D.N.R. COLLEGE OF ENGINEERING & TECHNOLOGY

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Academic Year 2018-19

Number of Books and Chapters in Edited Volumes/Books Published and Papers Published In National/ International Conference Proceedings

Sl. No.	Name of the Faculty Author	Title of the Paper	National/ International Conference	Name Of The Conference
1.	M. Thambi Babu	Design Optimization of Laminate Composite Cylindrical Skirt for weight Minimizing by using non-dominated sorting genetic Algorithm	International	National Conference on Innovations and Developments in Mechanical Engineering
2.	Dr. M. Anjan kumar	Influence of chemical additives and flyash on the swelling and bearing resistance of Expansive subgrade soils	International	Geo MEAST
3.	Dr. S. Koteswari	A Novel approach for avoiding fraudulences in ATM by multimodal biometrics using Liveness detection	International	International Conference on Electrical, Electronics, Computers, Communication, Mechanical and Computing (EECCMC)

DESIGN OPTIMIZATION OF LAMINATED COMPOSITE CYLINDRICAL SKIRT FOR WEIGHT MINIMIZING BY USING NON-DOMINATED SORTING GENETIC ALGORITHM

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Abstract

Laminated composite construction of panels and other structural elements is currently being used for many applications in aerospace, automotive, civil and defence industries. Laminated composites have several advantages over more traditional materials including greater specific strength, specific stiffness, corrosion and fatigue resistance, and energy absorption among others. Optimization of composite laminates with respect to ply angles to maximize the strength is necessary to realize the full potential of fiber reinforced materials. NSGA-II (Non-Dominated Sorting in Genetic Algorithms) is a non-dominated based genetic algorithm for objective optimization. It is very effective algorithm but has been generally criticized for its computational complexity. A modified version was developed, which has a better sorting algorithm which incorporates archiving better ranked objectives. Modified NSGA-II builds a population of competing individuals, ranks and sorts each individual according to non-domination level, applies Evolutionary Operations (EVOPs) to create new pool of offspring, and then combines the parents and offspring before partitioning the new combined pool into fronts. The NSGA-II then conducts niching by adding a crowding distance to each member. It uses this crowding distance in its selection operator to keep a diverse front by making sure each member stays a crowding distance apart. This keeps the population diverse and helps the algorithm to explore the fitness landscape. The above methodology is applied to the optimization of laminated composite materials. This problem deals with a practical design example of fiber-reinforced composite cylindrical skirt of solid rocket motor of aerospace vehicle are investigated. A skirt is a potential element for weight reduction in rocket motors as it leads to reduction of the total weight of solid rocket motor. Due to its significance for solid rocket motors, it is proposed to optimize the weight of the fiber-reinforced composite cylindrical skirt subjected to a buckling strength constraint and an overstressing strength constraint under aerodynamic torque and axial thrust. This is achieved by arriving at an optimal stacking sequence for the cylinder satisfying all the design constraints and also by employing multiple composite materials. Classical laminate theory combining with elastic stability theory of thin shells is used to arrive at buckling strength and overstressing strength of the fiber-reinforced composite cylindrical skirt. The Tsai-Wu failure criterion is employed to assess the first ply failure. Buckling strength and failure strength of the cylindrical skirt is described by using buckling load factor and overstressing load level factor. Following material combinations such as Graphite/Epoxy & Glass/Epoxy have been used to find the optimal curve. The obtained results show the effectiveness of the proposed methodology for the optimization of composite materials.

Influence of Chemical Additives and Flyash on the Swelling and Bearing Resistance of Expansive Subgrade Soil

G. Radhakrishnan[1(⊠)], M. Anjan Kumar[2], and G.V.R. Prasada Raju[3]

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Abstract. The geotechnical properties of expansive soil with inherent montmorillonite clay mineral are highly amenable to changes in the moisture content. These changes lead to distortions to the structures built on them. Flyash had been used extensively as a stabilizer to inhibit heave of expansive soil subgrade. Contemporary researchers have been trying to control the heave with the help of many additives viz. construction waste, industrial by products, chemicals compounds. Our current study is aimed to evaluate the combined effect of flyash and aluminum chloride as an accelerator to enhance geotechnical properties of the expansive soil. Twenty soil samples were prepared with a mix of flyash (0% to 15%) and aluminum chloride (0% to 2%) and the resulting soil matrixes were subjected to laboratory testing. Experimental results enhanced the CBR which is critical to the design of pavement thickness and there has been a simultaneous reduction in the swelling nature of soil.

Keywords: Expansive soil · Stabilization · Flyash and aluminum chloride

Notations

$AlCl_3$	Aluminum Chloride
DFS	Differential Free Swell
CBR	California Bearing Ratio
MDD	Maximum Dry Density
OMC	Optimum Moisture Content

1 Introduction

Expansive soils, most common in the deltaic regions along the sea cost of Andhra Pradesh in India, undergo swelling and shrinking due to seasonal moisture variations. This movement leads to the damage of lightly loaded structures like flexible pavements, pipe lines, slopes and canal linings. The expected retrofitting cost often exceeds loss due to natural hazards (Jones and Holtz 1973). Flexible pavements constructed on

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This is to certify that **Dr. S. Koteswari** *has published a paper entitled:* **A Novel Approach for Avoiding Fraudulences in ATM by Multimodal Biometrics using Liveness Detection** *with paper code:* **01-2018-807** *in International Conference on Electrical, Electronics, Computers, Communication, Mechanical and Computing (EECCMC) - 2018, with catalog "CFP18O37-PRT: 978-1-5386-4303-7", organized by Priyadarshini Engineering College, Vellore District, Tamil Nadu, India during 28th & 29th January. 2018.*

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