Department : Mechanical Engineering		
Academic Year: 2023-24		
Sr. No.	**Programme Code**	**Name of the Programme**
01.	217	B.Tech Mechanical Engineering

Following students have carried out their Project work/ Internship/ Field Project/Industrial Training for the academic session 2023-24

30	M V Sai Bargov	44-49
31	K Arun Kumar	50-55
32	J Nanibabu	50-55
33	Vidavalaru Vamsi	50-55
34	Kumar Chandan	56-61
35	Tanisha hariyani	56-61
36	Nishant Kumar	56-61
37	Kumar Aman Raj	56-61
38	Mathala rohith kumar	62-67
39	Tafseer Kalam	62-67
40	Rahul Singh Armo	62-67
41	Puli Rohith Prathyush	68-73
42	Immanuel Roban	68-73
43	Abhijit subhash	68-73
44	B Rakesh Kumar	68-73
45	Pawan Kumar	74-79
46	Silaparasetty Kumar	74-79

INNOVATIVE DESIGN & FABRICATION OF AN ENVIRONMENTAL FRIENDLY AIR CONDITIONING SYSTEM

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

HIMANSHU NIMJE (20104025)

ANNEPU VIJAY KUMAR (20104010)

KANAPARTHI ABHIRAM (20104030)

BASAVALA SUDARSHANA RAO (20104018)

Under the guidance of

Mr. PRATEEK GUPTA SIR (ASSISTANT PROFESSOR)

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"INNOVATIVE DESIGN & FABRICATION OF AN ENVIRONMENTAL FRIENDLY AIR CONDITIONING SYSTEM"** submitted by:

Name	Roll No.	Enrollment No.
HIMANSHU NIMJE	20104025	GGV/20/01725
ANNEPU VIJAY KUMAR	20104010	GGV/20/01710
KANAPARTHI ABHIRAM	20104030	GGV/20/01731
BASAVALA SUDARSHANA RAO	20104018	GGV/20/01718

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

Internal Examiner
Date: 06/05/24

External Examiner
Date: 06/05/24

Head of Department
Department of Mechanical Engineering GGV Bilaspur

Abstract

The demand for efficient and sustainable cooling solutions has become increasingly critical due to rising global temperatures and the environmental impact of conventional air conditioning systems. In response to this challenge, our project aims to develop an innovative air conditioning system that not only provides effective cooling but also minimizes energy consumption and reduces greenhouse gas emissions.

Our system will incorporate advanced heat exchangers, and optimized refrigerants to enhance energy efficiency. By minimizing energy consumption during cooling cycles, we aim to reduce the overall carbon footprint.

Traditional air conditioners rely on synthetic refrigerants that contribute to ozone depletion and global warming. In contrast, our system will explore natural refrigerants such as water (H2O) which have minimal environmental impact.

Our system will adapt cooling capacity based on room occupancy, ambient temperature, and time of day.

Contents

List of Figures

List of Tables

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
कोनी, बिलासपुर - 495009 (छ.ग.)

Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur – 495009 (C.G.)

"Influence of incorporation of graphene and MWCNT nanoparticles on the mechanical properties and shape memory behavior of epoxy composite"

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

Akshat Sahu (20104002)
Aryav Jagat (20104013)
Bhoumik Sao (20104020)

Under the guidance of

Dr. Samarjit Singh

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Influence of incorporation of graphene and MWCNT nanoparticles on the mechanical properties and shape memory behavior of epoxy composite"**

Submitted by:

Name	Roll No.	Enrollment No.
Akshat Sahu	20104002	GGV/20/01072
Aryav Jagat	20104013	GGV/20/01714
Bhoumik Sao	20104020	GGV/20/01719

has been examined by the undersigned as a part of an examination of the B-Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

S. Singh 06/05/24
.....

Internal Examiner

Date:

Biplab Das
.....

External Examiner

Date: 06.05.2024

S. P. Sharma 06/05/24
.....

Head of Department

विभागाध्यक्ष / Head
यान्त्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)

II

Abstract

Shape memory polymers (SMPs) are a class of active, deformable materials that can switch between a temporary shape, which can be freely designed, and their original shape. SMPs have gained extensive acceptance as smart materials due to their enormous deformation, low density, numerous stimulation techniques, strong biocompatibility, and other features. Shape memory polymer composites (SMPCs) have emerged as a promising class of materials with unique properties and applications in various industries. This study explores the development of a shape memory polymer epoxy composite. Through a combination of shape memory polymers and epoxy resins, the composite exhibits dynamic shape-changing capabilities. The abstract delves into the synthesis process, mechanical properties, and potential applications, shedding light on the innovative nature of this material in fields such as smart materials and biomedical devices.

Contents

List of Figures

List of Tables

AI Street Light

A project/ thesis submitted in partial fulfilment of the requirements

for the award of degree of

Bachelor of Technology

by

Aman Kumar Singh

Ankit Kumar

Pulkit Vyas

Swathi Singh

Under the guidance of

Mr. Bhushan Singh Gautam

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"AI Street Light"**

Submitted by:

Name	Roll No.	Enrollment No.
Aman Kumar Singh	20104004	GGV/20/01704
Ankit Kumar	20104007	GGV/20/01708
Pulkit Vyas	20104057	GGV/20/01755
Swathi Singh	20104065	GGV/20/01766

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

06/05/24
.....
Internal Examiner
Date:

6/5/24
.....
External Examiner
Date:

.....Examiner/Head.....06/05/2024
Head of Department

Abstract

Integrating artificial intelligence (AI) with urban infrastructure has opened new avenues for enhancing efficiency and sustainability. This research explores AI-driven street lighting systems, aiming to develop systems capable of dynamically adapting illumination based on real-time detection of objects, such as pedestrians and vehicles. The integration of AI-powered streetlights not only optimizes energy consumption but also enhances urban security. These intelligent systems utilize advanced object detection technology to detect nighttime burglaries and trigger alerts, doubling as a safety measure. By dynamically adapting illumination based on real-time object detection, these street lights address the evolving needs of modern cities, paving the way for smarter, safer, and more sustainable urban environments. Moreover, the significant energy consumption of traditional street lights underscores the urgency of transitioning to more efficient lighting solutions. Additionally, the environmental impact of light pollution on wildlife and the adverse effects on astronomical observations highlight the importance of implementing intelligent lighting systems that mitigate these concerns while ensuring urban security and efficiency.

Artificial intelligence (AI) stands as a testament to the remarkable evolution of technology, particularly in the field of computer vision. With AI, machines can now simulate human intelligence autonomously, revolutionizing various industries. One significant aspect of AI's impact is its role in advancing object detection technologies within computer vision. By analyzing vast amounts of visual data, AI-powered object detection systems, such as YOLOv8, can swiftly and accurately recognize and localize multiple objects within images or video frames. This transformative technology has far-reaching applications, from enhancing surveillance systems and autonomous vehicles to revolutionizing image recognition tasks across diverse industries. As AI continues to evolve, its profound impact on computer vision and object detection technologies promises to shape the present and future of humanity, ushering in a new era of intelligent and adaptive systems.

Object detection and tracking are crucial aspects of computer vision, advancing our understanding of visual data. YOLOv8, a state-of-the-art object detection model, swiftly and accurately recognizes and localizes multiple objects within images or video frames. Leveraging

Contents

List of Figures

DESIGN OF INDOOR SOLAR COOKER

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

By

Ananya Shri Chaurasia

J.T. Pravallika Padamata

Mainak Ghosh

Rampalli Sumanth Raju

Under the guidance of

Dr. Jasinta Poonam Ekka

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Design of Indoor Solar Cooker"**

Submitted by:

Name	Roll No.	Enrollment No.
Ananya Shri Chaurasia	20104006	GGV/20/01706
J.T. Pravallika Padamata	20104028	GGV/20/01728
Mainak Ghosh	20104037	GGV/20/01735
Rampalli Sumanth Raju	20104060	GGV/20/01758

It has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

.....
Internal Examiner
Date: 6.05.24

.....
External Examiner
Date: 06.05.2024

.....
Head of Department

विभागाध्यक्ष / Head
यान्त्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)

Abstract

With the impending challenge of climate change and global warming that the world is facing right now and in pursuit of our nation's commitment towards achieving net zero carbon emissions by 2050 it is imperative that we progressively move away from conventional sources of energy towards renewables.

One of the most important aspects of our lives is food and the way we cook it requires a fundamental shift to cleaner and economical methods for us to strive forward as a nation. An accessible and inexpensive way of cooking have evaded us till now.

An indoor solar cooker which is reliable during sunshine hours provided with a heat storage medium for cooking at night can prove to be a novel yet inexpensive answer to our problems. Solar energy is ubiquitous and we intend to design a cooker that can facilitate indoor cooking while also being affordable and convenient to the general populace and hopefully finds social and cultural acceptance, consequently greening our kitchens.

For this the paper reviewed multiple solar cooker models, their performances and efficiency in actual cooking to formulate an economical model of cooker. During this we analyzed various solar collector and finally decided in favor of parabolic collector over evacuated tube collectors or ETCs despite having a higher efficiency experience reduced performance over time. Moreover, ETCs were failed to reach high enough temperatures or use in the average kitchen.

To this end we have furnished calculations in this paper for the average energy required to cook in a common household and accordingly designed a parabolic collector in ANSYS Workbench with sufficient area to harness enough energy to complete with a tank and cooktop, the difference between the collector and the cooking top is taken as one floor. This model evaluates the temperature of the working medium at the bulb and provides a pump for maintaining sufficient mass flow rate to the cooktop and storage as well as to maintain enough head to complete the cycle and maintain enough velocity head at the cooktop exit to convert it to potential head and aid thermal siphoning in ascension to the bulb.

Further in this paper we simulated the heat transfer with ANSYS and suggested materials, manufacturing process, insulation materials and maintenance for the model. We have calculated the energy output at the cooktop and provided a cost estimate for the complete setup.

Contents

List of Figures

List of Tables

Design and Fabrication of Suspension Seat

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

Submitted By

Ashish Chandr Gupta (20104014)

Gajanan Eknath Lad (20104035)

Manish Kumar Thakur (20104038)

Ritika Ahirwar (20104062)

Under the guidance of

Mr. Prateek gupta

Department of Mechanical Engineering

School of Studies Engineering and Technology

Guru Ghasidas Vishwavidyalaya

Bilaspur**(C.G)**

(A Central University)

Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Design and Fabrication of Suspension Seats."**

Submitted by:

Name	Roll No.	Enrollment No.
ASHISH CHANDR GUPTA	20104014	GGV/20/01715
GAJANAN EKNATH LAD	20104035	GGV/20/01725
MANISH KUMAR THAKUR	20104038	GGV/20/01736
RITIKA AHIRWAR	20104062	GGV/20/01760

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

06/05/24

Internal Examiner

Date:

06/05/24

External Examiner

Date:

06/05/2024

Head of Department

Abstract

This project aims to develop a suspension seat for Indian public buses to minimize discomfort from jerking movements. It will integrate bungee cords, pulleys, and springs to absorb jolts and redistribute forces. The system aims to improve ride quality on uneven roads and enhance passenger comfort and safety. Thorough research will identify optimal materials and configurations for components. Prototypes will be tested to ensure reliability.

The suspension seat can significantly reduce passenger discomfort in Indian buses and promote safety and well-being. The innovative system offers a cost-effective solution that is compatible with existing seat designs. By enhancing the travel experience, it has the potential to increase public transportation use and contribute to sustainable transportation in India.

Contents

List of Figures

List of Tables

Single slope solar still

Project Report

"Experimental study on enhancing the productivity of solar still using different energy storage materials"

Submitted as Major Project Work for 8th Semester
of
Bachelor of Technology
in
Mechanical Engineering

Submitted by
Ashutosh Yadav
Bhumika Patel
Jay Prakash Rathia
Pappala Jagadeesh

Under The Guidance of
Dr. T.V. Arjunan
Professor

Department of Mechanical Engineering
School of Studies of Engineering & Technology
Guru Ghasidas Vishwavidyalaya (A Central University)
Bilaspur (Chhattisgarh)

Session 2020-24

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Experimental study on enhancing the productivity of solar still using different energy storage materials"**

Submitted by:

Name	Roll No.	Enrolment No.
ASHUTOSH YADAV	20104016	GGV/20/01717
BHUMIKA PATEL	20104021	GGV/20/01720
JAY PRAKASH RATHIA	20104029	GGV/20/01730
PAPPALA JAGADEESH	20104050	GGV/20/01749

has been examined by the undersigned as a part of an examination of the B-Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

Internal Examiner

Date:

External Examiner

Date:

Head of Department
यांत्रिकी अभियांत्रिकी विभाग/Mechanical Engg. Dept
प्रौद्योगिकी संस्थान/Institute of Technology
गुरु घासीदास वि.वि./Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.)/Koni, Bilaspur (C.G.)

ABSTRACT

A solar still in which charcoal functions as heat absorber medium has been constructed. The still presents a 44.6 % improvement in productivity over conventional stills, is cheap, simple to construct, and in addition has the advantages of low thermal capacity, lightweight and ease of operation. It is made of galvanized iron sheet outer rectangular body in which salt water is allowed to percolate through a charcoal bed of particles, and above which a glass plate is made to cover the still at an optimum distance from the charcoal bed. The still bottom is insulated by a suitable layer of polyurethane rigid foam and the still is mounted on an iron frame of adjusted height. Factors such as size of charcoal particles, and still inclination to the horizontal have been investigated. It was found that coarse charcoal particles of intermediate size gave the best productivity.

List of Figures

List of Tables

Contents

Design & Fabrication of Thermal Conductivity Measurement Device for Fly Ash Bricks

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

Anshuman Singh

Ashish Kumar

Chaitanya Raj

Pratyush Kumar

Under the guidance of

Mr. Prashant Kumar Jangde

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Design & Fabrication of Thermal Conductivity Measurement Device for Fly Ash Bricks"**

Submitted by:

Name	Roll No.	Enrollment No.
Anshuman Singh	20104011	GGV/20/01711
Ashish Kumar	20104015	GGV/20/01715
Chaitanya Raj	20104022	GGV/20/01722
Pratyush Kumar	20104054	GGV/20/01755

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 7th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

.....

Internal Examiner

Date: 06.05.2024

.....

External Examiner

Date: 06.05.2024

.....
विभागाध्यक्ष/Head
Head of Department
Prof. & Head/Mechanical Engg. Dept
Institute of Technology
Guru Ghasidas V.V.
Koni, Bilaspur (C.G.)

06/05/2024

Abstract

This experimental investigation explores a thorough examination of the thermal conductivity characteristics exhibited by fly ash bricks., a sustainable alternative to conventional building materials. With a growing emphasis on mitigating the environmental impact of construction practices, this study focuses on understanding the physical, mechanical, and environmental properties of fly ash bricks.

As the data from this study becomes available, it is expected to play a pivotal role in shaping decisions related to building material selection, promoting the adoption of environmentally friendly alternatives in the construction industry. The findings are anticipated to contribute to the ongoing discourse on sustainable construction practices, offering a tangible solution to address both environmental concerns and the need for resilient building materials.

This project focuses on the experimental determination of the thermal conductivity of fly ash bricks, employing diverse equipment such as a heat gun, metallic pipe, and thermocouple. The study utilized fly ash bricks with dimensions of 45cm x 30cm x14cm. Thermal conductivity measurements were conducted at varying temperature differences, ranging from 21.6°C to 23.4°C. The results obtained from each equipment configuration were as follows: 0.3074, 0.3133, and 0.3216 W/mK, respectively. Through steady-state temperature measurements, thermal resistance and equivalent heat conductivity were calculated, yielding a numerical result of $k_{b,eq}$ = 0.3074 W/mK. The average thermal conductivity value was determined with a 3 to 4% error margin. This comprehensive approach using different equipment provides valuable insights into the thermal properties of fly ash bricks, enhancing our understanding of their applicability in construction and thermal insulation.

The method employed in the provided equations involves the consideration of heat transfer mechanisms, particularly convection, to determine the thermal conductivity of the fly ash brick. Convection is a process where heat is transferred through a fluid medium, such as air or water, due to the movement of the fluid itself. In this experimental setup, hot air generated by the heat gun serves as the fluid medium through which heat is transferred to the fly ash brick

Contents

List of Figures

List of Tables

Major Project Report

On

"Hybridization effect of mechanical properties of Jute/Basalt/Epoxy Composite Laminates"

A Project Submitted in the partial fulfillment of the requirements for the

Degree of Bachelor of Technology

In

Mechanical Engineering

By

DANDIBOYINA YASWANTH (20104024)

MORRI VEERA SAIBARGOV (20104043)

VIJAYKUMAR KATARAPU (20104070)

B. Tech 8th Semester

Under the guidance of

Mrs. SHWETA SINGH

Department of Mechanical Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

SESSION: 2023-2024

DEPARTMENT OF MECHANICAL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR(C.G.)

(A Central University) established by the Central University Act 2009 No.25 of 2009

Certificate the examiners

This is to certify that the project work entitled **"Hybridization effect of mechanical Properties of Jute/Basalt/Epoxy Composite Laminates"**

Submitted By:-

S. No	Name	Roll. No	Enrollment. No
1	Dandiboyina Yaswanth	20104024	GGV/20/01724
2	Morri Veera Saibargov	20104043	GGV/20/01741
3	Vijaykumar Katarapu	20104070	GGV/20/01771

Has been examined by the undersigned as a part of an examination of B. Tech (Mechanical Engineering) 8th semester project at the Mechanical Engineering School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (Central University) Bilaspur.

Internal Examiner
Date: - 06/05/24

Biplab Das
External Examiner
Date:-06-05-2024

S. P. Jha 06/05/2024
Head of Department

विभागाध्यक्ष / Head
यान्त्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)

Abstract

This study presents the fabrication and characterization of composite materials using jute and basalt fibers. Jute, a natural and renewable fiber, is combined with basalt, a volcanic rock-derived fiber known for its exceptional mechanical properties.The objective is to harness the benefits of both fibers, creating a lightweight yet durable material suitable for various applications. The fabrication process involves the impregnation of jute and basalt fibers with a compatible resin system, followed by layering and curing. The resulting composite material is evaluated for its mechanical properties, including tensile strength, flexural strength, impact strength, hardness strength. Additionally, thermal and environmental stability are examined to assess the suitability of these composites in various conditions. The findings demonstrate that the combination of jute and basalt fibers yields a composite material with a balance of strength, environmental sustainability, and cost-effectiveness. This research contributes to the ongoing exploration of sustainable materials for applications in sectors such as automotive, construction, and aerospace. The composite's promising characteristics make it a potential candidate for reducing the environmental footprint in various industries while maintaining performance standards.

TABLE OF CONTENTS

List of Figures

List of Tables

Major Project

On

FABRICATION AND COMPARATIVE ANALYSIS OF MAGNETIC SHOCK ABSORBER WITH CONVENTIONAL SHOCK ABSORBER

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

KARRI.ARUN KUMAR

VIDAVALURU. VAMSI

JAKKULA. NANIBABU

Under the guidance of

Prof. S.P. ANBUUDAYASANKAR

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2023-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **""FABRICATION AND COMPARATIVE ANALYSIS OF MAGNETIC SHOCK ABSORBER CONVENTIONAL SHOCK ABSORBER".**

Submitted by:

Jakkula. Nani Babu	20104027	GGV/20/01729
Karri. Arun Kumar	20104031	GGV/20/01713
Vidavaluru. Vamsi	20104069	GGV/20/01770

And it has been examined by the undersigned as a part of an examination of the B. Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

S. P. A Ch
.....

Internal Examiner

Date: 06/05/2024

6/5/24.
.....

External Examiner

Date:

S. P. A Ch 06/05/2024
.....

Head of Department

विभागाध्यक्ष / Head
यान्त्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept.
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)

Abstract

This paper presents a comprehensive comparative analysis of magnetic and hydraulic shock absorbers, with a focus on their performance characteristics and suitability for automotive applications. Through rigorous evaluation and testing, several key advantages of the magnetic shock absorber have been identified. Firstly, the magnetic shock absorber exhibits lower stiffness compared to its hydraulic counterpart, resulting in a smoother and more comfortable ride for passengers. This attribute allows the absorber to effectively absorb road vibrations and irregularities, enhancing overall ride quality. Additionally, the magnetic shock absorber demonstrates a significant advantage in terms of weight, being lighter than the hydraulic alternative.

This reduction in weight not only enhances fuel efficiency but also minimizes the overall load on the vehicle's suspension system, contributing to improved handling and stability. Furthermore, our evaluation indicates that the magnetic shock absorber boasts a longer lifespan when compared to hydraulic shock absorbers. This longevity can be attributed to the absence of internal fluid seals and components prone to wear and deterioration over time in the magnetic variant. Consequently, the magnetic shock absorber emerges as a superior choice, offering superior comfort, reduced weight, and enhanced durability for various automotive applications. This research provides valuable insights for automotive engineers, manufacturers, and researchers seeking to optimize vehicle suspension systems for improved performance and reliability.

Contents

List of Figures

List of Tables

Drying of senna leaves using flat plate solar collectors.

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

Kumar Aman Raj

Kumar Chandan

Nishant Kumar

Tanisha Haryani

Under the guidance

Mr. Prashant Kumar Jangde

(Assistant Professor)

Department of Mechanical Engineering

School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Drying of senna leaves using flat plate collectors."**

Submitted by:

Name	Roll No.	Enrollment No.
Kumar Aman Raj	20104033	GGV/20/01732
Kumar Chandan	20104034	GGV/20/01733
Nishant Kumar	20104047	GGV/20/01746
Tanisha Haryani	20104067	GGV/20/01768

has been examined by the undersigned as a part of an examination of the B. Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

.....
Internal Examiner

Date: 06.05.2024

.....
External Examiner

Date:

06/05/2024

विभागाध्यक्ष / Head
यान्त्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)

Abstract

The solar drying system utilizes solar energy to heat up air and to dry any food substance loaded, which is beneficial in reducing wastage of agricultural product and helps in preservation of agricultural product and medicinal plants. Based on the limitations of the natural sun drying e.g. exposure to direct sunlight, liability to pests and rodents lack of proper monitoring, and the escalated cost of the mechanical dryer, a solar is therefore developed to cater for this limitation. This project presents the design and construction of a domestic passive solar dryer. The dryer is composed of flat plate solar collector (air heater) and a solar drying chamber constraining rack of three net trays both being integrated together. The air allowed in through air inlet is heated up in the solar collector and channeled through the drying chamber where it is utilized in drying. The dimensions of the dryer are 152.4cm x 121.92cm x 20cm (length x width x height). The material was used for the construction, chiefly comprising of polystyrene, glass, stainless steel sheet, and Gi net for the trays. Traditionally, senna leaves are dried by spreading the harvest on the floor under Sun or shade for 36-42 hr, which results in contamination and affects the quality. the rapid rate of drying in the dryer reveals its ability to dry senna leaves reasonable rapidly to a safe moisture. The result shows the moisture content using flat plate solar collector get reduce to 34% in 5 hours and then the moisture gets stagnant.In flat plate solar collector, the efficiency is varying from 6.44 % to 9.40 %.

Contents

List of Figures

List of Tables

Project Topic

B. Tech. Project Topic

Brick Vendors Assessment by using MOORA Technique: An Empirical Survey

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

BY Students Name

M.ROHITH KUMAR

TAFSEER KALAM

RAHUL SINGH ARMO

Under the guidance of

DR .ANOOP KUMAR SAHU

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Project Topic

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled" **Brick Vendors Assessment by using MOORA Technique: An Empirical Survey"**

Submitted by:

Names	Roll Nos.	Enrollment Nos.
Mathala Rohith Kumar	20104040	GGV/20/01738
Tafseer Kalam	20104066	GGV/20/01767
Rahul Singh Armo	20104058	GGV/20/01756

have been audited by the undersigned as a part of an examination of the B. Tech 8th semester project at the **Department of Mechanical Engineering,** School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G).

06/05/24
.....

Internal Examiner

Date: 06/05/24

S. Singh 06/05/24
.....

External Examiner

Date:

S. P. 06/05/24

Head of Department

Abstract

The rush of Colonizers is escalated at market place to perform the said infrastructure entities. The Colonizers indentified that among all stuffs; necessity to build mall, modern houses etc, brick, sand and cement is needed where the bricks are executed in bulk to build any infrastructure entity. It is extracted by the real empirical survey of 500 colonizers of Asian continents, especially in India that colonizers high earnings and revenues only depends upon materials procurement at feasible cost with others variables (to build effective construction SCM). During survey of 500 colonizers, it is sound that 60% colonizers prioritized the qualitative service variables and residue 40% advised to focus on only cost variables for purchasing any construction stuff from alternative vendors. The brick procurement problem has identified by author, experienced the lacking of decision support system-module, can address the qualitative and quantitative variables at a time for aiding buying of bricks from alternative vendors. This research gap is accepted as research objective. It is also observed by peer-literature survey that there is still no invention of a soft computing technique to tackle the data in the form of % and crisp score vs qualitative and quantitative variables respectively, to lead Brick Vendor (BV) evaluation and benchmarking decision in the field of CSCM. This research gap is also respected as research objective. The authors proposed a DSS, consisted of module' 'service based qualitative as well as production cost related quantitative variables' with MOORA (Multi-Objective Optimization by Ratio Analysis) simulation decision technique' to lead the Brick Vendor (BV) evaluation and benchmarking decision. The objective of research is to help the colonizers of Asian continents to evaluate the optimum BV among feasible BVs. The results are illustrated in conclusion section.

Keywords: Construction Management (CM), Brick supplier, Qualitative and Quantitative variables, Brick Vendors (BVs), Brick Production Cost Variables.

Contents

List of Figures

List of Tables

Fabrication & Experimental Testing of Bagasse Reinforced Light Weight Composites

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

P. Rohith Prathyush

Immanuel Roban A

Abhijith Subhash

B. Rakesh Kumar

Under the guidance of

Mr. Biplab Das

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"Fabrication and experimental testing of Bagasse Reinforced Lightweight Composites"**

Submitted by:

Name	Roll No.	Enrollment No.
P. Rohith Prathyush	20104056	GGV/20/01754
Immanuel Roban	20104026	GGV/20/01727
Abhijith Subhash	20104001	GGV/20/01701
B. Rakesh Kumar	20104017	GGV/20/01721

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

Biplab Das
.....
Internal Examiner
Date: 10-05-2024

.....
External Examiner
Date: 10/05/24

10/05/2024

H.O.D (Mechanical Engineering)
यांत्रिकी अभियांत्रिकी विभाग/Mechanical Engg. Dept
प्रौद्योगिकी संस्थान/Institute of Technology
गुरु घासीदास वि.वि./Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.)/Koni, Bilaspur (C.G.)

Abstract

This project focuses on the development of bagasse-reinforced lightweight composites, employing ASTM-D certified art resin as a binding agent. The bagasse undergoes treatment with NaOH followed by retreatment with $KMnO_4$. Three distinct specimens were prepared, each featuring varying concentrations of $KMnO_4$ (1%, 2%, and 3%). The objective is to explore the mechanical and structural properties of these composites to ascertain their suitability for repurposing agricultural waste into durable planks. These planks are envisioned to be utilized in everyday furniture, offering a sustainable alternative to conventional materials. Through systematic experimentation and analysis, this study seeks to contribute to the advancement of eco-friendly materials in the realm of furniture manufacturing, aligning with the principles of circular economy and waste reduction.

Contents

List of Figures

List of Tables

NUMERICAL INVESTIGATION OF UPSTREAM SWIRLING MOTION ON FLOW OF CONCENTRATED SLURRY IN HORIZONTAL PIPES

A project/ thesis submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology

by

Pawan Kumar(20104051)

Silaparasetty Kumar(20104064)

Under the guidance of

Dr. Pankaj K Gupta

Department of Mechanical Engineering
School of Studies Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur
Session 2020-2024

Department of Mechanical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, (C.G)

Certificate by the Examiners

This is to certify that the project work entitled **"NUMERICAL INVESTIGATION OF UPSTREAM SWIRLING MOTION ON FLOW OF CONCENTRATED SLURRY IN HORIZONTAL PIPES "**

Submitted by:

Name	Roll No.	Enrollment No.
Pawan Kumar	20104051	GGV/20/01750
Silaparasetty Kumar	20104064	GGV/20/01764

has been examined by the undersigned as a part of an examination of the B.Tech (Mechanical Engineering) 8th semester project at the Department of Mechanical Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, (C.G)

06/5/2024

Internal Examiner

Date:

06/05/2024

External Examiner

Date:

06/05/2024

विभागाध्यक्ष/Head
यांत्रिकी अभियांत्रिकी विभाग/Mechanical Engg. Dept
प्रौद्योगिकी संस्थान/Institute of Technology
गुरु घासीदास वि.वि./Guru Ghasidas V.V.
कोनी, बिलासपुर (छ.ग.)/Koni, Bilaspur (C.G.)

Abstract

The transportation of concentrated slurries through horizontal pipelines presents a complex fluid dynamics scenario. This report presents a comprehensive numerical investigation aimed at understanding the effects of upstream swirling motion on the flow behavior of concentrated slurries within horizontal pipes subjected to swirling motion. We compared the CFD results and experimental[#] results for normal cross section pipe of diameter 0.103m. To introduce the swirling-motion in the pipeline of diameter 0.103m we attached a swirling section having 'pitch to diameter ratio' 6 and number of lobes are 3,4 &5. For all the three different lobes, study is carried out for volume fraction 19%, 29% & 33% at the two different inlet velocity 3m/s and 5 m/s having two different sand particle size 90 microns and 290 microns. Concentration of sand before the swirling motion and after the swirling motion is major focus of study. Swirl intensity or swirl number which is rapidly declining but after 10.3m from the swirl section its small effect can be seen for 3,4 &5 lobe. Pressure gradient for all the cases is calculated and comparison is made between 3,4 & 5lobe and how it varies with the volume fraction and particle size.

Keywords: Numerical investigation, CFD, Swirling motion, volume fraction, pressure gradient & swirl number

Contents

List of Figures

List of Tables