

WIND POWER GENERATION WITH TRANSFORMER LESS OPERATION WITH CSI IN OFFSHORE CONDITION

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ABSTRACT:

Offshore wind ranches along with series-interconnected constructs are really motivating setups because tough together with pricey abroad substations may be removed. Within this paper, a tool consistency transformer (MFT)-positioned wind power change tool is really recommended for such wind ranches based upon existing source converters. The present minute setup contains a tool voltage sturdy magnetic synchronized electric generator that is in truth affixed to a reduced passive rectifier, an MFT-based cascaded converter, in addition to an onshore existing source inverter. Besides meeting routine monitoring objectives (max power aspect monitoring, dc-link existing surveillance, along with in addition receptive electrical power standard), this research study endeavors to make certain continually dispersed electrical power in addition to present sharing amongst the component elements gave the put structure from the MFT-based converter. On top of that, this research study thoroughly examines the excellent quality from decoupling in between the voltage/power harmonizing from the mobile converter along with in addition the

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Control of generator and load side converter for Stand-Alone Variable Speed Wind turbine

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ABSTRACT:

Primary aim of the paper is to generate the quality of power from the renewable energy resource, the wind system is considered here. In general the system is operated in two mode conditions i. standalone mode ii. Grid connected mode. This paper explains the control of a standalone system using two different control schemes namely a. generator side control scheme b. load side control scheme. Which are helps to regulate output voltage levels and power delivered to load with any disturbances even in the variations caused in the input side, The MATLAB platform is used for the testing control strategy. The purpose of control is to adjust the inverter voltage's amplitude and frequency at a variable speed of the wind. This article presents a Generalized Predictive Control application to a wind power converting system with emphasis on the Maximum Power Point Tracking (MPPT). The controller developed consists RST regulator obtained GPC.

Keywords: *MATLAB, RSC, GSC, PLL, Grid, BES.*


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Self-Repairable Multiplexer in Real Time for Fault Tolerant Systems

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Abstract—Using VLSI more number of transistors can be embedded on a single chip. As the space between transistors or circuits decreasing the system or chip is more susceptible to faults. Fault tolerant systems required to avoid inaccurate results. Multiplexer is a device which selects input signals based on select signal. The existing papers deal with only self checking multiplexer. In this paper a self repairing 2:1 multiplexer which can repair permanent and transient faults is proposed. Two different architectures are proposed for self repairing multiplexer. First architecture is having additional circuitry to repair the fault in multiplexer. In second architecture the building blocks of multiplexer like OR and AND gates itself are self repairable. These self repairing multiplexer architectures can detect and repair the single and multiple faults. The proposed architectures give 100% error recovery. The circuits are simulated using Cadence tool and verified the functionality.

Index Terms— VLSI, Fault, Error, Self checking, Self repairing.

I. INTRODUCTION

As the technology is scaling down, chip density is increasing so that millions of transistors are embedded on a single die. The yield may decrease due to process variations, deviation in parameters and lithographic effects [13]. This advanced microelectronic technologies more susceptible to faults [4].

The response of a circuit may be invalid because of presence of faults [5-8]. This leads to inaccurate results. Fault secure systems are very much needed to withstand faults [9,10]. So the self checking and repairing is necessary for correct operation of the circuit. In self checking the fault is detected by circuit itself and in self repairing the circuit can repair itself and produces correct output [11]. The overall circuit performance depends on individual gates of the circuit. Using small number of gates for design can increase the performance in terms of delay, area and power.

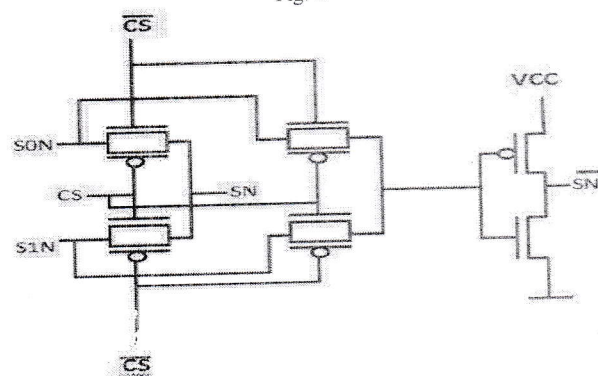
To get high speed the critical path should be as minimum as possible. Similarly to get low power less number of gates are used at circuit level without compromising the accuracy of the

circuit [12-14]. Multiplexers are used in wide variety of applications like adders, multipliers, communication, digital signal processing etc. [15-19] Based on the selection signal multiplexer will select the input data and passes it to the output. The presence of fault in a multiplexer causes invalid data at the output. The multiplexer should be fault secure so that it gives valid data at the output even though faults are present in it. The paper is organized as follows. The self checking multiplexer described in section II, Proposed layout of the self repairing multiplexer 1 and 2 are explained in section III and IV. The layout and equivalent circuit simulation results are discussed in section V. Finally conclusion is given in section VI.

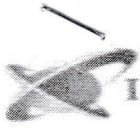
II. SELF CHECKING MULTIPLEXER

Self checking multiplexer was proposed in [6]. This self checking multiplexer designed by using four transmission gates and an inverter as shown in Fig. 1. When CS is low S0N is passed to SN. Similarly when CS is high S1N is passed to SN. Thus it implements the function of multiplexer. In this self checking multiplexer when SN and SN_bar are same then it shows the presence of a fault. By using this structure only fault is detected and can't be repairable. To make the multiplexer self repairing two different structures are proposed. The CS_bar signal is the inverted signal of CS.

Fig. 1.



Self checking multiplexer [6].



ANALYSIS AND DESIGN OF MULTI STORED BUILDING FOR VERTICAL AND HORIZONTAL LOADING WITH AND WITH OUT DAMPERS

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ABSTRACT:

Researches in past reviewed for base isolation analysis using response spectrum it is found that the design in ancient time are not sure and safe due to lack of technology and lesser software analysis availabilities. Some countries applied base isolation these days and the building response constructed with base isolation performed better at practical ground. The response of base isolated building is lesser in terms of amplitude and the cost of the building can also be optimized. Many researchers studied for this subject and they concluded that base isolation must be applied in critical seismic zones and the isolators must be used to save lives and properties. It is seen that Indian construction practices are lacking to apply use of base isolation in building design. It is suggested in the end that it must be motivated to study and research base isolation in Indian constrains and conditions.

Keywords: *Single column, symmetrical, eccentric loads, Staad Pro..*

1. INTRODUCTION:

Tuned mass dampers have been widely used for vibration control in mechanical engineering systems. In recent years, Tuned Mass Dampers theory has been adopted to reduce vibrations of tall buildings and other civil

engineering structures. Dynamic absorbers and tuned mass dampers are the realizations of tuned absorbers and tuned dampers for structural vibration control applications.

The inertial, resilient, and dissipative elements in such devices are: mass, spring and

DESIGN AND SEISMIC RESPONSE OF HIGH RAISE RCC BUILDING WITH DIFFERENT ZONES WITH SHEAR WALLS

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ABSTRACT:

Shear wall systems are one of the most commonly used lateral load resisting systems in high-rise buildings. Shear walls have very high in plane stiffness and strength, which can be used to simultaneously resist large horizontal loads and support gravity loads, making them quite advantageous in many structural engineering applications. There are lots of literatures available to design and analyze the shear wall. However, the decision about the location of shear wall in multi-storey building is not much discussed in any literatures. In this paper, therefore, main focus is to determine the solution for shear wall location in multi-storey building. In this study, a G+ 10 storeyed reinforced concrete (RC) building with varying ground slope as 0°, 5°, 10°, 15° and 20° without shear walls and incorporating shear walls symmetrically in plan and at peripheral corners have been considered for the analysis. Buildings are designed as per IS 456:2000 and later subjected to earthquake loads. The modelling and analysis of the building has been carried by Liner Static, Linear Dynamic analysis (Response Spectrum and

DESIGN AND ANALYSIS OF WIND AND EARTHQUAKE LOADS ON TALL BUILDINGS

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ABSTRACT:

Now a day's many tall structures and high rise towers are being built all around the globe. Wind plays a critical position in design of tall structures because of its dynamic nature. The effect of wind is predominant on tall structures depending on location of the structure, height of the structure. In this paper equivalent static method is used for evaluation of wind loads on buildings with various ratios. The aspect ratio may be various with the aid of changing number of bays. Aspect ratio 1, 2, 3 were considered for present research. The analysis is accomplished the usage of STAAD PRO. The high rise building with a long lifetime may be exposed to one or more extreme peril. Traditionally; specifications individually treated the multiple extreme hazards according to controlling load case. Thus, the ability of high rise buildings designed by the current codes to face the combined threats of earthquake and wind is rather imprecise. This paper presents a multihazard-based framework to assess the damage risk of high rise buildings which can be broken into three parts: the modelling of hazards and the damage probability computation. Modern tall buildings have efficient structural systems, and utilize high-strength materials, resulting in reduced building height, and thus, become more slender and flexible with low damping. These flexible buildings are very sensitive to wind excitation and earthquake load causing discomfort to the building occupants.

Keywords: Tall building, STAAD Pro, Damage, earthquake, multiple loads .

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Optimal Modeling of Grid Connected DC Coupled PV/Hydro Hybrid Power System

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ABSTRACT

The sustainable power source systems (RESs) are an appealing alternative to energize the group as they are condition amicable, free of cost, and all-overrunning. The effectiveness of these vitality systems is low and can be enhanced by coordinating them in parallel. In this paper, hydro (7.5 kW) and PV (10 kW) are taken as RESs and associated with the utility grid. Because of the discontinuous idea of both the hydro and photovoltaic energy sources, utility grid is associated with the system for guaranteeing the ceaseless power stream. The hydro power generation system uses the 3-phase synchronous machine and converters. The AC/DC/AC converter is used as interface to connect the hydro turbine to the utility grid to adjust the generated voltage to the utility grid voltage. The solar generation system is the combination of PV array, boost converter, and solar inverter. The control of both the hydro and solar power plants is provided through the constant current controller. The analysis has been done to verify the existence of the proposed system. Results demonstrate that the proposed system is able to be put into service and can feed the community.

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I. INTRODUCTION

India supervision has up-scaled the goal of renewable power capacity near 175 GW by the year 2022 which incorporates 100 GW as of, 60 GW as of hydro, 10 GW from bio-power and 5 GW from small hydro-power. The capacity goal of 100 GW put in the National Solar Mission (JNNSM) want mainly comprise of 40 GW Rooftop and 60 GW due to Large and Medium Scale Grid Connected Solar Power Projects. With this ambitious goal, India will develop into one of the largest Green Energy producers in the world, surpassing several developed countries. The total investment in setting up 100 GW will be around Rs.6, 00,000 crore. India encourages The Research and Development efforts of the Ministry are directed towards technology development and demonstration, leading to commercialization, apart from strengthening the capacity of R&D/Academic Institutions and Industry for taking up advanced research for technology development. The ultimate goal is to reduce the cost and improve efficiency in the near future. The prominent projects taken up include advanced research and demonstration of higher efficiency solar cells, solar thermal power generation, hydrogen energy storage and fuel cells development, development and deployment of improved biomass cook stoves, etc. Research & development activities have been taken up with national laboratories, universities, scientific & educational institutions & industry for improvements in the renewable energy systems and products. The focus is on improved efficiency, cost reduction and technology transfer and demonstration for their commercialization [1-2].

In this paper, a system is proposed in which hydro and solar based hybrid power generation system is connected with the utility grid. In the peak summer, solar energy is abundantly available, but in rainy days it is difficult to

Similarly the power generation using the hydro energy gives better efficiency in rainy seasons. Hence, the parallel combination of these two energy systems has been adopted, and for the continuous power flow grid is also connected. In the summer, the grid connected solar system supplies the power to the load, and hydro system will be disconnected. In rainy days the grid connected hydro system supplies the power to the load, and solar system will be disconnected. In other seasons, grid connected the solar and hydro systems are able to deliver the power to the consumer. Hence, it is good option to adopt the proposed system for supplying continuous power to the consumer. The solar power generation system contributes power of about 10 kW. It consists of PV array and solar inverter controlled by constant current controller. The hydro system has the 3-phase synchronous generator (SG) and back to back converter (combination of Rectifier and inverter) as an interfacing device for integrating the hydro system into the utility grid. The hydro power generation system contributes 7.5 kW power.

II. SYSTEM DESCRIPTION

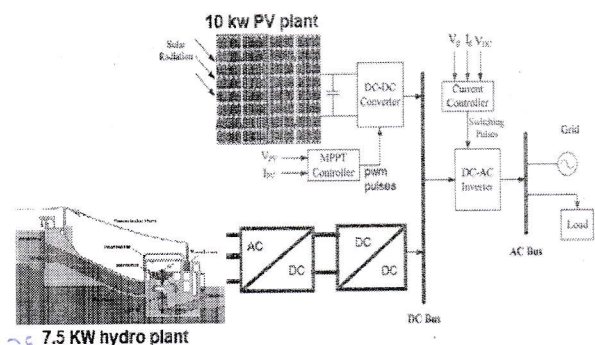


Figure 1. Schematic diagram of grid integrated hydro and



DESIGN AND FABRICATION OF ELECTROMAGNETIC BRAKING SYSTEM

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Abstract : An electromagnetic brake is a new and revolutionary concept. These are totally friction less. Electromagnetic brakes are the brakes working on the electric power & magnetic power. An Electromagnetic Braking system uses Magnetic force to engage the brake, but the power required for braking is transmitted manually. Electromagnetic braking system is a modern technology braking system used in light motor & heavy motor vehicles. This system is a combination of electro-mechanical concepts. The frequency of accidents is now-a-days increasing due to inefficient braking system. It is apparent that the electromagnetic brake is an essential complement to the safe braking of heavy vehicles. It aims to minimize the brake failure to avoid the road accidents. It also reduces the maintenance of braking system. An advantage of this system is that it can be used on any vehicle with minor modifications to the transmission and electrical systems. An Electromagnetic Braking system uses Magnetic force to engage the brake, but the power required for braking is transmitted manually. The disc is connected to a shaft and the electromagnet is mounted on the frame .When electricity is applied to the coil a magnetic field is developed across the armature because of the current flowing across the coil and causes armature to get attracted towards the coil. As a result, it develops a torque and eventually the vehicle comes to rest. These brakes can be incorporated in heavy vehicles as an auxiliary brake. The electromagnetic brakes can be used in commercial vehicles by controlling the current supplied to produce the magnetic flux. Making some improvements in the brakes it can be used in automobiles in future.

IndexTerms - Component,formatting,style,styling,insert.

I. INTRODUCTION


A brake is a device, where it restricts motion. It is commonly known that the brakes use friction to convert kinetic energy into heat. But the Electromagnetic brakes have been used as supplementary retardation equipment in addition to the regular friction brakes on heavy vehicles. They work on the principle of electromagnetism. The working principle of this system is that when the magnetic flux passes through and perpendicular to the rotating wheel the eddy current flows opposite to the rotating wheel/rotor direction. By using the electromagnetic brake as supplementary retardation equipment, the frictions brakes can be used less frequently and therefore practically never reach high temperatures. In this research work, with a view to enhance to the braking system in automobile, a prototype

model is created and analyzed. It aims to minimize the brake failure to avoid the road accidents. It also reduces the maintenance of braking system. An advantage of this system is that it can be used on any vehicle with minor modifications to the transmission and electrical systems. Electromagnetic brakes operate electrically, but transmit torque mechanically. This is why they used to be referred to as electro-mechanical brakes. Over the years, EM brakes became known as electromagnetic, referring to their actuation method. Since the brakes started becoming popular over sixty years ago, the variety of applications and brake designs has increased dramatically, but the basic operation remains the same

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EARTHQUAKE RESPONSE OF REINFORCED CONCRETE MULTISTORY BUILDING WITH BASE ISOLATION

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ABSTRACT

Many buildings in the present scenario have irregular configurations both in plan and elevation. This in future may be subjected to devastating earthquakes. So it is also necessary to enhance the seismic performance of asymmetric buildings by using seismic control techniques. Total of 2 models, asymmetrical in plan (I-shape) are taken for analysis to cover the broader spectrum of medium building for the seismic control of the structures using pushover analysis, two different techniques were considered such as lead rubber bearing isolator and fixed support, the analysis has been carried out using SAP2000V15. The results of fixed support frame and other lead rubber isolator models have been compared, the presence of lead rubber base isolator, top story drift get reduced as compared with fixed support. For high rise buildings especially with the application of isolation systems due to the massive increase in the story displacements suggesting the ineffectiveness of the base isolators for high rise buildings successively the plastic hinge pattern formed after carrying out the pushover analysis was also studied which indicated that structural performance was considerably improved.

1. INTRODUCTION

1.1 GENERAL

The buildings with regular geometry and uniformly distributed mass and stiffness in plan as well as in elevation suffer much less damage compared to irregular configurations. The promise of nonlinear static analysis that is pushover analysis is to produce structures with predictable seismic performance. Seismic isolation is relatively recent and evolving technology. The main feature of the base isolation technology is that it introduces flexibility in the structures. Advantages of lead rubber isolator with RC framed buildings properly designed and detailed buildings with lead rubber base isolator shown good

response in past earthquakes. Although infill panels considerably enrich both the strength and stiffness of the frame, because of lack of knowledge of the multiple behavior of the frame and infill, their influence is not taken into account. Hence the structural action of infill walls cannot be neglected. Therefore, masonry infill panel should be considered as structural element. The main aim of the present study is to illustrate the effect of base isolation and masonry infill wall as shell element on the response of low, medium and high rise I-shape asymmetric buildings.

Earthquake is unpredictable to the engineers and after effects of such

INFLUENCE OF FLY ASH AND DENSIFIED SILICA FUME AS ADDITIVES ON MECHANICAL PROPERTIES OF COIR FIBER REINFORCED HIGH-STRENGTH CONCRETE

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ABSTRACT

This paper presents the experimental investigation carried out to determine the mechanical properties of coir fibre reinforced high strength concrete of grade M50 incorporating fly ash (FA) and densified silica fume (DSF). Three different compositions of coir fiber reinforced concrete (CFRC) were made. First CFRC without additives, second CFRC made by 10% replacement of cement mass with FA, in the third composition 10% of cement mass was replaced with DSF. In each mentioned admixture, coir was added in its natural length by 0.4% of the binder volume. The mechanical properties viz., compressive strength, flexural tensile strength, density and elasticity modulus of all mixes has been determined. The investigations revealed that adding coir fibres to high strength concrete caused a slight reduction in density and compressive strength of concrete by about 1.5 and 1.2% respectively. However, it improved the flexural tensile strength and dynamic elasticity modulus by 4 and 9%. Improvement of ductility in presence of coir has been proven through direct observation and experiment. Coir fiber reinforced concrete contains FA presented the highest strength compared to other mixes with about 8% higher strength compared to control concrete. It also presented the highest quality through sonic investigation followed by CFRC without additive and CFRC incorporating 10% DSF.

KEYWORDS: High Strength Concrete; Coir Fiber; Densified Silica Fume; Fly Ash; Compressive Strength; Flexural Strength; Young Modulus.

GENERAL

Concrete is a mixture of various materials, consist of cement, fine aggregate, coarse aggregate and water which has emerged as a dominant construction material for

the infrastructural and building needs. Concrete is probably the most extensively used construction material in the world. It is only second to water as the most

FIR FILTER DESIGN BASED ON FPGA

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Abstract—Signal processing ranks among the most demanding applications of digital design concepts. It is a mature technology domain wherein the demands for enhanced performance and reduced resource utilization have risen exponentially over the years. Field Programmable Gate Array (FPGA) design technology has becoming the preferred platform for evaluating and implementing signal processing algorithms. The advantages of the FPGA approach to digital filter implementation include higher sampling rates than are available from traditional DSP chips, lower costs than an application specific integrated circuit (ASIC) for moderate volume applications, and more flexibility than the alternate approaches. Since many current FPGA architectures are in-system programmable, the configuration of the device may be changed to implement different functionality if required. This paper describes an approach to the implementation of digital filter based on field programmable gate arrays (FPGAs) which is flexible and provides performance comparable or superior to traditional approaches, lowpower, area-efficient re-configurable digital signal processing architecture that is tailored for the realization of arbitrary response Finite impulse response (FIR) filters.

Index Terms—FIR Filter, FPGA, DSP chips.

I. INTRODUCTION

A Filter is frequency selective network, which is used to modify an input signal in order to facilitate further processing. Basically there are two types of filters-analog and digital. Digital Filters are widely used in different areas, because Digital filters have the potential to attain much better signal to noise ratio than analog filters. The digital filter performs noiseless mathematical

operations at each intermediate step in the transform and their precise reproducibility allows design engineers to achieve performance levels that are difficult to obtain with analog filters Digital filters operate on numbers opposite to analog filters, which operates on voltages. The basic operation of digital filter is to take a sequence of input numbers and compute a different sequence of output numbers. There exists a range of