International Journal Of Advance Research, Ideas And Innovations In Technology

VOLUME 1 - ISSUE 1

IJARIIT

SPECTRUM

International Journal of Advance Research, Ideas and Innovations in Technology

March-April, 2015

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Spectrum is an e-magazine with the comprehensive collection of all the papers that have been published in our journal over the last two months — Volume 1, Issue 1 (March-April, 2015). This edition brings together 5 papers by 9 authors from 7 institutions. Each entry links to the abstract and the full paper.

ABOUT IJARIIT

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e-ISSN 2454-132X

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ABSTRACTS

1 Uncertainty in Improving Durability Aspects and Mechanical Properties of Bamboo Reinforced Concrete

Paper ID V1I1-1136 · Structural Engineering

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Dr. S. Mandal, IIT (BHU), Varanasi, UP

The construction industry uses the most of clean energy and also produces most of the carbon dioxide in the present global world. The production of one ton of steel and concrete emits more than two tonne and one tonne respectively of carbon dioxide whereas production of one tonne of bamboo consumes more than one tonne of carbon dioxide from the atmosphere. In SAARC countries like India where about two-third of the population live below poverty line, there is a great need of some other suitable construction material in terms of cost, availability and environment friendly. Towards this, many researchers in the past has emphasized on the use of Bamboo as reinforcement. Bamboo offers competitive strength to mass ratio, compared to re-bars. Since it is a natural material,the necessity to understand their long term behaviour regarding its acceptance as a suitable construction material in general is important. Due to the advantageous characteristics of bamboo, efforts should be made to popularize the use of bamboo. In this study, a review of the existing research work on Bamboo Reinforced Concrete with the emphasis on the various factors, which are considered as demerits in making bamboo reinforced concrete construction, as a tool is presented. This uncertainty study may serve the goal of making the dream of common people, to have their own home, come true. Keywords: Bamboo Reinforced Concrete, Durability, Mechanical Properties, Economic and Environmental Friendly Reinforcement.

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2 Human Factor Considerations in Sewing Machine for Workstation Design

Paper ID V1I1-1137 · Industrial Engineering (m.e)

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Hitesh Vasudev, Assistant Professor, PIT, Hoshiarpur, Punjab

There is a need of ergonomically fit sewing machine workstation so that sewing machine operators can perform their tasks comfortably. The present study was initiated where worker’s perceptions were measured by preparing questionnaire to find out difficulties during sewing machine work. Questionnaires were filled up by 100 sewing machine operators from different parts of the region. Questionnaire included the different modules which are Perceived posture, localized postural discomfort and estimated endurance time. Worker’s perceptions were analyzed by finding their critical values. Criticality index of questionnaire was calculated for concluding the most critical areas. Based on the criticality index, recommended parameters were performed on selected operators. Nine sewing machine operators performed experiments at twelve different combinations of table height, desk slope and pedal position. ANOVA technique was used to analyze the data obtained from nine selected sewing machine operators after performing experiments and the dimensional adjustment of sewing

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machine workstation was made, in relation to desk height, desk slope and pedal position. The recommendations were formulated in order to minimize the load on the musculoskeletal system during operation in terms of anthropometric dimensions with respect to sewing desk height, desk slope and pedal position. Statistical methods were used to find out the significance of the parameters considered in the study. So sewing machine workstation is said to be best fitted; only if it will have desk height +10 cms (above elbow height), desk slope 10° and pedal position -4 cms.

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3 A Beam Technology on the Pen

Paper ID V1I1-1138 · Computer Science And Engineering

Pradeep M, Visvesvaraya Technological University, Karnataka
B.C Arjun, Visvesvaraya Technological University, Karnataka

Today we see projector everywhere which run on the different techniques. This has made life of the user to costlier. So, we present a work on beam or a halo technique on the pen. This technology gives projecting information on the walls. The main implementation behind is applying a beam or a halo technology to the pen, and then we can use that pen to projecting an information on the walls. The projector used is LCD projector.

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4 Optimization of Steel Connecting Rod by Aluminum Connecting Rod using Finite Element Analysis

Paper ID V1I1-1139 · Mechanical Engineering

Sahil Guleria, Student, Rayat & Bahra college of Engineering & BioTechnology, Punjab
Harpreet Singh, Assistant Professor, Rayat Bahra University, Mohali, Punjab

The main aim of the project is to analyze various stresses and fatigue parameters acting on connecting rod, Optimize shape and weight. Connecting rod is an intermediate & important engine component which connects piston & crankshaft. It is subjected to multiple compressive & tensile forces. Major consideration in this case is gas force. The high magnitude gas force is responsible for many kinds of failure. These failures need to be prevented & for this purpose analysis was needed to be done. In this project, connecting rod of Tractor is chosen as a model for study. This project considers two cases, first, static load stress analysis of the connecting rod, and second, optimization for weight. In this project analysis is done on four stroke single cylinder petrol engine connecting rod. The model was developed in PRO-E software, saved in IGES format and then imported to ANSYS workbench. Using ANSYS workbench 14 model was analyzed for various stresses by applying suitable boundary conditions & using different modules of ANSYS workbench 14. The Von Misses stresses, shear stresses, elastic strain, total deformation and various fatigue parameters like life, damage, safety factor etc. are analyzed. Here two materials were studied for their performance, viz., Structural Steel & Aluminum (LM6) Alloy. Shape and weight optimization was done for both the materials. Aluminum being light in weight and having more yield strength became the suitable material. The results obtained from the stress analysis were used to modify the design of existing connecting rod, so that better performance i.e. reduced inertia, fatigue

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life and manufacturability can be obtained under varying load conditions.

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5 Classifications & Misclassifications of EEG Signals using Linear and Ada Boost Support Vector Machines

Paper ID V1I1-1140 · Data Mining

Neelam Rout, SOA University, ITER College, Rajasthan

Epilepsy is one of the frequent brain disorder due to transient and unexpected electrical interruptions of brain. Electroencephalography (EEG) is one of the most clinically and scientifically exploited signals recorded from humans and very complex signal. EEG signals are non-stationary as it changes over time. So, discrete wavelet transform (DWT) technique is used for feature extraction. Classifications and misclassifications of EEG signals of linearly separable support vector machines are shown using training and testing datasets. Then AdaBoost support vector machine is used to get strong classifier.

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Volume 12, Issue 6 (November-December, 2026) is open for submissions. Last date: 31st December, 2026.

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