

STATIC, DYNAMIC AND IMPACT STRESS ANALYSIS OF A BUS BODY STRUCTURE USING FINITE ELEMENT ANALYSIS

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ABSTRACT

The increased speed and weight of modern bus puts the components of a bus body in a highly dynamic load situation. Bus body is the core component in a vehicle. A classic finite element model of the bus body is established that focuses on analyzing the behavior of a bus body during static and dynamic load conditions. A finite element model of a pre-stressed bus body is established for static load conditions. The purpose of this research work is to analyze the structural response of the bus body for static, dynamic, and impact loading conditions. In order to conduct this analysis, Finite element Method is applied and ANSYS (FEM Tool) is used. The finite element model is constructed from the structural data and drawings provided by DELHI TRANSPORT CORPORATION (DTC). The research work determines the structural response under the above said loading by evaluating the maximum deflection and stress pattern. The results are presented in the form of graphs and data along with the three-dimensional model of the bus body.

KEYWORDS: Static Load, Dynamic Load, Bus Body Structure, Pre-Stressed & Finite Element Model

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1. INTRODUCTION

One of the technical innovations of the modern world and of course always allowing room for progress, buses have taken the centre stage in transporting people through long distances with maximum safety, comfort, minimum cost, reduced timing, and through proper adherence of standard rules. For many years, buses have been widely used in India as a successful mean for public transportation within the city as well as from city to city. The buses form the major component of surface transportation in India as buses connect most of the villages. When these buses had been used first, since then not much attention has been paid for the improvement of the body of the buses. These bus body designs have, however, been giving reasonable service, although their efficiency had hardly been evaluated or tested scientifically. In the absence of such evaluation tests, the vehicle designs cannot be termed as optimal designs from operational and maintenance costs point of view as also from structural performance; passenger comfort and other operational requirement point of view. Everyone tried to improve mechanical components such as engine, transmission systems, clutches, gear box, etc. But, bus body structure could not win the hearts of designers. Now, designers are also becoming serious for the design of bus bodies. The damages and human injuries during accidents had been sufficient to draw the attention of designers towards it.

Considering the above deficiencies, scientific evaluation of some of the existing bus body designs is

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Cornell University Courses of Study Cornell University, 1981 Scientific and Technical Aerospace Reports ,1995

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League has set the standard for supporting families with breastfeeding This new edition of their classic bestseller brings generations of wisdom to today s parents with up to date information new illustrations and stories from mothers fathers and grandparents around the world who share their own experiences What s inside Why breastfeeding matters Getting started how to learn your baby s feeding cues and positions to try Life with your breastfed baby Managing common challenges includes new research Going back to work expressing and storing your milk Sleep and how to get more of it starting family foods and weaning Whether you re planning to breastfeed for a few weeks or a few years this book puts all the information at your fingertips ready to help you when you need support at any point on your breastfeeding journey Whether you read the whole book from cover to cover or dip in and out as you need to you ll find everything you need in this indispensable volume that has supported countless mothers to breastfeed their babies Formerly published as *The Womanly Art of Breastfeeding*

The Theoretical and Experimental Stress Analysis of a Diesel Engine Bus Body R. J. Alfredson,1966 **Annual Index/abstracts of SAE Technical Papers** ,2006 *International Aerospace Abstracts* ,1999 New trends in esports and gaming: analyzing the impact of esports and video games on body composition, psychological state and health of gamers/players Raquel Vaquero-Cristóbal, Mario Albaladejo Saura, Frano Giakoni, Andrés Godoy,Adrián Mateo-Orcajada,2024-12-02 The field of video games and esports is currently booming being one of the industries that has grown the most in recent decades This has given rise to numerous investigations that have sought to delve deeper into the field However the vast majority of research to date has analyzed the performance of esports players and its influence on physical and mental parameters of the players However the healthy domain of video games is still unexplored So far little research has analyzed the possibilities offered by esports and video games in the educational and health fields but the results obtained are encouraging Thus this monograph aims to bring together research in which video games or mobile applications are used as a tool to produce beneficial changes for health mental health psychological state body composition among others The lack of research in which video games esports or mobile applications have been used from a healthy point of view is a gap that currently exists in the scientific literature The use of gamified mobile applications e g Pok mon Go has shown beneficial results in increasing physical activity in different populations positively impacting their body composition and mental state In the educational field initial research has also shown that video games esports and even mobile applications can be a very useful resource for teachers **Backpacker** ,2007-09 Backpacker brings the outdoors straight to the reader s doorstep inspiring and enabling them to go more places and enjoy nature more often The authority on active adventure Backpacker is the world s first GPS enabled magazine and the only magazine whose editors personally test the hiking trails camping gear and survival tips they publish Backpacker s Editors Choice Awards an industry honor recognizing design feature and product innovation has become the gold standard against which all other outdoor industry awards are measured

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of Lewis Research Center Technical Publications Announced in 1991, 1992 **Collapse Analysis of Bus Body Structures Using Interactive Computer Graphics** F. F. Monasa, W. McGuire, 1986 **Evaluation of Structural Strength Capacity of Bus Body Structures** Frank Monasa, 1981 **Static Load Test Code for School Bus Body Structure** W. C. Rumph, 1965 *Experimental Stress Analysis for Materials and Structures* Alessandro Freddi, Giorgio Olmi, Luca Cristofolini, 2015-03-26 This book summarizes the main methods of experimental stress analysis and examines their application to various states of stress of major technical interest highlighting aspects not always covered in the classic literature It is explained how experimental stress analysis assists in the verification and completion of analytical and numerical models the development of phenomenological theories the measurement and control of system parameters under operating conditions and identification of causes of failure or malfunction Cases addressed include measurement of the state of stress in models measurement of actual loads on structures verification of stress states in circumstances of complex numerical modeling assessment of stress related material damage and reliability analysis of artifacts e g prostheses that interact with biological systems The book will serve graduate students and professionals as a valuable tool for finding solutions when analytical solutions do not exist **Development of Bus Body Structure** Hong Chung Ling, 2005
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