fractions. Palm oil obtained at low melting point called "Olein" and the oil obtained at high melting point called "Stearin". Oil palm fruits are oval-shaped sessile drupes. Palm oil contains some triglyceride species, which are completely saturated. The iodine value of palm oil is lower (44-58) when compared to other vegetable oils because of high proportion of saturated fatty acids. Palm oil is solid at ambient temperature and fluid in tropical and sub-tropical climates with certain fractions held in crystalline form. It is used in manufacturing plastics, fibers and soaps. It is available in Asia, Africa, Indonesia, Nigeria and Malaysia.

Methodology: The Performance test was conducted in a Single Cylinder Four Stroke Diesel Engine. Four Stroke Water Cooled Diesel Engine of 5 HP is considered for the purpose of experimentation. It consists of Single Cylinder Four Stroke Water Cooled Compression Ignition Engine connected to an Eddy Current Dynamometer. It is integrated with a data acquisition system to store the data for the offline analysis. The fuel flow is measured by the 20cc Burette and Stopwatch. Water meter is used to measure the flow rate of water. Cooling water is circulated separately to the Engine and the Dynamometer at the



required flow rates. Necessary provisions are made to regulate and measure the flow rates of the air, fuel and the coolant. Initially the engine is operated by using diesel as the fuel at constant speed of 1500 RPM at 10%, 20%, 30%, 40%, and 50% of full load. At each of these loads, the Engine Performance Parameters and Emission Characteristics are recorded, tabulated and plotted. Engine was then run on blends of Palm Stearin oil and Diesel mixed in various concentrations 5%, 10%, 15% and 20% by volume then Performance Parameters and Emission Characteristics were noted.

Conclusion:

- On evaluating Performance Parameters it is found that all four blends of Diesel and Palm Stearin Oil are similar in terms of their performance Parameters and Emission Characteristics as compared to pure Diesel.
- Garlic Treatment is found to be more effective at high loads.
- During the experiments no problem was faced at the time of starting the engine and ran smoothly over the whole range of Palm Stearin Oil percentage in the fuel blends. So, it can be directly used as a alternative fuel as a replacement of diesel fuel and do not require any major modification in the existing Diesel Engine.
- SFC, Emission Parameters such as CO, CO₂, O₂ and HC for the blends containing up to 10% (by volume) is close to that of mineral diesel. So, usage of 10% Palm Stearin Oil with Diesel is highly recommended.





Analysis of Compact Heat Exchangers

S.S Vishal, M.Madhuri, M.Vinod Kumar, K.Malathi and S.Naresh Shetty

Abstract

Introduction: Heat transfer is energy in transit due to temperature difference. There are three modes of heat transfers namely, Conduction, Convection and Radiation. A heat exchanger is a device designed to efficiently transfer or "exchange" heat from one matter to another. When a fluid is used to transfer heat, the fluid could be a liquid, such as water or oil, or could be moving air.

The two basic types of heat exchangers are compact and conventional heat exchangers. The ratio of the heat transfer surface area of a heat exchanger to its volume is called the area density β . A heat exchanger with $\beta > 700 \text{ m}^2/\text{m}^3$ is classified as a Compact heat exchanger (CHEs) and if $\beta < 700 \text{ m}^2/\text{m}^3$ then they are the Conventional heat exchangers. CHEs can have advantages, such as space savings, superior heat recovery and a higher resistance to fouling, which make them well worth considering when compared to the Conventional heat exchangers.

Project Scope: This project deals with the analysis of compact as well as conventional heat exchangers for different hot fluid (air) and cold fluid (water) flow rates. It involves how the heat transfer rate, effectiveness and overall heat transfer conductance are influenced by varying the flow rates of hot fluid and cold fluid in the conventional as well as the compact heat exchangers.

Methodology: The available heat exchanger in our lab is a double pipe heat exchanger (Conventional Heat Exchanger) and experiments are carried out at different mass flow rates of water and air. The performance parameters effectiveness (ϵ) and overall heat transfer conductance (UA) of the heat exchanger are found out for the obtained experimental readings. Various correlations are available in the literature for estimation of heat transfer and various characteristics of the plate fin heat exchanger (Compact Heat Exchanger). Using those correlations the performance of the plate fin heat exchanger is calculated. So, the performance of both the heat exchangers is compared.

Conclusion: On performing analysis it is proved that the performance parameters Effectiveness (ϵ) and Overall heat transfer conductance (UA) of compact heat exchanger (plate fin heat exchanger) are high when compared to that of the conventional heat exchanger (double pipe heat exchanger). So it can be concluded that the Compact heat exchangers are more efficient than the Conventional heat exchangers.





Design and Manufacturing of a Nano Helicopter

KatlaRajkumar, YeletiNarayana, Ramesetty Mahesh Babu, Gangam Praveen, KolsaniPavan Kumar and PathiopakaSrinivas

Abstract

Project Scope:

- We are doing this project for improving the knowledge and technical skills in aeronautic (technical) field.
- The main aim for doing this project is for the betterment of agricultural field, the nano helicopter eases spraying of fertilizer chemicals on crops in less time also covering more area comparatively.
- We can also attach cameras to this helicopter and perform aerial surveillance.

Methodology: In this project we are going to deal with the manufacturing of helicopter, which is controlled by radio controlled with the help of remote.

For doing this project we have selected a very light and high strength material i.e. aluminum material. This material is very less weight and high strength and also reasonable cost.

In this project, we are using two stroke petrol engine as a main power source. And the power transmission is done through "V" belt drive using two pulleys.





Strucutre - Property Correlation of Plain Carbon and Alloy Steels Based on Cooling Rate

Pavan Kanth, V.V.BhargavaSaiKiran, G.Irshad, S.Kiran Kumar and K.MuraliManohar

Abstract

Introduction: The knowledge of materials and their properties is of a great significance for a design and manufacturing engineers. The machine element should be made of such a material, which has properties suitable to the condition of operation. In addition to this, the engineers must be familiar with the effects which the manufacturing process and heat treatment has on the properties of the materials.

A vast range of materials are available today at the disposal of engineers. A proper selection has to be made to suit the requirements. A large variety of steels to suit any application and capability of fabrication into a variety of shapes are available. Effective design in engineering calls for ability to put them to the best use by selecting the right material for a given job. By careful selection and treatment it is possible to impart different properties. It is important to understand all these principles in order to be able to make best use of materials available.

Project Scope:

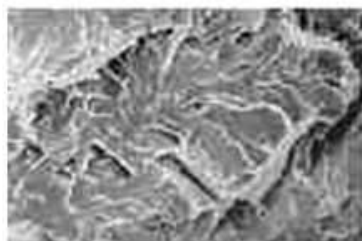
- Heat treatment is an important process in order to alter the properties of materials. With the help of this process the hardness of the material can be improved.
- If any new alloy comes into existent such kind of tests are performed in order to check its properties and if the requirement is met it would be released into market.
- Impact tests are very important for automobile industry, because they have to use such a material in manufacturing of an automobile such that it should resist sudden loading i.e in case of accidents and any other untoward incidents, hence proper materials have to be selected in order to avoid crack through the material after an impact.
- Also the effect of different alloying elements in the material can be analyzed so as to improve the overall quality of the material by varying the combination and compositions.



METHODOLOGY: Three materials i.e EN8, HCHC and SS 304 were taken and heat treated to its austenitic temperature i.e 1000°C and subsequently quenched in different medium such as brine, oil, water, furnace cooled and air cooled. As the specimens are quenched in different medium their hardness and the toughness values differ. As the carbon content increases the hardness value increases where as the toughness values decreases. Fastest cooling was obtained in the brine solution where as the slowest cooling was obtained in furnace cooled. Where as in SS304 the hardness values doesn't show much change in its values because it has austenitic stabilizers which doesn't allow the phase change to martensite. Fractographic and the metallographic features of the specimens were studied under metallurgical microscope and SEM (scanning electron microscope). These tests were carried out at Deccan Smith Pvt LTD.



EN8 AIR COOLED



Brittle fracture of HCHC steel





Buckling Load Analysis on Composite Materials Using Ansys Software for Automobile Applications

M Rachana Rao, J Purna Chander, J Mani Kumar and A V V Rajesh

Abstract

Composite structures have many advantages because of higher specific stiffness and strength compared to metallic structures. The drive shafts are used in automotive aircraft and aerospace applications for power transmission. This work deals with the replacement of conventional steel drive shaft with composite materials like E-glass /Epoxy, High strength carbon/Epoxy, and High modulus carbon/Epoxy for automobile applications. The design parameters such as ply thickness, number of plies required and stacking sequence of laminate will be optimized for the above materials. The drive shafts are subjected to torque transmission, torsional buckling and natural vibration. The weights savings of the E-glass/Epoxy, High strength carbon/Epoxy and High modulus carbon/Epoxy shaft are 48.36%, 86.90% and 86.90% in comparison to steel shaft respectively.

There are two techniques available in the ANSYS for predicting the buckling load and the buckling mode shape of the structure like nonlinear buckling analysis and Eigen value (linear) buckling analysis. The stress and strain distributions in E-glass /Epoxy, High strength carbon/Epoxy, and High modulus carbon/Epoxy composite drive shafts will be estimated. The effect of centrifugal forces on the torque transmission capacity of the composite drive shafts and the effect of transverse shear and rotary inertia on the fundamental lateral natural frequency of the shaft are also to be investigated





Emission and Performance Analysis of 2 Stroke Single Cylinder Petrol Engine by Varying Compression Ratio

Mayank, A.Prem, K.Tejasvi Sharma, A. Sai Chandra and T.Naresh

Abstract

Introduction: An engine is a device which transforms one form of energy into another form. However, while transforming energy from one form to another, the efficiency of conversion plays an important role. Normally, most of the engines convert thermal energy into mechanical work and therefore they are called 'heat engines'.

Heat engine is a device which transforms the chemical energy of a fuel into thermal energy and utilizes this thermal energy to perform useful work. Thus, thermal energy is converted to mechanical energy in a heat engine.

Project Scope: In the present work a small capacity of air cooled engine of VCR is considered of the purpose of experimentation.

A Compression ratio has been varied from 4.4 to 7.4. The Engine has been operated at constant speed under variable load conditions. The Engine has been tested both for its Performance and Emission characteristics.

Methodology: The 4 stroke single cylinder petrol engine available in our lab is of variable compression type and experiments are carried at constant speed and at various loading conditions. The performance parameters like brake thermal efficiency, volumetric efficiency, Break specific fuel consumption are found out and regarding to emission analysis percentage of CO₂, CO, SO_x, are found at various compression ratios.

Conclusion: The optimum Compression Ratio (CR) at low loads is found to be 7.4 with regard to the performance and 5.6 with the regard of emissions. However, at high loads the corresponding values have to be found to be 5.6. The results are presented in the form of tables and graphs. The minimum Brake thermal efficiency is 4.8% and at loads 500 and at 4.4 compression ratio. The minimum Efficiency is found to be 28 at 500 and at 6.8 compression ratio. Finally Emissions are minimum at 1500 load and at 6.2 compression ratio.



Prof.S.Satyanarayana, Vice-Chancellor, O.U., releasing the balloon, while inaugurating the ISRO Project in VBIT.



Delegates of "CARCAN - 2012"

A National Symposium on "Current Trends in Atmospheric Research Including Communication and Navigation Aspects" (CARCAN - 2012).

Delegates are seen along with Prof.Sanjeev Kumar, Chairman, DST.

The Symposium organised at VBIT on 21st & 22nd Dec'12 was sponsored by DST, MoES, CSIR & ISRO.



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