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Green Cloud Computing: An Extensive Survey In Selecting Multi-Objectives For Task Scheduling in Sustaining Energy Efficiency

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Abstract

Cloud computing is a hot topic in resources planning and the planning of appropriate cloud workloads is focused on the Cloud application's QoS needs. Many methods for calculating cloud computing resources under several aspects have been developed. However, researchers continue to face problems in selecting the efficient and acceptable resource planning strategy for a specific workload based on existing resource planning techniques. The use of resources is the main aim of cloud planning, since resources are available as a service. The way cloud services are designed to serve the cloud user in the application layer is critical in cloud management and research planning. In this text, we analyse algorithms based on two dimensions for resource scheduling. Firstly, the resources are configured on a QoS basis and the goals such as task making-up, user costs and app output optimise. First the cloud provider needs to prepare the proficient cloud resource to use the supply or to save carbon costs or renewable cloud resources. Under the division of three the current techniques are checkedscheduling for user QoS, scheduling for provider efficiency, or scheduling for negotiation subcategories.

Keywords: Cloud, Scheduling, QoS, Makespan, Energy.

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Experimental Investigation On Partial Replacement Of Coarse Aggregate With Shredded Rubber For Concrete

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Abstract

The work was conducted by leading tests on the crude materials to decide their properties and reasonableness for the test result analysis. Mixed proportion of concrete plans are readied utilizing IS code book technique for M30 evaluation of cement concrete. The sample specimen are casted with different rate substitutions of the coarse aggregate with shredded rubber as aggregate in the replacement by 5 %, 10%, 15% and 20%. In addition, a control concrete mix has made without adding of shredded rubber as aggregate in the grade of M30. But conducting the fresh concrete property and harden property of the concrete with control concrete and adding of differed percentage of shredded rubber as aggregate.

Key Words: *Compressive strength, Concrete, Flexural strength, Shredded rubber and Modulus of elasticity*

1. INTRODUCTION

The waste administration is one of the major ecological concerns around the world. Throughout the previous 30 years numerous examinations have been led so as to evaluate the achievability of utilizing modern results and waste materials in structural designing applications. Broad examinations on wastage reusing are being executed to limit the ecological harms [1]. In such manner, development agents, as other reusing and creation businesses, have likewise accomplished advances in utilizing these waste materials. The non-recyclable materials enters the earth in car utilized tires.

These tires are regularly kept in an uncontrolled way, as a result of the perceptible fast exhaustion in locales accessible for squander removal, causing major natural issues [2]. Water amassing inside the tires gives perfect temperature and dampness conditions for the spread of mosquitoes, mice, rodents and vermin. Simultaneously, the amount of oxygen that exists in the inside of the tires is sufficient to cause fire in proper conditions, on account of their inflammable parts, with coming about negative effects on the environment and on human wellbeing.

2. EXPERIMENTAL PLAN

In this project we have plan to conduct various process of collecting date and experimental investigation procedure which very clearly in the figure 1.

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High performance glass fiber reinforced concrete

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ABSTRACT

The research article outlines the experiment for the fresh properties of concrete and harden concrete which is conducts to find the use of glass fibers with structural component like cube cylinder and beam. To find the strength and durability of M20 grade of concrete with Glass Fiber Reinforced Concrete (GFRC). GFRC is mixed with concrete in three different variation and identify the fresh properties of the concrete and the harden strength of the concrete. GFRC varies from 0 to 1 percentage by mass of concrete and the properties of this FRC like compressive strength, toughness, modulus of elasticity and flexure strength were studied.

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1. Introduction

Concrete is the most generally used materials for construction which has many fascinating properties like stiffness, durability, and higher in compressive strength below usual environmental factors. In a similar time concrete is good while brittle and weak in tension. Plain cement concrete has two deficiencies, has very low tensile strength and an occasional strain value at fracture strength [1].

Normally reinforced cement concrete has consists of continuous distorted steel bars or high tensional wires. The advantage of reinforced cement concrete and high tensional wires for prestressing technology utilizing glass reinforcement as high tensile strength has helped to overcome the incapacity of concrete in tension, however the concrete has good compressive strength. Glass - fiber concrete (GFRC) may be added to a concrete created primarily of hydraulic cements, aggregates and unreal reinforcing fibers [2]. Glass fiber concrete (GFRC) material which is completed new technology to increase the strength of the concrete. This can be used as composite material consisting of a matrix which containing a random distribution or dispersion of tiny fibers, either artificial or may be a natural material, which is having a high durability in the concrete [3].

Glass Fiber Reinforced Concrete (GFRC) is also one type of fiber reinforced concrete. Fiber reinforced concretes are usually used for wall panel which is used for interior building and it is also known as architectural precast concrete wall panels [4]. This material is generally excellent in making shapes on the facade of any structure and it is less thick than steel.

2. Material and properties

2.1. Grades of concrete

The concrete is generally grades of concrete is according to its compressive strength. the various grades of concrete as stipulated by the references of IS: 456-2000 and IS: 1343-1980 is used to design the concrete mix, the letter M refers to the mix design concept of the concrete and the specified characteristic strength of 150 mm size of concrete cubes at 28 days of curing, expressed in Mpa (N/mm2).

2.2. Cement

The soundness of cement is depending upon the location of the cement-manufacturing plant, available raw material are pulver-

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Green Composite Form of Eco - Friendly Concrete by Adding PVA Fiber

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Abstract

The ultimate aim of this research is to generate an Eco- friendly concrete by using polyvinyl alcohol fibers. The experimental investigation conducted for both the properties of fresh and harden properties of concrete which is to find the use of Polyvinyl alcohol fibers to the form of Eco-Friendly building. This type of concrete will be used as a greenhouse effect. To evaluate the strength of the harden concrete and durability of the fresh concrete which is made of M30 grade of concrete with additional added with Polyvinyl alcohol fibers (PAV). PAV Fibers has added with concrete which varies 0, 0.5, 1, 1.5, and 2 % by weight of fresh concrete and PAV fiber has conducted different types of structural experiments to determine the properties.

Key words: Compressive Strength, Concrete, Durability, Fiber Reinforced Concrete, Flexural strength, polyvinyl alcohol fibers.

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Experimental Studies on Strength and Durability of Sustainable Concrete Using Bottom Ash by Replacement of Fine Aggregate

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Abstract

The experimental investigations has carried out to identify the effect of use on bottom ash which is replacement for fine aggregate. By adding the bottom ash in Concrete can be improved the strength and the cost of the concrete will be reduced. The waste materials which is extracted from the thermal power plant is harmful for human health so by using this materials in the concrete will be an eco-friendly for the environmental. Even though the cost of the sand is high by using the bottom as the cost will reduce up to 20%. The different types of strength and the properties of the concrete has been identified. To find the strength two different types of concrete test has be consists of compressive strength and flexural strength of the concrete beam. To development the strength of the concrete different percentages of bottom Ash has been add 0%, 10%,20%, 30% and 40% has replaced with fine aggregates. The concrete has various age of curing like 7days and 28days with two different types of water one is normal water and the salt water for compressive strength. The strength and durability of the concrete has been identified in this research.

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Optimal Generation Scheduling Considering Renewable Energy Sources

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Abstract- This paper presents a competent approach to solve the unit commitment problem with consideration of wind and solar energy systems. The integration of wind and solar energy in the existing power system is considered to reduce the thermal unit operating cost. Abundant literatures have been reported for the thermal Unit Commitment (UC) solution. The Renewable Energy Source Integrated UC (RESIUC) problem is more complex in nature that requires a competent optimization tool. Hence, the novel swarm intelligence technique known as Grey Wolf Optimization (GWO) algorithm has been applied to determine optimal solution for the intended UC problem. The potential of the GWO algorithm has validated using standard 10-unit system. Numerical results show a considerable improvement in the quality of the solution obtained.

Keywords – Generation Scheduling, Grey Wolf Optimization, Renewable Energy, Unit Commitment

I. INTRODUCTION

The objective of the Unit commitment (UC) problem is to determine optimum schedule of all the units. The committed units must meet the system demand and reserve requirements at minimum operating cost, subject to a variety of constraints. UC is a vital optimization problem for daily economic operation and planning of modern power systems. Since UC problem involves many variables and constraints, it is complicated to determine the optimum start-up and shut down schedules of generating units. The augment of ecological shield and the progressive exhaustion of conventional power plants have increased the interest in incorporating Renewable Energy Sources (RES) into existing power system.

The UC is a non-convex, large-scale mixed integer nonlinear programming problem. It is difficult to determine the best feasible scheduling for UC problem within reasonable computational time and memory requirement. Abundant methods have been evolved to solve the UC problems. They can be categorized into traditional, soft computing and hybrid techniques.

The deterministic methods for thermal UC include Integer Programming (IP) [1], Branch-and-Bound (BB) [2], Priority List (PL) [3], Dynamic Programming (DP) [4], Mixed Integer Programming (MIP) [5] and Lagrangian Relaxation (LR) [6] methods. Most of the above approaches face the problem of dimensionality, particularly in case of large-scale systems. The soft computing techniques are used to address the demerits of mathematical approaches. Soft computing techniques such as Genetic Algorithm (GA) [7], Simulated Annealing (SA) [8], Neural Network (NN) [9], Differential Evolution (DE) [10], Ant Colony System (ACS) algorithm [11], Bacterial Foraging Algorithm (BFA) [12], Shuffled Frog Leaping Algorithm (SFLA) [13], Particle Swarm Optimization (PSO) [14], Quasi-Oppositional Teaching Learning Based Optimization (QOTLBO) algorithm [15] and Invasive Weed Optimization (IWO) [16] and Fireworks Algorithm [17] have been reported in the field of thermal UC.

Hybrid methods include Hybrid Taguchi (HT) - ACS [18], LR and PSO [19], hybrid harmony search/random search algorithm [20] and LR-DE [21] have been reported to solve thermal UC problems.

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Unit Commitment Solution for a Wind-Thermal Power System

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Abstract- The Unit Commitment (UC) problem is treated as most complex optimization problems in power system operation, since it involves several variables and constraints. The integration of wind power with existing power system increases the complexity of power system operations due to its inadequate predictability, variability and intermittent nature. The penetration of wind power reduces the usage of fossil fuel in the traditional generating plants significantly. It not only makes saving of money, also it reduces the pollutant emission from the fossil fuel plants. This paper employs a novel metaheuristic algorithm known as Grey Wolf Optimization (GWO) for solving the UC with Wind Power Penetration (UCWPP) problem. The proposed algorithm has been applied to 4 and 12 generating units, considering 24 hours scheduling period. Furthermore, the ramp rate limits are also included in the mathematical UCWPP formulation. The simulation results reveal that GWO method has higher potential for solving UCWPP problems.

Keywords – Grey Wolf Optimization, Power System Operation. Unit Commitment, Wind Power.

I. INTRODUCTION

The Unit Commitment (UC) problem is to determine the optimal on /off status and the generation of each unit. The purpose of unit commitment is to minimize the total generation cost while the load demand reserve requirement and unit constraints are satisfied. The unit commitment is a classical non convex mixed integer problem and remains a key process for optimizing power systems scheduling. UC is the optimization problem used to determine the operation schedule of generating units at each hour with varying loads and generating under different generation, environmental and technical constraint. Renewable generators attracted prominence in power sectors to reduce emission of green house gas and power generation costs. As a result the equilibrium between supply and demand side and the reliability of the power system is hard to manage.
The penetration of wind energy is increased significantly in past two decades and is expected to continue rising in the future. The existing power system operation has significantly challenged by wind power penetration. The merit of wind power is sustainable and has zero carbon emissions. On the other hand, it is intermittent and highly complicated to forecast. Here, the wind power is integrated with thermal generating units, thus UC with Wind Power Penetration (UCWPP) problem has formulated. Profuse techniques have been developed and applied to solve the UC problems. They can be classified into deterministic, artificial intelligence and hybrid methods.

The unit commitment problem has been solved by different optimization techniques like Mixed Integer Programming (MIP) [1], Stochastic Dual Dynamic Integer Programming (SDDIP) [2], Mixed Integer Linear Programming (MILP) [3], Benders Decomposition (BD) [4], Unit Decommitment (UD) method [5], Harmony Search (HS) Algorithm [6], Enhanced Simulated Annealing (ESA) approach [7], Artificial Neural Network (ANN) [8], Neural Based Tabu Search (NBTS) method [9], Hybrid Artificial Neural Network-Dynamic Programming (HANN-DP) [10] approach, Genetic Algorithm (GA) [11], Cooperative Coevolutionary Algorithm (CCA) [12], Annealing-Genetics (AG) algorithm [13], Hybrid Particle Swarm Optimization (HPSO) [14], Improved Simulated Annealing Particle Swarm Optimization (ISAPSO) [15], Improved Dragonfly Algorithm (IDA) and Particle Swarm Optimization (PSO) [16], Augmented Lagrange Hopfield Network based Lagrangian Relaxation (ALHN-LR) [17].

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Asymmetric Reduced Switch Fifteen-Level Multilevel Inverter for Unipolar PWM Scheme

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Abstract-
Multilevel *DC* to *AC* converters offers a higher capability of power allied with lesser output voltage harmonics and minor commutation losses. Their major weakness is their complication; need an enormous number of switching devices and passive device, and relatively difficult control circuitry. This paper focuses on the performed effort on one phase fifteen-level reduced switch *DC* to *AC* converter. Unipolar sinusoidal reference signal with triangular wave carriers is used in favour of producing the preferred switching pulses to produce the essential output *AC* voltage level. The asymmetric fifteen-level *DC* to *AC* converters circuit have been proposed and modelled through MATLAB-Simulink. The simulation outcomes are shows with fewer *THD* and bargain switching loss have been achieved.

Keywords: Total harmonic distortion, DC to AC converters, Unipolar PWM, Reduced Switch, Multi-level Inverter.

I. INTRODUCTION

The premises of multilevel inverter have been discussed more than 30 years back. The multilevel inverter has lots of rewards while compared to a predictable two-level inverter such as withstanding higher voltage facility, minor harmonic distortion, lesser switching losses, lesser switching strain, and producing the higher value of output voltage through superior electromagnetic compatibility [1]. The *MLI* technique not only creates superior voltage levels but additional also promotes renewable power creation strategy in input supply side [2]. *MLI* is one of the electrical energy exchange strategies that create *AC* kind voltage as output supply side using input supply *DC* source [3].

Minimum switching multilevel inverter module contain their individual reward and drawback. The module requires a bidirectional switching device in favour of achieving the preferred output *AC* voltage level. Utilization of bidirectional switching device increases, the whole count of switches in those modules, since the mixture of double unipolar switches makes single bidirectional switches through the impression of emitter attached to all switches [4-19]. A familiar topology of the inverters is full bridged 3-level. The 3-level inverter can satisfy qualifications through its extremely higher switching, although it might also regrettably enlarge switching stress and level of interfering to additional apparatus. Civilizing its *AC* output voltage waveform decreases its harmonic substance and, therefore, besides the dimension of the filter worn and the stage of *EMI* created through the inverter's switching process [20]. A variety of conventional topology of *MLIs* is worn in favour of exchange of *DC-AC* supply such *NPC MLI, FC MLI* and *CHB MLI* [21-22]. *NPC MLI* needs the additional number of diodes and the number of capacitors needs in the *FC MLI* is large for the reason that voltage harmonizing constraint.