

A
Project Report
On
"A Review on Parametric Analysis of Expandable/Retractable Solar Panels"



Submitted to
Department of Industrial and Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

Submitted as Major Project for Requirement
Of
Bachelor of Technology
In
Industrial and Production Engineering

Submitted By
Nikhil Diwan
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Under the Guidance of
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(Assistant Professor)

Department of Industrial and Production Engineering
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya (A Central University)
Bilaspur (Chhattisgarh)

May 2022

School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya



Certificate of Supervisor

This is to certify that the work incorporated in the project

“A Review on Parametric Analysis of Expandable/Retractable Solar Panels”

is record of work carried out by Mr. Nikhil Diwan bearing Enrolment No. GGV/18/1183, under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, (C.G), India to the best of my knowledge and belief.

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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.),

Abstract

This project focuses on the applications of geometrically transformable and expandable structures with deployed energy production replace the fixed photovoltaic (PV) panels and tracking systems currently used in buildings rooftop installations. The significance of this expandable geometric system relies on its embedded motion grammar, i.e., rotation and translation transformations, in the system. The research draws inspiration from reconfiguration of compound tree leaves in nature, and addresses issues of redesign and modelling challenges that led to digital fabrication of the Prototype. With the increasing demand for new sources of energy, solar power has become an attractive solution for the current energy crisis. Photovoltaic systems have been increasingly used in the form of solar panel arrays. Foldable Solar Panels are lightweight, durable and extremely portable. The solar panels are mounted to weather resistant fabric that quickly fold for storage and unfold for use. A new portable solar generator has been developed to generate electricity. It has the potential to replace petrol generator. The solar generator can generate 20 Watts of electricity. This amount of power can supply up to 96 hours of electricity for the purpose of lighting and running small electrical appliances. The power output is (alternating current) AC current using 150 Watts inverter with 200 Watts surge, suitable for all commercial single phase electric appliances. Modern low earth orbit (LEO) satellites that require multi-mission flexibility are highly likely to be repositioned between different operational orbits. While executing this process the satellite may experience high levels of vibration and environmental hazards, exposing the deployed solar panel to dangerous stress levels, fatigue and space debris, hence it is desirable to retract the solar array before satellite repositioning to avoid damage or failure. A novel concept of deployable/retractable hybrid solar array system composed of both rigid and flexible solar panels arranged within a petal formation, aimed to provide a greater power to v ratio while dramatically reducing mass and cost is proposed.

**A
Project report
on
Effect of Process Parameters of Electrical Discharge Machine on
Machining Characteristics**

**Submitted in
Partial fulfillment of requirement for the award of degree
of
Bachelor of Technology
in
Department of Industrial and Production Engineering
School of Studies in Engineering & Technology
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (Chhattisgarh)**



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Submitted By:
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**Department of Industrial and Production Engineering,
School of Studies in Engineering & Technology,
Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur (Chhattisgarh)
Session 2018-2022**



CERTIFICATE OF SUPERVISOR

This is to certify that the work incorporated in the project “Effect of Process Parameters of Electrical Discharge Machine on Machining Characteristics” is the Record of project work carried out by Mr. Shivam bearing Enrollment No. GGV/18/1294 under my guidance and supervision for the award of degree of Bachelor of Technology in the department of industrial and Production Engineering, School Of Studies In Engineering & Technology, **Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, Chhattisgarh, India.** To the best of my knowledge and belief the project.

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Department of Industrial and Production
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ABSTRACT

Electric discharge machining (EDM) is a non-traditional machining process that involved a transient spark discharge through the fluid due to the potential difference between the electrode and the work piece. The aim of this project is to determine the proper electrode material for machining tool tungsten work pieces using electrical discharge machining (EDM). Basically, improper choose of electrode material in EDM machine may result a few problems like the machine may cause of poor machining performance and it will decrease the accuracy of the products. This project presents a fundamental study of characteristic of electrode discharge machine (EDM) that is electrode wear ratio (EWR) and material removal rate (MRR) by using copper electrode materials in order to increase the understanding of EDM processes. To archive this project objective, an experiment will be doing properly. By following the method, some literature review is going to do first before preparing the experimental set-up. Then experiment will be runs and the data of the experiment are taken. This is to make sure the analysis can be done in order to find the best electrode material. There is electrode material should be copper. Regarding the literature review, the higher material removal rate in the EDM machine, the better is the machining performance while the lower electrodes wear ratio in the EDM machine is the better and accurate performance characteristic. Thus, as the expected result for this experiment, the copper electrode material will be the best electrode among others electrode for EDM machining process.

Project Report
on
“Analysis of barriers to implement Blockchain in Manufacturing and Service sector”



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(*A Central University*)
Bilaspur (C.G.)
Submitted as Major Project for Requirement
of
Bachelor of Technology
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APRIL 2022

Department of Industrial & Production Engineering
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“Analysis of barriers to implement Blockchain in Manufacturing and Service sector”

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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Abstract

Blockchain technology (BCT) has been gaining popularity due to its benefits for almost every industry. However, despite its benefits, the organizational adoption of BCT is rather limited. This lack of uptake motivated us to identify the factors that influence the adoption of BCT from an organizational perspective. In recent times, organizations are increasingly adopting blockchain technology in their supply chains due to various advantages such as cost optimization, effective and verified record-keeping, transparency, and route tracking. This thesis aims to examine the barriers to implement Blockchain in Manufacturing and Service sector in India. A questionnaire- based survey was used to collect data from service and manufacturing-based company in India. The research framework is presented based on analysis of barriers to implement blockchain in service and manufacturing sector.

The three factor which affect most in adaptation of blockchain are Complexity in setup/use, Security and privacy concern and Technological awareness. Furthermore, the three factors, namely, Market dynamics, Scalability and Cost do not influence the intention to adopt the technology. The study contributes to filling a significant gap in the academic literature since only a few studies have endeavored to ascertain the technology adoption factors by supply chains of SMEs in a developing country like India. The study has also proposed a novel integrated technology adoption framework that can be employed by future studies. The findings are expected to enable SMEs to understand important factors to be considered for adopting blockchain technology in their Industries. Furthermore, the study may benefit the blockchain technology developers and suppliers as they can offer customized solutions based on the findings.

A
Project report

On

**“Improvement in Yield of Carbonated Soft Drinks on Polyethylene
Terephthalate (PET) and Returnable Glass Bottles (RGB) Line”**

At Narmada Drinks Pvt.Ltd Bilaspur

-a methodology of Six Sigma



**Submitted to
Institute of Technology
Guru Ghasidas Vishwavidyalaya
(A Central University)
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In partial fulfillment of requirement for the award of degree

Of

**Bachelor of Technology
In
Industrial and Production Engineering**

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Session 2018-2022**

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CERTIFICATE OF SUPERVISOR

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**“Improvement in Yield of Carbonated Soft Drinks on Polyethylene
Terephthalate (PET) And Returnable Glass Bottles (RGB) Line”**

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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

Abstract

Six Sigma is an industry-accepted and proven methodology used for business process improvement. This methodology helps an organization achieve a superior performance and improved profitability, and is very effective for service-based businesses as well as those that are product-related. The Six Sigma program applies several specialized skill sets to streamline operations including process analysis, statistical measurement, and group facilitation.

It is an approach that improves quality by analyzing data with statistics. In recent years there has been a significant increase in the use and development of the six sigma methodology in manufacturing industry and others. It is high time to have a review on the six sigma approach. This paper reviews some related literatures to describe methodology, implementation and future researches. The present paper summaries four issues within the sub-category of the initial six sigma concepts: basic concept, DMAIC, DFSS and deployment. Then, some sectors that benefit from the implementation of six sigma are listed out, and the key factors influencing the successful six sigma project implementation are identified. At last, some topics for future research are presented.

Keywords: Carbonated Soft Drinks (CSD), PolyethyleneTerephthalate (PET), Returnable Glass Bottles (RGB) Line, Critical to quality (CTQ)

A
Project Reports
on
“The Analysis of Drivers, Barriers, and Practices of Green Supply
Chain Management in Automobile Firms in Chhattisgarh”
Submitted to



Department of Industrial & Production Engineering

Guru Ghasidas Vishwavidyalaya

(A Central University)

Bilaspur (C.G.)

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“The Analysis of Drivers, Barriers, and Practices of Green Supply Chain Management in Automobile Firms in Chhattisgarh”

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A
Major Project Report on
The mechanical study of

“Reinforced Epoxy Based Hybrid Composite”



Submitted to

Department of Industrial and Production Engineering

Guru Ghasidas Vishwavidyalaya

(A Central University)

Bilaspur (C.G.)

Submitted as Project Work for 8th Semester Requirement of Bachelor
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in

Industrial and Production Engineering

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“Reinforced Epoxy Based Hybrid Composite”

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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.),

ABSTRACT

Composite materials are becoming more popular due to their superior properties such as high tensile, flexural, and impact strength, high stiffness, and high corrosion resistance when compared to traditional materials. The carbon, glass, and Kevlar synthetic fibers have excellent mechanical properties and are used in a variety of fields including aircraft, automobiles, biomedical, and sports. The experimental analysis of a hybrid composite based on carbon-glass-Kevlar fiber reinforced with epoxy resin is presented in this paper. Hybrid composites were fabricated for different stacking sequences and fiber orientations (ply angles) by performing the hand lay-up technique. The tensile strength, flexural strength, and hardness tests were performed by ASTM D638, ASTM D790, and ASTM D2583, respectively. The result revealed that the stacking sequence affects the tensile, flexural strength and hardness whereas fiber orientation affects the tensile, and flexural strength except hardness. The discussed hybrid composite fabrication scheme, testing, data interpretation, analysis and results are tabulated and represented graphically throughout the presented research work.

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A
Project Report
on
**INVESTIGATION AND ANALYSIS OF WITH AND WITHOUT ERP SYSTEMS
IN MANUFACTURING ORGANIZATIONS**



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
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**Submitted as Major Project for Requirement
of
Bachelor of Technology
in
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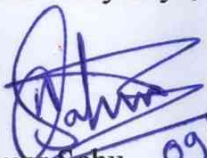


Certificate of Supervisor

This is to certify that the work incorporated in the project

**INVESTIGATION AND ANALYSIS OF WITH AND WITHOUT ERP IN
MANUFACTURING ORGANIZATIONS**

is record of work carried out by Mr. G. Venkata Naresh, Mohd Asfaq, M. Praneeth Kumar Reddy, P. Venkata Srinivas bearing Enrollment No. GGV\19\1106, GGV\19\1469, GGV\19\1165, GGV\19\1198 under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.


Dr. Nitin Kumar Sahu

Assistant Professor

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09/5/2023

Certificate by the Examiners

ABSTRACT

Enterprise Resource Planning (ERP) systems, if implemented successfully, can bestow impressive strategic, operational and information-related benefits to the adopting firms. A failed implementation can often spell financial doom. Currently, most of the information about the failures and successes are based on reports on implementations in large manufacturing and service organizations. But enterprise resource planning vendors are now steadily turning their marketing insights on small and medium-sized manufacturers. There are mixed results of success and failure in different Organizations. The present project is an attempt to analyze the performance of Manufacturing Organizations with and without ERP systems.

The project will present a comparative analysis of manufacturing organizations with and without ERP systems. The findings will highlight the advantages of ERP systems, including increased productivity, tangible and intangible benefits, reduced lead times, and improved quality control. It will explore the challenges associated with implementing an ERP system, such as the need for organizational change and the cost and time required for implementation.

The research focuses on business performances that foster with and without ERP systems and are developed using information gleaned from case studies in various organizations. To improve productivity and overall business performance, Enterprise Resource Planning (ERP) is one of the solutions for manufacturing and automobile service organization in order to face the global challenges.

A
Project Report
on

Surveillance Camera 2.0: Unlocking the Power of Monitor and Identify Me Features



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

**Submitted as Major Project for Requirement
of
Bachelor of Technology
in
Industrial & Production Engineering**

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MAY 2023

Department of Industrial & Production Engineering
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Certificate of Supervisor

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“Surveillance Camera 2.0: Unlocking the Power of Monitor and Identify Me Features”

is record of work carried out by Aabhas Bajpai (19105501) & Aryan Verma 19105504) under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.

A handwritten signature in blue ink, appearing to be 'Kd' followed by a flourish.

Mr. Kawal Lal Kurrey

(Assistant Professor)

Department of Industrial & Production Engineering

CHAPTER 1

INTRODUCTION

- **Project Name:** Smart Supervision System
- **Short Description:** This is a python GUI application which can run on any operating system, uses webcam and has number of features which are not in normal cctv, discussed in detail below pages.
- **Programming Language:** Python
- **Features:**
 - Anti-thief
 - Noise Detection
 - Visitors Counting
 - Normal Recording
 - Face Identification

This is a Project built using latest Programming Language and highly evolving Computer Science field which is "Computer Vision". Which means this project allow computer to watch or in other words it gives vision capability to computers.

A
Project Report
on
“Design and Simulation of Battery Thermal Management Systems (BTMS) for
cylindrical Lithium-ion battery modules using CFD”



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)
Submitted as Major Project for Requirement
of
Bachelor of Technology
in
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is record of work carried out by Mr. Rahul Pandey, Ravikant Upadhyay and Raushan Bhardwaj bearing Enrollment No. GGV/19/1232, GGV/19/1489 and GGV/19/1238 respectively, under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.

Mr. Anurag Singh

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Due to the growing concerns regarding the reliance on imported oil and the negative environmental impact of transportation systems, researchers have focused on developing clean energy transportation alternatives. Hydrogen energy and Electrical power vehicles are the two front runners for traditional vehicle alternatives but due to the advantages, electric vehicles possess in form of environmental protection, high efficiency, harmless and sustainable endurance, it has the most development prospects. Electrical vehicles come in various forms that depends on the types of engines or motors used. These include Hybrid Electric Vehicles (HEVs), Battery Electric Vehicles (BEVs), and Plug-In Hybrid Electric Vehicles (PHEVs). The performance and utility of these vehicles largely depend on the efficiency of their battery packs.

Among the various battery technologies, Lithium Ion (Li-ion) batteries have been identified as one of the most promising due to their high specific energy densities, capacity, charge retention capabilities, and long cycling life. However, manufacturers face a significant challenge in extracting the maximum power utility from a Li-ion battery pack. To meet the heavy power demand of EVs, Li-ion packs are often coupled together in series and parallel combinations, leading to excessive rise in pack temperatures and deterioration of pack performance and power supplying capability. Moreover, Li-ion packs generate significant heat during these scenarios, leading to potential thermal runaway and cell destruction.

Therefore, the design and implementation of a successful thermal management system is crucial. The primary objective of such a system is to effectively dissipate the heat in a battery pack, ensuring that the batteries operate within the desired temperature range for the specific application, while reducing non-uniformities in temperature distributions within the pack. Thermal management systems can use a variety of methods for heat dissipation, including active methods such as air or liquids for heating and cooling, and passive methods such as phase change materials or heat spreaders.

In short, we can say that the development of an efficient thermal management system for Li-ion battery packs is essential for the optimal performance and longevity of electric vehicles.

A
Project Report
on
**OPTIMIZING BIOMASS POWER PLANT PERFORMANCE THROUGH
COMPREHENSIVE MAINTENANCE STRATEGIES in India**



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

**Submitted as Major Project for Requirement
of
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MAY 2023

A
Project Report
on
Impact of Covid-19 on the FMCG Sector as well as on Consumer Behavior



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

Submitted as Major Project for Requirement
of
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Certificate of Supervisor

This is to certify that the work incorporated in the project

Impact of Covid-19 on the FMCG Sector as well as on Consumer Behavior

is record of work carried out by Mr. Rahul Singh (GGV/19/1233), Mr. Gaurav Rathore (GGV/19/1101), Mr. Ankit Sisodiya (GGV/19/1035), Mr. Shiv Om Singh (GGV/19/1486), under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.

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Department of Industrial & Production Engineering

Abstract

The outbreak of the COVID-19 pandemic has resulted in a significant impact on various sectors of the economy, including the Fast-Moving Consumer Goods (FMCG) industry. The objective of this research paper is to analyze the effect of the COVID-19 pandemic on the FMCG sector. The paper examines the changes in consumer behavior and sales growth in the FMCG industry during the pandemic.

This study employs the data given by different companies. The data is obtained from various reports, research papers, and online sources. The findings of the study suggest that the COVID-19 pandemic has resulted in significant changes in consumer behavior, including increased demand for hygiene and health-related products. Additionally, supply chain disruptions and restrictions on the movement of goods and people have affected the availability of goods and services, resulting in changes in the pricing and distribution of FMCG products. The study concludes that the FMCG sector needs to adopt innovative new strategies to meet the changing consumer demands and diversify the impact of the COVID-19 pandemic.

Moreover, the pandemic has highlighted the need for FMCG companies to be adaptable in the face of unexpected challenges. Companies that were able to adapt quickly in response to the pandemic were more successful in reducing the impact on their business operations.

The findings of this study can be useful for policymakers, business managers, and stakeholders in the FMCG sector in developing strategies to address the challenges and opportunities presented by the pandemic.

A
Project Report
on
“Coil Winding Machine”



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(*A Central University*)
Bilaspur (C.G.)

**Submitted as Major Project for Requirement of
Bachelor of Technology in Industrial & Production
Engineering**

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JULY 2022

Department of Industrial & Production Engineering

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Certificate of Supervisor

This is to certify that the work incorporated in the project **“Coil Winding Machine”** is a record of work carried out by Mr.Sai Durga Rao bearing Enrollment No. GGV/18/1134, under the guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.

To the best of my knowledge and belief.

- Embodies the work of the candidates themselves/him/herself.
- Has duly been completed.
- Fulfills the requirement of the B.Tech degree of the University.


Mr. Leeladhar Rajput 13-03-21

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Abstract

A coil winding machine is a machine for winding coil onto a spool, bobbin and many more. This coil winding machine is one of types of winding machine that available in industries today. From multi speeded machines to medium, large and extra-large machines, these machines come in various types and categories, performing a range function. The common applications for a coil winding machine are to wind coils for transformer, inductors, motor and chokes. To complete a coil using manual coil winding machine will be inconvenience and waste of time. Therefore, fabrication of coil winding machine will be done in this project which is controlled by two stepper motor using Ardiuno program. This machine is inexpensive, easy to operate and build in a smallscale size. This project also can be used for training students in winding of small transformers & relay coils.

**OBSTACLE AVOIDANCE OF WHEELED MOBILE ROBOT IN CLUTTERED
ENVIRONMENT**

Report of major project

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF 8th SEMESTER

BACHELOR OF TECHNOLOGY

(Industrial & Production Engineering)

Submitted by

Akhilesh Tirkey



Department of Industrial & Production Engineering

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Guru Ghasidas Vishwavidyalaya (A Central University)

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April 2022

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“Obstacle avoidance of wheeled mobile robot in cluttered environment”

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- Has duly been completed.
- Fulfils the requirement of ordinance relating to the Bachelor of Technology of the University.
- Is up to the desired standard both in respect of contents and language for being referred to the examiners.

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A
Project Report
on
"Assessment of Solid Waste Management in Higher Education: A study from the
University of Chhattisgarh"



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

Submitted as Major Project for Requirement
of
Bachelor of Technology
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MAY 2023

Department of Industrial & Production Engineering
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**“Assessment of Solid Waste Management in Higher Education: A Study from the
University of Chhattisgarh”**

is record of work carried out by Mr. Duges (19105509), Mr. Komati Anvesh (19105522), Mr. Gaurav Yadav (19105511) & Mr. Subodh Kumar Mahto (19105538) under my guidance and supervision at **Department of Industrial and Production Engineering**, School of Studies in **Engineering & Technology**, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.

Dr. Atul Kumar Sahu

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Abstract

Effective solid waste management strategies are recognized as efforts to achieve campus sustainability. This abstract provides an overview of the survey and assessment of solid waste management in higher education institutions. The university campus is currently considered the center of various activities involving students, lecturers, staff, and other parties contributing to the consumption pattern of energy, water, and other resources. This study aims to estimate the compositions of waste generated on the **University of Chhattisgarh**, evaluate the relationships between variables through statistical analysis, and recommend possible strategies to reduce solid waste generation. Student and staff awareness in particular were determined to be the only factor that significantly affects solid waste generation. Outcomes of this study could be used as a reference to develop sustainable campus strategies, recycling plans, and comprehensive waste management in higher education.

Globally, the solid waste management sector is facing numerous challenges. Solid waste management is a critical issue in higher education institutions, and effective waste management practices are necessary to minimize negative environmental impacts and promote sustainability. To encourage solid waste management University of Chhattisgarh Conducted a online survey on the Solid waste management in higher education. The critical success of this survey was fulfilled by awareness with the participation of the students and staff faculty of university. The survey aims to identify the current practices, challenges, and opportunities for improvement in solid waste management in higher education institution. Target respondents are the students and faculty staff of university campus. The assessment involves evaluating the data collected from the survey and developing recommendations for effective waste management practices. The survey can cover various aspects of solid waste management, including waste generation, collection, treatment, and disposal. Data were analyzed and interpreted by using descriptive and inferential statistics. The results of the survey and assessment can help higher education institutions to identify areas for improvement, set targets for waste reduction and recycling, and develop action plans to achieve sustainability goals. The survey findings indicate that there is a **lack of awareness and education about sustainable waste management practices** among students and staff. The level of awareness of the students and faculty is influenced by their practices in waste segregation, reduction, reuse, and recycling but not influenced by their practices in terms of disposal. The study also revealed that the most waste generated in University premises was paper waste, plastic waste, leftovers food, tissue papers, and cans waste. The survey and assessment of solid waste management in higher education institutions are essential steps towards promoting environmental stewardship, sustainability, and public health.

Meaningful recommendations were suggested to raise awareness among students in proper segregation and disposal practices. This project report also provides recommendations for the university administration to enhance the efficiency and sustainability of campus waste management systems and for becoming a more sustainable Higher educational institution.

A
Project Report
On
INVESTIGATION OF LEAN MEASURES IN HIGHER EDUCATION
A STUDY UNDER INDIAN CONTEXT



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(A Central University)
Bilaspur (C.G.)

**Submitted as Major Project for Requirement
of
Bachelor of Technology
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Department of Industrial & Production Engineering
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Certificate of Supervisor

This is to certify that the work incorporated in the project

INVESTIGATION OF LEAN MEASURES IN HIGHER EDUCATION

A STUDY UNDER INDIAN CONTEXT

is record of work carried out by Mr. Kotha Sandeep, Leena Raj, Mamta Ratre, Priya Dixit, Swapnil Dronkar bearing Enrollment No GGV/19/1143, GGV/19/1150, GGV/19/1156, GGV/19/1220, GGV/19/1287, under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.


Dr. Atul Kumar Sahu

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ABSTRACT

- This research aims to investigate various performance characteristics of higher education and how the lean concept can improve the system efficiency, which leads to HEI to become a lean university.
- A conceptual model has been prepared through a literature review and a set of Questionnaires was framed to take a survey to identify university waste.
- The groundwork has been established for the development of the lean concept in higher education to further guide lean initiatives for its practical Implementation.
- This study guides practitioners in enhancing the standard of HEIS by Eliminating organization waste.

Chapter 1

Introduction

A
Project Report
on
“Automatic UV-C disinfection robot”



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
(*A Central University*)
Bilaspur (C.G.)

**Submitted as Major Project for Requirement of
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“Automatic UV-C disinfection robot”

is a record of work carried out by Miss. Monika Sharma bearing Enrollment No. GGV/18/1172, under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India. To the best of my knowledge and belief.

To the best of my knowledge and belief the report

- Embodies the work of the candidates themselves his/herself,
- Has duly been completed,
- Fulfills the requirement of the B.Tech degree of the University


Mr. Somnath Singroul

Assistant Professor

Department of Industrial & Production Engineering

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). COVID-19 has affected nearly 12.2 million people and has claimed the lives of 552, 112 people from all over the world. This disease affects different people in different ways. Some people may develop mild to moderate illness and recover without special treatment or hospitalization, while some may develop severe illness and even die. The incubation period of this virus, on average 5-6 days but it could also be up to 2 weeks. During this period, the person may not experience any symptoms but could still be contagious. The person will be a virus carrier and easily spread it when he/ she does not take any precautionary measures.

Coronavirus has spread rapidly and many countries have been affected by this pandemic. While some countries are recovering, other countries are still in lockdown and some are suffering from the second wave of coronavirus.

The global COVID-19 pandemic due to the novel coronavirus SARS-CoV-2 has challenged the availability of traditional surface disinfectants. It has also stimulated the production of ultraviolet-disinfection robots by companies and institutions. These robots are increasingly advocated as a simple solution for the immediate disinfection of rooms and spaces of all surfaces in one process and as such, they seem attractive to hospital management, also because of automation and apparent cost savings by reducing cleaning staff. Yet, their true potential in the hospital setting needs to be carefully evaluated. Presently, disinfection robots do not replace routine (manual) cleaning but may complement it. Further design adjustments of hospitals and devices are needed to overcome the issue of shadowing and free the movement of robots in the hospital environment. They might in the future provide validated, reproducible, and documented disinfection processes. Further technical developments and clinical trials in a variety of hospitals are warranted to overcome the current limitations and to find ways to integrate this novel technology into the hospitals of today and the future.

A
Project Report
on

**OPTIMIZING BIOMASS POWER PLANT PERFORMANCE THROUGH
COMPREHENSIVE MAINTENANCE STRATEGIES in India**



Submitted to
Department of Industrial & Production Engineering
Guru Ghasidas Vishwavidyalaya
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Certificate of Supervisor

This is to certify that the work incorporated in the project

A Review on **“OPTIMIZING BIOMASS POWER PLANT PERFORMANCE THROUGH COMPREHENSIVE MAINTENANCE STRATEGIES”** is record of work carried out by Ms. Guntreddi Naimisha, Mr. Jeggili Vikas Kumar, Mr. Karanam Deves Prasad bearing Enrolment No. GGV/19/1109, GGV/19/1123, GGV/19/1132, under my guidance and supervision at Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, (A Central University) Bilaspur, (C.G.) India.


Mr. C.P. Dewangan (Supervisor)

(Associate Professor)

Department of Industrial & Production Engineering

Abstract

This project deals with “**OPTIMISING BIOMASS POWER PLANT PERFORMANCE THROUGH COMPREHENSIVE MAINTENANCE STRATEGIES**” at Sudha Biomass Power Plant.

This project report focuses on the mechanical maintenance of equipment in the **Sudha Bio Power Pvt Ltd.** located in Bilaspur, Chhattisgarh. The report outlines the importance of effective mechanical maintenance in ensuring the efficient operation and longevity of the plant's equipment. The report provides an overview of the various types of equipment used in the plant, including boilers, turbines, and generators, and describes the different maintenance requirements for each. Additionally, the report discusses the importance of preventative maintenance, which involves regularly inspecting and servicing equipment to prevent breakdowns and extend the lifespan of the equipment.

The report also highlights the role of effective documentation and recordkeeping in ensuring effective mechanical maintenance. Finally, the report provides recommendations for improving the mechanical maintenance program at the Sudha Biomass Power Plant, including the implementation of a computerized maintenance management system and the training of personnel in effective maintenance practices.