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RECENT INNOVATIONS AND TECHNOLOGICAL DEVELOPMENT IN CIVIL ENGINEERING

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Assessment of Municipal Solid Waste Management of Dindigul City Using Geospatial Tools

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Abstract: Solid waste management is among the basic essential services provided by municipal authorities in the country to keep cities clean. Due to industrialization, rural to urban migration and high growth rate of population have induced rapid urbanization in developing countries like India. The urbanization created acute problem of solid waste management. The per capita waste generation rate in India has increased from 0.75 kg per day in 2010 to 1.5 kg per day in 2017; such a steep increase in waste generation within a decade has severed the stress on all infrastructural, natural and budgetary resources. Dindigul is one of the fastest developing city, it generates total quantity of waste is about 6500 tons per day. So, there is need of the proper waste collection, transportation route for prevention of environment form the hazardous waste disposal. The proposed work emphasizes on the assessment of detail process of solid waste management such as collection, storage, segregation, transportation, treatment and disposal by using Geospatial tools like RS, GIS and GPS. It may help in sustainable urban environment of Dindigul city.

Keywords: GIS, GPS, Remote Sensing, Municipal Solid Waste Management, Sustainable Urban Environment

I. INTRODUCTION

Solid waste comprises unwanted and discarded materials from houses, street sweeping, and commercial and industrial operations. Increase in urban population and changing life styles lead to the generation of solid waste. Generally, solid waste is heterogeneous in nature such as mixture of vegetables, food items, paper, plastics, rags, glass etc. If solid waste is disposed off on land in open areas, then it causes a negative impact on the environment, ground water and on health. The most common problems associated with improper management of solid waste include diseases, odor nuisance, fire hazards, atmospheric and water pollution, aesthetic nuisance and economic losses (Jilani, 2002). There has been a significant increase

in solid waste generation in India over the years from 100 gm per person per day in small towns to 500 grams per persons per day in large towns. Currently most of the municipal waste in India is being disposed unscientifically (Akolkar, 2005). Generally municipal solid waste is collected and deposited in landfill such unscientific disposal attract birds, rodents and fleas to the waste site and create unhygienic conditions (Suchitra, et al. 2007). The degradation of the solid waste results in the emission of carbon dioxide (CO₂), methane (CH₄) and other trace gases. The unscientific landfill site may reduce the quality of the drinking water and causes the disease like nausea, jaundice, asthma etc (Bean, et al. 1995). In Dindigul city primary sources of solid waste are local households, commercial establishments, hospitals, hotels, restaurants, and markets. The total quantity of waste generated per day is about 1300 to 1400 metric tons (approximate generation per capita per day is 500 grams). Dindigul Municipal Corporation is responsible for collection, storage, segregation, transportation and disposal of all solid waste generated in the city. In the present research work describes an attempt to assess the collection, segregation, transportation, treatment and disposal of DMC land fill site using geospatial tools like Remote Sensing (RS), Geographical Information System (GIS) and Global Position System (GPS).

II. SIGNIFICANCE OF STUDY

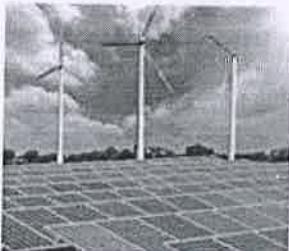
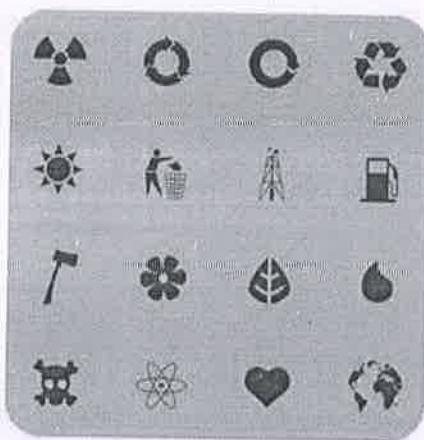
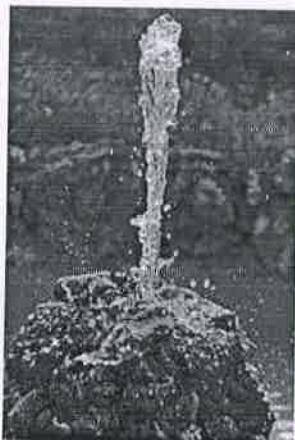
Dindigul city generates large amount of solid waste. This large amount of waste poorly disposed and untreated. The city does not have an engineered or scientific landfill site and the capacity of existing dump site cannot cater the future demand of the waste generated. So, there is an immediate need for designed scientific integrated solid waste management system using Geospatial tools like Remote Sensing, GIS and GPS to minimize adverse effects on environment, social and economic of solid





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Experimental Study on Light Weight Concrete by Ceramic Waste

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Abstract: This paper investigate the prospect of utilization of the ceramic wastes (CW) such as coarse and fine aggregate in lightweight aggregate concrete (LAC) that is consequence of coarse aggregate material (CAM) substitute with CW and consequence of biscuit substitute fine aggregate material (FAM) on properties of LAC. The composition of ordinary Portland cement (PC): FAM: CAM are 1: 2.21: 3.03 and substituted CAM with CW and FAM with biscuit at the levels of 0, 25, 50, 75 and 100 wt.%. All conditions of LAC was subjected to tested water absorption, thermal conductivity and unit weight at the age of 28 day. The compressive strength at 7, 14, 28 and 56 days was also conducted. The results show that when proportion of CW is increased then density and compressive strength decreased but the water adsorption and thermal conductivity increased. After 28 days, the sample with 100% CW compressive strength and bulk density has reduced from 55.4 to 11.4 MPa and 2394 to 1362 kg/m³. On the other hand 50 wt. % gave the compressive strength and density of 38.1 MPa and 1803 kg/m³ respectively. 50% mix was collected for study with biscuit replaced FAM on mechanical properties. The compressive strength improved when levels of biscuit increased for 50 wt. % were as decreased with excess 50 wt. %. The bulk density and thermal conductivity dropped from 1803 to 1584 kg/m³ and 0.689 to 0.592 W/m²K. The optimum configuration that meet the ASTM C330: standard range for structural lightweight aggregate concrete has t contain 50 wt. % of CW and 100 wt. % of biscuit.

Keywords: lightweight aggregate concrete (LAC), ceramic wastes (CW). Coarse aggregate material (CAM)

I. Introduction

Lightweight concrete (LWC) outlined as a sort of concrete that contains of AN increasing agent that will increase the degree of the mixture that is lighter than the standard concrete.. USA, uk, Sweden, etc has been wide exploitation LWC. The LWC has denseness and thermal conduction. Reduction of load, quicker building rates in construction and lower transport and handling prices square measure blessings of LWC. Light-weight mixture concrete may be shaped employing a vary of light-weight aggregates from natural materials, thermal treatment of natural raw materials, by-products from industrial. Volcanic rock, clay, slate, shale, fly ash, feather palm shell ash, biscuit ceramics, bottom ash etc. were used be light-weight mixture in concrete [1]-[6]. the specified engineering properties of LWC can have a sway on the most effective style of light-weight mixture to use. it's a touch structural, however high thermal insulation properties, square measure required a light-weight, weak mixture may be used. The LAC have AN air dry density not exceptional 2000 kg/m³, however may be as low as four hundred kg/m³ reckoning on the materials used and therefore the compressive strength will vary between one and sixty five MPa [7]. The LAC was usually being designed in accordance with ACI 213R-04 [8].

The environmental problems square measure important and anxious in industrial sector. The small, medium and huge industrials turn out pollution akin to water, air, solid, risky and noise. In ceramic industries, they're the one in all industries that generates solid wastes from method akin to biscuit, deteriorated operating mould etc. The biscuit is defected final product akin to ceramic ware, or unglazed ceramic ware, typically known as terracotta, or, most typically, A negotiator stage in a very glazed final product. The operating moulds square measure drop before expiration or deterioration. From the ministry of business (Thailand) found that the number of deteriorated operating mould is quite 38,000 tons/year [9]. Generally, the management of operating mould waste will utilized in varied manufacture business akin to cement business, the mineral is additional into a clinker concerning 3-5 wt.% of cement weight and created the ceiling that it's utilized in little quantities. Additionally, the ceramic production has broken ceramic wastes concerning five-hitter of ceramic product. Each most operating mould and biscuit square measure drop or land crammed that square measure inappropriate strategies.

It increasing the chance of chemical element compound gas and Causes the worldwide warming. From the property of CW and biscuit that have a lower density than traditional coarse and fine mixture. it's presumably replacement of CAM and FAM This analysis study the optimum quantitative relation of light-





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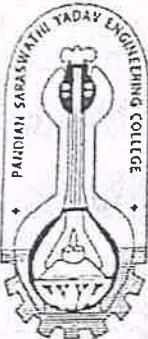
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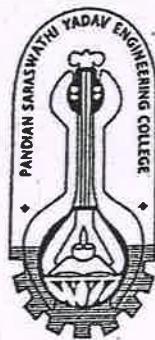
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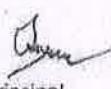
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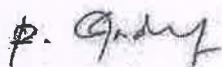


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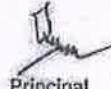
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IoT BASED SOLDIER MONITORING SYSTEM

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Abstract

In today's human race the safety of the nation depends upon the enemy's warfare and so the security of the defense force is measured as vital role in it. The security of any nation depends on military, air-force and navy of country and the backbone of all these forces is our soldiers. One of the fundamental charges in military operations is that soldier will not able to converse with control room station. In this project, the exact location and health status constraint of soldier can be sent to the base station in real time so that the suitable action can be taken in case of disaster.

GPS is used to log the longitude and latitude so that route can be known with no trouble. Here to find the physical condition status of the soldier, the body temperature sensor is used to measure the temperature of body, and to calculate heart beat rate of soldier, heart beat sensor is used. The IoT makes the entire monitoring process fast, efficient and the decisions can be taken in less amount of time. So by using this equipment's, the basic life guarding system for soldier can be executed in low cost and high trustworthiness.

I.INTRODUCTION

A. IoT (INTERNET OF THINGS)

IoT is simply the network of interconnected things/devices which are embedded with sensors, software, network connectivity and necessary electronics that enables them to collect and exchange data making them responsive. More than a idea Internet of Things is essentially an architectural frame which allows incorporation and information change over between the bodily world and supercomputer systems over alive network communications. Many people misguidedly think of IoT as a sovereign technology.

Amusingly internet of things is being enabled by the presence of other self-determining technologies which make original mechanism of IoT.

The original mechanism that make internet of things a reality is:

Hardware- Making material objects reactive and giving them ability to recover information and react to instructions,

Software - Enabling the data gathering, storage, processing, manipulating and instructing.

Communication Transport - Most important of all is the communication transportation which consists of protocols and technology which enable two physical objects to exchange statistics.

As telecommunication division is becoming more widespread and resourceful, broadband internet is widely accessible. With scientific development it is now much cheaper to produce essential sensors with fitted WiFi capabilities making concerning devices less expensive.

Most essential, the smart phone practice has surpassed all the predicted restrictions and telecommunication division is already functioning on its toes to keep their customers content by getting better their infrastructure. As IoT devices need no divide communication than the existing one, building IoT tech is very not expensive and it is highly reachable. To put things basically, any object that can be connected will be connected IoT. This might not make wisdom on the front position but it is of high value. With consistent devices one can better organize the life and be more creative, safer, smarter and well-versed than ever before.

For example, how simple it will be to begin the day if the alarm clock is not only able to wakebut also able to speak with brewer to notify it that the person's awake at the same time notifies the geezer to start water heating.



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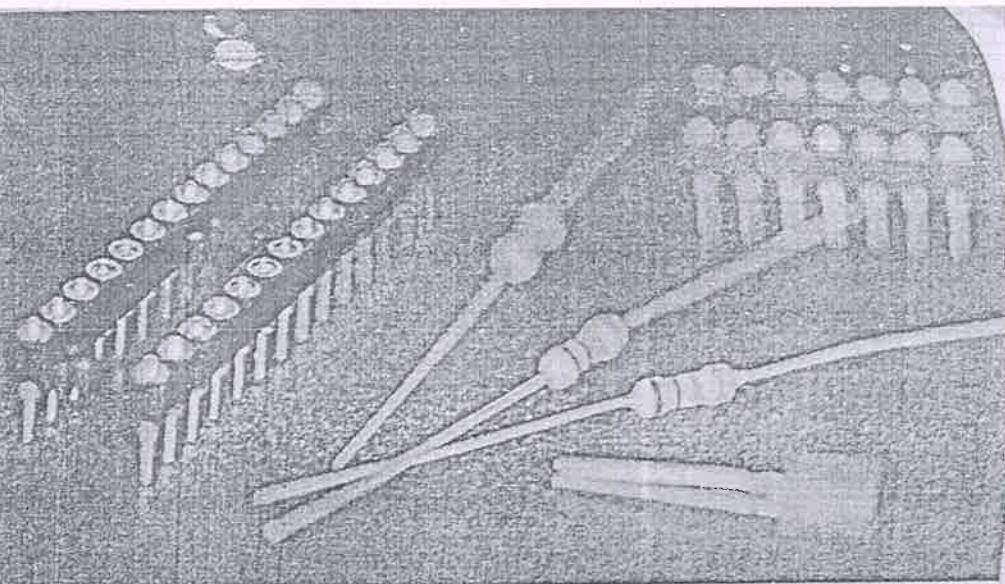
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Principles of Sensors and Transducers



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Seeds of automation in engineering



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Nachimuthu Balamurugan
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Modelling and Analysis of Induction Motor Drives

Analysis to enhance motor performance using
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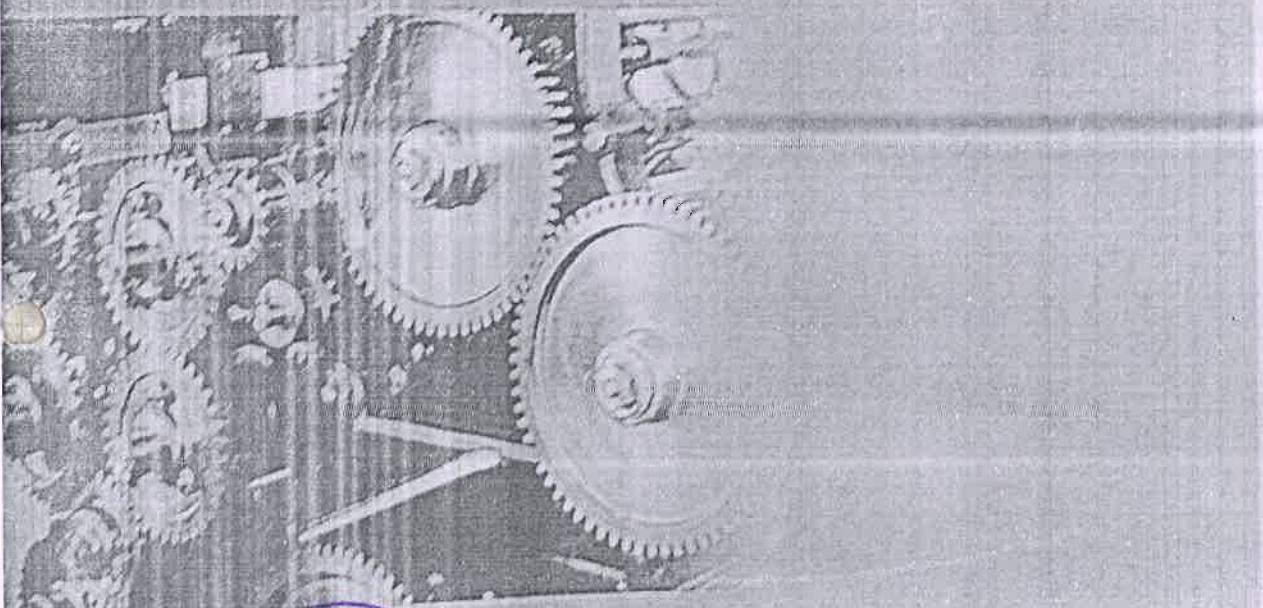


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