| **Department : Industrial and Production Engineering Department** | | |
|---|---|---|
| ***Academic Year : 2023-24*** | | |
| **Sr. No.** | **Programme Code** | **Name of the Programme** |
| 01. | | B.Tech |

A

**Project Report**

**On**

# "Development of IOT based Soil testing Device"

Submitted in the partial fulfilment for the award of the
Degree of Bachelor of Technology
In
**Industrial and Production Engineering**

By
**Akhila Chodimela (20105008)**
**Vivekanand (20105049)**
**Rahul Jayant Shirodkar (20105032)**

B.Tech. VIII Semester

Under the guidance of
**Prof. Arpita Roy Choudhury**
(ASSISTANT PROFESSOR)

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**
**SESSION: 2023-2024**

**Certificate by the Examiners**

This is to certify that Project work entitled:

**"Development Of IoT based Soil Testing Device"**

Submitted by

Ms. Akhila chodimella Roll NO.20105008 Enrolment No: GGV/20/01308
Mr. Rahul Shirodkar Roll NO.20105032 Enrolment No: GGV/20/01334
Mr. Vivekanand Roll NO.20105049 Enrolment No: GGV/20/01350

Has been examined by the undersigned as a part of examination of B.Tech. (Industrial and Production Engineering) VIII Semester Project at Department of Industrial and Production Engineering, School of studies in Engineering & Technology, Guru Ghasidas Vishwavidhyalaya (A central university), Bilaspur (C.G)

.....
Internal Examiner

.....
External Examiner

Date: 02/05/2024

2/5/2024

Head, Department of Industrial and Production Engineering

औद्योगिक एवं उत्पादन अभियांत्रिकी
Industrial & Production Engineering
प्रौद्योगिकी संस्थान / Engineering & Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

## ABSTRACT:

This research paper introduces the design, development, and deployment of an Internet of Things (IoT) based soil testing device tailored for precision agriculture applications. With the increasing demand for sustainable and efficient farming practices, there is a growing need for precise monitoring and management of soil conditions. Traditional soil testing methods are often time-consuming, labour-intensive, and lack real-time data acquisition capabilities. In response to these limitations, this study proposes an innovative IoT solution that combines sensor technology, wireless communication, and data analytics to enable remote and continuous monitoring of soil parameters.

The proposed device integrates various sensors to measure key soil properties such as moisture content, pH level, temperature, and nutrient levels. These sensors are interfaced with a microcontroller unit capable of processing the collected data and transmitting it wirelessly to a central server or cloud platform. Utilizing Internet connectivity, farmers can access real-time soil health information remotely through web or mobile applications. Furthermore, the device is designed to provide actionable insights and recommendations based on the analysed data, empowering farmers to make informed decisions regarding irrigation scheduling, fertilizer application, and crop management practices.

The effectiveness of the IoT-based soil testing device is evaluated through field trials conducted in different agricultural settings. Results demonstrate the device's ability to accurately monitor soil conditions over time and its potential to optimize resource utilization, enhance crop productivity, and promote sustainable farming practices. The findings of this research contribute to the advancement of precision agriculture techniques and underscore the significance of IoT technology in addressing the challenges faced by modern agricultural systems.

Keywords: IoT (Internet of Things), Sensor Technology, Data Transmission, Wireless Communication, Prototyping.

A

**Project Report**

On

# "A REVIEW ON PRACTICES IN THE SUSTAINABLE SUPPLY CHAIN MANAGEMENT"

Submitted in the partial fulfillment for the award of the
Degree of Bachelor of Technology

In

**Industrial and Production Engineering**

By

**Devansh Anurag Gupta (20105010)**
**Prasoon Panth (20105026)**
**Reddy Rajula Pavan Sai (20105031)**

B.Tech. VIII Semester

Under the guidance of

**Dr. GANESH PRASAD SHUKLA**
(ASSISTANT PROFESSOR)

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**
**SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**
**SESSION: 2023-2024**

## Certificate by the Examiners

This is to certify that Project work entitled:

**"A REVIEW ON PRACTICES IN THE SUSTAINABLE SUPPLY CHAIN MANAGEMENT"**

Submitted by

| | | |
|---|---|---|
| Mr. Devansh Anurag Gupta | Roll NO.20105010 | Enrollment No: GGV/20/01311 |
| Mr. Prasoon Panth | Roll NO.20105026 | Enrollment No: GGV/20/01328 |
| Mr. Reddy Rajula Pavan Sai | Roll NO.20105031 | Enrollment No: GGV/20/01333 |

Has been examined by the undersigned as a part of examination of B.Tech. (Industrial and Production Engineering) VIII Semester Project at Department of Industrial and Production Engineering, School of studies in Engineering & Technology, Guru Ghasidas Vishwavidhyalaya ( A central university) ,Bilaspur(C.G)

..... Internal Examiner

..... External Examiner

Date: 09/05/2024

9/5/2024

विभागाध्यक्ष/Head
औद्योगिक एवं उत्पादन अभियांत्रिकी विभाग
Industrial & Production Engineering
प्रौद्योगिकी संस्थान/Engineering & Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Head, Department of Industrial and Production Engineering

# ABSTRACT

Sustainable Supply Chain Management has emerged as a key approach for Enterprise aiming to become economically and environmentally sustainable. This research paper thoroughly examines the practices behind sustainable supply chain management. As organizations worldwide prioritize environmental and social responsibility, they are actively seeking ways to incorporate sustainability into their supply chain operations. The synthesis of literature illuminates prevalent practices within SSCM, ranging from the adoption of eco-friendly materials and energy-efficient technologies to the implementation of waste reduction strategies and sustainable sourcing initiatives. These practices serve as pillars for organizations seeking to foster environmental stewardship and social responsibility throughout their supply chains. Furthermore, the review identifies the interplay between regulatory mandates, consumer preferences, and economic incentives, shaping the adoption and evolution of sustainable practices in supply chain management By synthesizing existing literature, this review paper highlights the in the common practices which organization generally performs such as regulatory, consumer demands, and cost-saving opportunities. Through a comprehensive analysis of these- practices, this paper aims to provide an invaluable-resource for academics, practitioners, and policymakers navigating the realm of sustainable supply chain management [SSCM].

**Keywords**- Sustainable Supply Chain, Practices in SSCM, Sustainability

A

Major 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**

**Submitted By**

Gourav Bansal (19105513)

**Under the Guidance**

Mr. Mukesh Kumar Singh

(Head of Department)

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

**MAY 2024**

**Department of Industrial & Production Engineering**

**School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya**

## Certificate of Supervisor

This is to certify that the work incorporated in the project

**"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.

**Mr. Mukesh Kumar Singh**

(Head of Department)

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

# "Analysis of Municipal Solid Waste Management Practices in Smart City Bilaspur"

Submitted in the partial fulfillment for the award of the

Degree of Bachelor of Technology

In

**Industrial and Production Engineering**

By

**Hariom Dewangan (20105013)**

**Prakhar Bajpai (20105025)**

B.Tech. VIII Semester

Under the guidance of

**Dr. GANESH PRASAD SHUKLA**

(ASSISTANT PROFESSOR)

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**

**SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**

**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**

**SESSION: 2023-2024**

## DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR(C.G.)

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

### CERTIFICATE OF SUPERVISOR

It is certified that the major project entitled **" Analysis Of Municipal Solid Waste Management Practices In Smart City Bilaspur"** submitted by Hariom Dewangan and Prakhar Bajpai in partial fulfillment of the requirements of the award of the degree of Bachelor of Technology in Industrial and Production Engineering, School of studies in Engineering and Technology, Guru Ghasidas Vishwavidalaya, Bilaspur, is carried out by them in the Department of Industrial and Production Engineering during session 2023-24 under supervision and guidance of **Dr. GANESH PRASAD SHUKLA, ASSISTANT PROFFESOR**, Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidalaya, Bilaspur C. G.

09-07-24

**Dr. Ganesh Prasad Shukla**
(ASSISTANT PROFFESOR)
Department of Industrial and Production Engineering

## ABSTRACT

This research paper provides a comprehensive analysis of municipal solid waste (MSW) management practices in Bilaspur, India, with a focus on evaluating the current status, identifying challenges, and proposing recommendations for improvement. The study aims to assess waste generation, collection, transportation, and disposal in Bilaspur city, while also examining governmental policies and initiatives aimed at enhancing waste management effectiveness. Drawing comparisons with successful waste management models in cleanest cities like Indore, the research identifies existing challenges and issues faced by Bilaspur in managing solid waste. Through a detailed examination of these challenges, the paper offers recommendations and guidelines to assist Bilaspur in implementing measures to improve its cleanliness ranking and achieve zero waste generation. By addressing the identified gaps and challenges and implementing the suggested strategies, Bilaspur can progress towards a more sustainable, efficient, and environmentally responsible waste management system, contributing to the city's overall cleanliness and well-being in alignment with national initiatives.

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.)

Major Project Report

On

# Quality Control in Soft Beverage Industry in Universal Context: A Review

Submitted in the partial fulfillment for the award of the
Degree of Bachelor of Technology

In

Industrial and Production Engineering

By

**RatnaSri Devadasu (20105033)**

**Siragam Mahesh (20105040)**

**Suthi G (20105045)**

B.Tech. VIII Semester

Under the guidance of

**Dr. Nitin Kumar Sahu**

**Assistant Professor**

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING
SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

**SESSION: 2023-24**

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**
**SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR(C.G.)**
(A Central University established by the Central University Act 2009 No.25 of 2009)

## CERTIFICATE

It is certified that the majorr project entitled **"Quality Control in Soft Beverage in Universal Context: A Review". Ratnasri Devadasu, Siragam Mahesh, Suthi G** submitted by in partial fulfillment of the requirements of the award of the degree of Bachelor of Technology in Industrial and Production Engineering, School of studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, is carried out by them in the Department of Industrial and Production Engineering during session 2023-24 under supervision and guidance of **Dr. Nitin Kumar Sahu**, Assistant Professor Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur C. G.

02/5/2024

**Dr. Mukesh Kumar Singh**
Head of Department
Department of Industrial and Production Engineering
School of Studies in Engineering &Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur

विभागाध्यक्ष / Head
Industrial & Production Engineering
प्रौद्योगिकी संस्थान / Engineering & Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

# Quality Control in Soft Beverage in Universal Context: A Review

Monitor critical parameters in production to ensure consistently high product quality.

Ratnasri devadasu, Srigam Mahesh, Suthi G

Department of Industrial and Production Engineering,
School of Engineering and Technology,
Guru Ghasidas Vishwavidyalaya,
Bilaspur, Chhattisgarh

**Abstract—Quality control is a fundamental aspect of the soft beverage industry to maintain product consistency and safety. This report paper discusses the key components of quality control in this industry, including raw material inspection, production processes, and product testing. It also highlights the importance of quality control in ensuring consumer satisfaction and regulatory compliance. Quality control is a critical aspect of the soft drink manufacturing process, ensuring that the final product meets industry standards and consumer expectations. This report examines the various components and methodologies employed in quality control within the soft drink industry. The approach used in this study is direct observation, thorough examination of production process lines, and information has been collected from managements, quality department and from company's workers working in the area of production process through interview and questionnaire. Pareto chart/analysis and control chart was constructed in order to prioritize the major defects occurred and to suggest a suitable control limits for some variables. From the analysis of the data, it has been found that the company has many practices like usage of control charts, Usage of computerized technology for data recording, usage of calibrated measuring devices, Planning for quality improvement, Presence of in house technical staff experts and setting definition for quality are in use in the organization etc. and challenges specifically like there is lack of higher management support, lack of team working, lack training etc. If a quality control practice is employed effectively, it could improve the quality of the product and overall organizational performance by knowing the customer requirement and meeting them. Even if the company has many constraints to implement all suggestion for improvement within short period of time, but it is important to give training for employs and management commitment is important and the company recognized that the suggestion will provide significant productivity improvement in the long run. The report also highlights the significance of quality control in maintaining product consistency and safety. It discusses the regulatory frameworks and standards that govern the soft drink industry, emphasizing the importance of compliance in delivering safe and reliable products to consumers. Furthermore, this report explores the role of technology in modern quality control practices, such as automated production lines, data analytics, and monitoring systems, to optimize efficiency and accuracy. It addresses the challenges and emerging trends in the soft drink industry, including sustainability and the demand for healthier beverage options, and how these factors impact quality control processes. In conclusion, this report underscores the vital role of quality control in the soft drink industry to guarantee the safety, consistency, and consumer satisfaction of the final product. It provides a comprehensive understanding of the methods, regulations, and technological advancements that support effective quality control in soft drink production.**

**Keywords: Quality improvement, Control charts, Control limits, Inspection, Evaluation, Data analytics, Monitoring**

A
MAJOR PROJECT REPORT
On

# Design & Development of Two Wheeled Self Balancing Obstacle Avoidance Robot

*Submitted by*

**ASHU PATEL (Roll No. - 20105004)**
**MAYANK KHANDEKAR (Roll No. - 20105019)**
**NIKITA NIMMY (Roll No. - 20105022)**
**SHAILENDRA GENDLE (Roll No. - 20105037)**
**SHASHANK YADAV (Roll No. - 20105038)**
**YOGESH CHANDRA (Roll No. - 20105052)**

*For partial fulfilment of the requirement for*
*the award of degree Of*

**BACHELORS OF TECHNOLOGY**

**in**

**Industrial and Production Engineering**

**Department of Industrial & production Engineering**
**Guru Ghasidas Vishwavidyalaya, Bilaspur**
**(2020-2024)**

**Department of Industrial & Production Engineering**
**Institute of Technology, Guru Ghasidas Vishwavidyalaya**

## CERTIFICATE OF SUPERVISOR

This is to certify that the work incorporated in the project "**Design & Development of Two Wheeled Self Balancing Obstacle Avoidance Robot**" is record of project work carried by ASHU PATEL, MAYANK KHANDEKAR, NIKITA NIMMY, SHAILENDRA GENDLE, SHASHANK YADAV, YOGESH CHANDRA bearing enrollment no. **GGV/20/01354, GGV/20/01321, GGV/20/01324, GGV/20/01340, GGV/20/01341, GGV/20/01351,** respectively , under the guidance for the award of Degree of Bachelor of Technology in the Department of Industrial and Production Engineering, Institute of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G). To the best of my knowledge and belief, this project work:

- Embodies the work of the candidate themselves.
- Has been completed.
- Is up to the desired standard both in respect of contents and language for being referred to the Examiner.

# Abstract

This thesis presents the design, implementation, and evaluation of a two-wheeled self-balancing robot as a major project. The project aimed to construct a functional prototype capable of autonomously maintaining its balance while navigating diverse terrains. The report outlines the mechanical design, sensor integration, and control algorithms utilized in achieving stable locomotion. Additionally, it discusses the challenges encountered during the development process and the corresponding solutions devised. Experimental results demonstrate the successful operation of the prototype in various scenarios, validating its effectiveness and potential for real-world applications. The insights gained from this project contribute to the field of robotics, offering valuable lessons for future research and development endeavors in autonomous systems.

This project aims to design and implement a self-balancing robot using an Arduino Nano-microcontroller, MPU6050 accelerometer and gyroscope sensor, and L298N motor driver. The robot utilizes a PID control algorithm to balance itself on two wheels.

The report provides an overview of the theory of operation, project components, and block diagram, as well as detailed descriptions of the MPU6050 sensor and L298N motor driver. Additionally, the report outlines the process of PID tuning and provides suggestions for future improvements, such as adding line-following capabilities or upgrading to higher-quality components. The self-balancing robot demonstrates the potential of using PID control algorithms to stabilize dynamic systems and could have potential applications in the fields of robotics and automation.

Major Project Report

On

"Fabrication & Tribological Properties of Jute and Basalt Natural Composite Material"

Submitted in the partial fulfillment for the award

of the Degree of Bachelor of Technology

In

Industrial and Production Engineering

By

Arpit Mishra (20105003)

Pushpendra (20105030)

Kangala Sireesha (20105041)

Yaragasi Deevena (20105050)

**B.Tech. VIII Sem**

**Under the guidance of**

Mr. Kawal Lal Kurrey

&

Mrs. Sweta Singh

**Assistant Professor (IPE & MECH.)**

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA (A Central University), BILASPUR (C.G.)

**SESSION: 2023-24**

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION 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

It is certified that the minor project entitled **"Fabrication & Tribological Properties of Jute and Basalt Natural Composite Material "** submitted by **Arpit Mishra**, **Pushpendra, Sireesha and Deevena** and in partial fulfillment of the requirements of the award of the degree of Bachelor of Technology in Industrial and Production Engineering, School of studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, is carried out by them in the Department of Industrial and Production Engineering during session 2023-24 under supervision and guidance of **Mr. Kawal Lal Kurrey**, Assistant Professor, Department of Industrial and Production Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur C. G.

2/5/24

**Prof. Mukesh Kumar Singh**
Head of department

Department of Industrial and Production Engineering

School of Studies of Engineering & Technology

Guru Ghasidas Vishwavidyalaya,

विभागाध्यक्ष / Head
औद्योगिक एवं उत्पादन अभियांत्रिकी
Industrial & Production Engineering
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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

# ABSTRACT

This study presents the fabrication and characterization of composite materials using jute and basalt fibres. Jute, a natural and renewable fibre, is combined with basalt, a volcanic rock-derived fibre known for its exceptional mechanical properties. The composite materials are produced through a combination of layering and resin infusion techniques. The objective is to harness the benefits of both fibres, creating a lightweight yet durable material suitable for various applications. The fabrication process involves the impregnation of jute and basalt fibres 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, and impact resistance. 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 fibres yields a composite material with a balance of strength, environmental sustainability, and cost-effectiveness. In this research we find out the coefficient of friction, frictional force and wear test of the material. It contributes to the different 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.

**Keywords –**

Jute, Basalt, Composite material, Epoxy, Pin on Disc Machine, BJBJ, JJBB, JBJB,4B, 4J, JBBJ, Wear, CoF, Frictional Force

A

Major Project Report

On

# "EVALUATION OF SUPPLY CHAIN OF EV SYSTEM IN INDIA"

Submitted in the partial fulfillment for the award of the

Degree of Bachelor of Technology In

Industrial and Production Engineering

By

**Bantumilli Sabitha (Roll No. 20105005)**
**Bonagiri Adarsh (Roll No. 20105006)**
**Chapa Jayadheer Dora (Roll No.20105007)**
**Dora Satish (Roll No. 20105011)**
**Sivaprasaad T (Roll No. 20105042)**
**Vanapalli Balaji (Roll No. 20105048)**

B.Tech. VIII Semester

Under the guidance of

**Dr. ATUL KUMAR SAHU**

Assistant Professor

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**
**SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**

**SESSION: 2023-24**

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**
**SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY**
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR(C.G.)**
**(A Central University established by the Central University Act 2009 No.25 of 2009)**

## CERTIFICATE

It is certified that the major project entitled "Evaluation of Supply chain Management of EV's System in India" submitted by Bantumilli Sabitha, Bonagiri Adarsh, Chapa Jayadheer Dora, Dora Satish, Sivaprasaad T and Vanapalli Balaji in partial fulfillment of the requirements of the award of the degree of Bachelor of Technology in Industrial and Production Engineering, School of studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, is carried out by them in the Department of Industrial and Production Engineering during session 2023-24 under supervision and guidance of Dr. Atul Kumar Sahu, Asst. Professor, Department of Industrial and Production Engineering, School of Studies in Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur C. G.

Dr. M.K. SINGH
Head of Department
Department of Industrial and
Production Engineering School of Studies in
Engineering & Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur. C.G.

ABSTRACT:

The transition of transportation industry into Electric vehicles from conventional vehicles has now become more important as the rate of depletion of fossil fuels is all time high and the environmental impact they have is also very high, so in order to overcome these limitations/drawbacks the adaptation of electric vehicles could be a great solution. In this research paper we are going to look into and understand various barriers/reasons due to which people hesitate to buy EV's and tend to provide solutions or ways through which these could be overcome. The present study investigates evident barriers to understanding implementation of EV. A questionnaire based survey is performed to collect primary data from service and manufacturing based companies in India. Survey responses are received online and data is analysed in a scorecard. The scorecard embeds the scribed entries of Likert scale to determine the relative score. In present study ,twelve barriers from four categories named as market, technical, policy and infrastructure are evaluated, where, four sub-barriers from market domain, five sub-barriers from technical domain, one barrier from policy domain and two sub-barriers from infrastructure domain are evaluated findings of the study determine that the four factors i.e. "cost of EV's", "range of vehicle [mileage ]", "cost of maintenance", and "large time period to charge" mostly affect the adoption of EV Supply chain. Conversely, "environmental friendliness' ', "awareness among the people" and "quietness" do not affect the adoption of electrical vehicles in India. Only few studies have endeavoured to ascertain the electric vehicle adoption in the transportation industry in India. Thus the study is filling a momentous gap in barriers in adapting to electric vehicles. The findings are expected to enable the supply chain to understand important factors to be considered for adaptation of electrical vehicles in India. Furthermore, the study may benefit the electrical vehicle manufacturers to endure customized solutions based on these findings.

A

**Project Report**

**On**

# "Numerical Simulation of Single Pass Tubular Solar Air Heater of the Different Diameters"

**Submitted to**

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

**Submitted as Major Project Work for 8th Semester**

Of

Bachelor of Technology

In

Industrial & Production Engineering

**Submitted by:**
Aradhana Bandhade
KomalrajPradhan
Snehal Kumar Yadav

**Submitted To:**
Disha Dewangan
(Assistant Professor)

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

**Session 2023-24**

# CERTIFICATE BY THE EXAMINERS

This is to certify that the

Numerical Simulation of Single Pass Tubular Solar Air Heater of the Different Diameters

Submitted by:

| Name | Roll No. | Enrollment No. |
|---|---|---|
| Aradhana Bandhade | 20105002 | GGV/20/01304 |
| Komalraj Pradhan | 20105016 | GGV/20/01318 |
| Snehal Kumar Yadav | 20105043 | GGV/20/01345 |

Project work entitle:

Has been examined by the undersigned as a part of an examination of the B.Tech (Industrial & Production Engineering) 8th semester project at the Department of Industrial & Production Engineering.

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

.....

Internal examiner

Date: 1/04/24

.....

External Examiner

Date:

.....

Head of Department

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

# ABSTRACT

Solar air heaters represent a possible path toward developing sustainable heating solutions by using the sun's abundant and renewable energy to address the heating needs of many sectors.

In the present work mainly focus on selecting the effecting diameter of Single Pass Tubular Solar Air Heater (SP-TSAH) by concurring the different diameters of 19, 25, 30, 51, 63, and 75 mm through Computational Fluid Dynamics (CFD) analysis with different mass flow rates of 0.004, 0.007, 0.01, and 0.013 kg/s by comparing outlet temperature and temperature profile. The maximum efficiency obtained from numerical simulation of SP-TSAH are 63.82%, 58.04%, 68.87%, 49.17%, 52.8%, and 49.72 % for diameter 19, 25, 38, 51, 63, and 76mm respectively. Thus, the analysis concluded that 38mm diameter pipes are most suitable based on their thermal efficiency of 68.5% than other diameters.

Major Project Report

On

# "VOICE CONTROLLED AIR PURIFIER WITH SLEEPING AID"

Submitted in the partial fulfillment for the award of the
Degree of Bachelor of Technology

In

Industrial and Production Engineering

By

**GUGULOTHU RAMBABU Roll No:20105012**
**JATOTH PAVAN Roll No:20105015**
**SAGINALA PRASHANTH Roll No:20105034**

B.Tech. VIII Semester

Under the guidance of

**Dr. Nithin Kumar Sahu.**

**Assistant Professor**

**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING**

SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR(C.G.)SESSION:2023-24

**Department of INDUSTRIAL & PRODUCTION Engineering**

**Institute of Technology, Guru Ghasidas Vishwavidyalaya**

## CERTIFICATE OF SUPERVISOR

This is to certify that the work incorporated in the project

**"VOICE CONTROLLED AIR PURIFIER WITH SLLEEPING AID"**

is a Record of research work carried out by **GUGULOTHU RAMBABU, JATOTH PAVAN,** and **SAGINALA PRASANTH** respectively , under my guidance and supervision for the award of Degree of Bachelor's of Technology in the Department of Industrial & production Engineering , Institute of Technology Guru Ghasidas Vishwavidyalaya, Bilaspur, (CG) India. To the best of my knowledge and information I state that:-

- The work has duly been completed by the candidate himself.
- Fulfils the requirement of ordinance related to the Bachelor of Technology of the University.
- The proposed work is up to the desired standard both in respect of contents and language for being referred to the examiners.

02/05/2024

**DR.NITIN KUMAR SAHU**

Assistant Professor
Industrial & Production Engineering

21/5/24

**M.K.SINGH**

Head of department
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विभागाध्यक्ष / Head
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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

## ACKNOWLEDGEMENT

This report is being presented as the final report of the thesis entitled ***"VOICE CONTROLLED AIR PURIFIER WITH SLEEPING AID"***. First, we thank our honorable guide DR.Nitin kumar sahu, Assistant Professor, Department of Industrial & Production Engineering, Institute of Technology, Guru Ghasidas University, Bilaspur (C.G) for his continuous support and valuable guidance throughout the thesis work. He guided the thesis with informative discussions related to the final report.

We also take this opportunity to express our deep gratitude& regards to Dr. Rajesh Bhushan, Head of the Department, of Mechanical Engineering, who has provided the guidance and encouragement to do this thesis work. Completing this project, although was a challenge for us, would not have achieved without support, inspiration, encouragement and contribution of many people. In addition, we would also like to thank our friends for providing a friendly environment and encouragement. Last but not the least; we thank our parents for educating us and for unconditional support and encouragement to pursue our academic interest.

**DATE:**..02/05/2024

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A

MAJOR PROJECT REPORT

On

# A Comprehensive Review on Thermal Management of Metal Hydride based Hydrogen storage devices

*Submitted by*

**AKSHAT JAIN (Roll no. - 20105001)**

**NEERAJ YADAV (Roll no. - 20105020)**

**PARAMKUSH J. NAKKA (Roll no. - 20105024)**

**PRERANA (Roll no. - 20105027)**

**PRIYARANJAN (Roll no. - 20105029)**

*For partial fulfilment of the requirement for*

*the award of degree Of*

**BACHELORS OF TECHNOLOGY**

**in**

**Industrial and Production Engineering**

**Department of Industrial & production Engineering**

**Guru Ghasidas Vishwavidyalaya, Bilaspur**

**(2020-2024)**

**Department of Industrial & Production Engineering**

**Institute of Technology, Guru Ghasidas Vishwavidyalaya**

## CERTIFICATE OF SUPERVISOR

This is to certify that the work incorporated in the project "**A Comprehensive Review on Thermal Management of Metal Hydride based Hydrogen storage device**" is record of project work carried AKSHAT JAIN (Roll no. - 20105001) NEERAJ YADAV (Roll no. - 20105020) PARAMKUSH J. NAKKA (Roll no. - 20105024) PRERANA (Roll no. - 20105027) PRIYARANJAN (Roll no. - 20105029) bearing enrolment no. **GGV/20/01331, GGV/20/01322, GGV/20/01326, GGV/20/01329, GGV/20/01303**, respectively, under the guidance for the award of Degree of Bachelor of Technology in the Department of Industrial and Production Engineering, Institute of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G). To the best of my knowledge and belief, this project work:

- Embodies the work of the candidate themselves.
- Has been completed.
- Is up to the desired standard both in respect of contents and language for being referred to the Examiner.

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# CERTIFICATE BY THE EXAMINERS

This is to certify that project work entitled:

**A Comprehensive Review on Thermal Management of Metal Hydride based Hydrogen storage device**

Submitted by;

AKSHAT JAIN (Roll no. - 20105001)

NEERAJ YADAV (Roll no. - 20105020)

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10/05/24

Supervisor

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Dr. Mukesh Kumar Singh

(H.O.D.) Industrial & Production Engineering

## ABSTRACT

Metal hydride-based solid-state hydrogen storage systems hold significant promise for clean energy applications. However, efficient thermal management is crucial for their performance, safety, and practical viability. This abstract provides an overview of recent research on thermal management strategies for metal hydride-based hydrogen storage devices, highlighting various techniques, challenges, and future directions.

Thermal management of metal hydride-based storage systems involves optimizing heat transfer mechanisms, materials engineering, and temperature control strategies. Recent studies have explored both passive and active cooling methodologies, such as heat exchangers, to enhance thermal performance. For example, Singh et al. investigated the impact of design parameters, including fin thickness, fin number, and fin perforation, on hydrogen absorption and desorption rates. They found that these parameters significantly affect heat transfer and absorption characteristics, with increased hydrogen supply pressure correlating with higher absorption rates.

Furthermore, researchers have explored innovative approaches to improve thermal conductivity and sorption performance. Singh et al. introduced copper flakes to enhance thermal conductivity by 0.08 W/mK and improve sorption performance by 11%. Visaria and Mudawar focused on releasing hydrogen gas from high-pressure metal hydrides using modular tube-fin and coiled tube-fin heat exchangers. They emphasized the importance of optimizing heat exchanger design parameters to enhance absorption performance.

In addition to experimental studies, numerical simulations have been employed to analyse heat transfer processes in metal hydride storage devices. Mellouli et al. developed a 2D mathematical model to enhance heat and mass transfer in metal hydride systems using finned spiral tubes. Their findings showed that the addition of fins accelerates heat transfer and reduces charging time in storage tanks. Tong et al. investigated the application of coiled-tube heat exchangers for efficient hydrogen storage, highlighting the impact of heating water temperature, outlet pressure, and heat transfer coefficients on storage capacity and dehydriding rates.

Challenges in thermal management include the need for materials with enhanced thermal conductivity, integration of efficient cooling systems, and validation of advanced modeling techniques. Gambini et al. introduced Liquid Organic Hydrogen Carriers (LOCHs) as a potential solution for long-term and large-scale hydrogen storage. Their study focused on optimizing LOHC-based batch reactor thermal design, achieving a 30% reduction in absorption duration compared to traditional heat exchangers.

Moreover, the importance of hydrogen compression for practical applications, such as fuel cell electric vehicles (FCEVs), cannot be overstated. Bhogilla and Niyasin explored metal hydride-based compression systems and discussed the impact of heat source temperature and supply pressure on compressor efficiency. Goshome & Tetsuhiko investigated the feasibility of a one-stage metal hydride hydrogen compressor employing V40Ti22Cr38 alloy, demonstrating its potential for cost reduction and minimal vibration compared to traditional compressors.

So, efficient thermal management is crucial for the performance and practical viability of metal hydride-based hydrogen storage systems. Recent research has focused on optimizing heat transfer mechanisms, enhancing sorption performance, and developing innovative cooling

strategies. Challenges remain, including the need for materials with enhanced thermal conductivity and the validation of advanced modeling techniques. Future research should prioritize comprehensive studies to foster the development of robust, efficient, and safe hydrogen storage devices, paving the way for a sustainable and greener energy future.

A

MAJOR PROJECT REPORT

ON

# Green Marketing -A Gateway to Sustainability Development

Submitted in partial fulfilment of the requirement for the award of the degree of bachelor of technology in industrial and production engineering

By

**Jaideep Ratnu – 20105014**

**Mani Aditya Rathi – 20105018**

**Pritam Raj – 20105028**

Under the guidance of

**Arpita Roychoudhury**

Assistant Professor

**Department of Industrial & Production engineering,**

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**Session 2023-2024**

Department of Industrial & Production Engineering,
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## CERTIFICATE OF SUPERVISOR

This is to certify that the work incorporated in the project "GREEN MARKETING -A GATEWAY TO SUSTAINABILITY DEVELOPMENT" is record of project work carried by **Mr. Jaideep Ratnu, Mr. Mani Aditya Rathi, Mr. Pritam Raj** bearing enrolment no. GGV/20/01315, GGV/20/01320, GGV/20/01330 respectively, under my guidance for the award of Degree of Bachelor of Technology In The Department Of Industrial And Production Engineering, Institute Of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur. To the best of my knowledge and belief, this project work:

- Embodies the work of the candidate themselves.
- Has been completed.
- Is up to the desired standard both in respect of contents and languages for being referred to the examiner.

02/05/2024

Arpita Roychoudhury
(Assistant Professor)
Department of Industrial & Production Engineering

**Abstract**

The importance of environmental issues in every phase of life is the main concern of today's world. In this scenario of global concern, green marketing has become an integral part of business as well as public life. Consumers are now a days environmentally conscious and demand for eco-friendly products and services. This ultimately led to growth and concerned about the sustainable environmental development. Green marketing is a phenomenon that has emerged as an important strategy for businesses to address the growing environmental concerns of consumers and society. However, green marketing also posses several challenges and opportunities for marketers, such as understanding the green consumer segments, designing effective green marketing mix, communicating the green value proposition, and overcoming the green trust gap. This article reviews emphasis on links between green marketing and sustainable development, green marketing strategies, trends in green marketing, challenges faced by green marketing and the future of green marketing. This article is based on secondary data collected from different sources, which includes research papers by different researchers, journals, articles, conference proceedings, text books and internet.

**Unveiling Sustainability through Product Development in Green Marketing**

Green marketing presents a strategic approach for businesses to cater to the growing demand for environmentally responsible products and practices. This abstract explores the significance of product development within the framework of green marketing.

The rising environmental consciousness among consumers necessitates a shift towards sustainable product lifecycles. This abstract highlights key considerations for product development in green marketing, including:

- **Eco-friendly Materials:** Utilizing recyclable, biodegradable, or responsibly sourced materials throughout the product's life cycle.
- **Energy Efficiency:** Designing products with lower energy consumption during use and production.
- **Reduced Packaging:** Minimizing packaging waste through innovative design and sustainable materials.
- **End-of-Life Considerations:** Developing products with easy disassembly, repair, and recycling options.

By integrating these principles, product development can become a powerful tool for green marketing. The abstract emphasizes the importance of conducting thorough consumer research to identify needs and preferences within the sustainable product landscape. Furthermore, the abstract acknowledges the potential challenges associated with green product development, such as higher upfront costs and potential trade-offs between functionality and sustainability. However, it highlights the long-term benefits, including:

- **Enhanced Brand Image:** Building a reputation for environmental responsibility attracts eco-conscious consumers and fosters brand loyalty.
- **Increased Customer Satisfaction:** Meeting consumer demand for sustainable products leads to higher customer satisfaction.
- **Cost Savings:** Sustainable design can lead to reduced waste disposal costs and improved resource efficiency.

A

MAJOR PROJECT REPORT

ON

# Solid Waste Management in GGV campus: A Case Study

Submitted in partial fulfilment of the requirement for the award of the degree of Bachelor of Technology in Industrial and Production Engineering

By

**Nikhil Pratap Singh – 20105021**

**Shubham Kumar – 20105039**

Under the guidance of

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Session 2023-2024

## Abstract

Solid waste management (SWM) is a critical aspect of environmental sustainability, particularly in rapidly developing regions like GGV Bilaspur Central University. This research paper aims to comprehensively investigate the current state of SWM practices within the university campus, recognizing the urgency of addressing environmental degradation and promoting sustainable waste management strategies. Through a multidisciplinary lens that integrates environmental science, engineering, economics, and social sciences, this study seeks to provide a holistic understanding of the complex dynamics surrounding waste management. The methodology employed in this research involves a meticulous examination of existing SWM strategies and their implications for environmental, social, and economic sustainability. Data collection techniques such as surveys, interviews, and site visits are utilized to gather diverse perspectives and insights into the prevailing SWM scenario. By triangulating these data sources, the study aims to identify both strengths and weaknesses in the university's waste management system, laying the groundwork for informed analysis and decision-making. Environmental impacts of improper waste disposal are a focal point of this research, as it seeks to assess the ecological consequences of current SWM practices. Additionally, the study explores the social and economic dimensions of waste management, considering factors such as community mangagement, resource allocation, and policy frameworks. By delving into these multifaceted aspects of SWM, the research aims to provide a comprehensive overview of the challenges and opportunities inherent in promoting sustainability within the university community. Innovative technologies and best practices from global case studies serve as sources of inspiration for potential solutions to SWM challenges. By exploring cutting-edge waste management technologies, effective policy frameworks, and community engagement initiatives, the study aims to develop actionable recommendations tailored to the specific needs and context of GGV Bilaspur Central University. These recommendations are informed by evidence-based analysis and are designed to catalyze positive change in waste management practices. The ultimate goal of this research paper is to present a roadmap for transitioning towards a more sustainable SWM paradigm at GGV Bilaspur Central University. This roadmap encompasses strategic interventions aimed at enhancing waste management efficiency, reducing environmental impacts, and fostering a culture of environmental stewardship within the university community. By providing practical insights and actionable recommendations, the study aims to empower decision-makers, stakeholders, and practitioners in their efforts to promote sustainability and advance the university's environmental goals. In conclusion, this research paper contributes to the broader discourse on environmental sustainability by addressing the pressing issue of solid waste management within the university context. Through rigorous inquiry, interdisciplinary analysis, and practical recommendations, the study aims to drive positive change and promote a more sustainable future for GGV Bilaspur Central University and its surrounding communities.

## CERTIFICATE BY THE EXAMINERS

This is to certify that project work entitled:

**SOLID WASTE MANAGEMENT IN GGV CAMPUS: A CASE STUDY**

Submitted by

Nikhil Pratap Singh – 20105021

Shubham Kumar – 20105039

Has been examined by the undersigned as a part of examination for the award of **Bachelor Of Technology** Degree In **Industrial And Production Engineering** Of Institute of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur.

Supervisor

Date: 2/5/24

2/5/24

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Guru Ghasidas Vishwavidyalaya
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# MAP VISION-BASED AUTONOMOUS NAVIGATION OF QUADROTOR

**THESIS**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD
OF
THE DEGREE OF

**MASTER OF TECHNOLOGY**
**(CAD/CAM - ROBOTICS)**

Under the supervision of
**Prof. Mukesh Kumar Singh**
and
Co-supervision of
**Dr. Ganesh Prasad Shukla**

Submitted
By

**Vikas Jangde**
**M.Tech. (CAD/CAM - ROBOTICS)**
**(Roll No. 21034101)**

**Department of Industrial and Production Engineering**
**School of Studies of Engineering and Technology, Guru Ghasidas Vishwavidyalaya (Central University), Koni, Bilaspur (C.G.)-495009.**
**INDIA**

## ABSTRACT

This research work focuses on the design and control of map-based navigation of quadrotors fitted with aerodynamics structure, visual sensors and micro controller that may be used for many applications such as navigation of dangerous and unreachable environment where surveillances is not possible for human being. The research on unnamed arial vehicle (UAV) quadrotors is a challenging task for the entire research community in the area of surveillance in unreachable environment and many researchers are trying to find an optimized path with clear vision system. The growing global demand for quadrotor mandates advancements in various industries and applications. This thesis presents the development of an autonomous quadrotor designed specifically for map-based navigation along predefined paths. The research objective is to eliminate the need for manual control, ensuring precision in navigation and facilitating applications such as surveillance, mapping, and monitoring.

The proposed research work is related to design and development of quadrotor for autonomous navigation for known environments. The kinematic and dynamic analysis of quadrotor has been carried out in the first part and the equipment used for designing the quadrotor has been carried out in the second part of the thesis. The proposed quadrotor integrates the state-of-the-art components, including a Pixhawk 2.4.8 flight controller with S100 Radiolink Global Positioning System (GPS), TF-Luna LiDAR Sensor, 915MHz 500MW Telemetry kit, T-Motor Air gear 450 combo kit that enables the designed quadrotor is able to achieves self-balance, altitude lock and enable it to navigate in the known environments.

The proposed quadrotor is assembled and design for real-time experiment. A series of simulation tests are conducted for various path such as triangular, circular and unshaped paths using mission planner software. The simulation results are used and verified for navigation of designed quadrotor to obtained the experimental results. Further the simulation and experimental results are compared to analyse the accuracy of the designed quadrotor. From the results analysis it is found that the accuracy of the designed quadrotor is satisfactory and within a limit for given path in real-time environment. The proposed, design and developed quadrotor in this research is simple, accurate and having very good agreement with the simulation and experimental results for real-time surveillance of the known environment.

## CERTIFICATE

As per the University Grant Commission (promotion of academic integrity and prevention of plagiarism in higher education institute) regulation 2023 dated 4rd October 2023 progress report **MAP VISION-BASED AUTONOMOUS NAVIGATION OF QUADROTOR** of **Vikas Jangde**, a student of M. Tech (CAD/CAM- ROBOTICS) IV semester has been checked by by DrillBit Plagiarism Detection Software available at Central Library, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, Chhattisgarh, India. The amount of similarity in the progress report is 9%. The signed by DrillBit Plagiarism Detection Software similarity report is attached to the certificate.

vijangde

Signature of Student

VIKAS JANGDE

Signature of the Supervisor

PROF. MUKESH KUMAR SINGH

Signature of the Co-Supervisor

DR. GANESH P. SHUKLA

Signature

विभागाध्यक्ष / Head
औद्योगिक एवं उत्पादन अभियांत्रिकी
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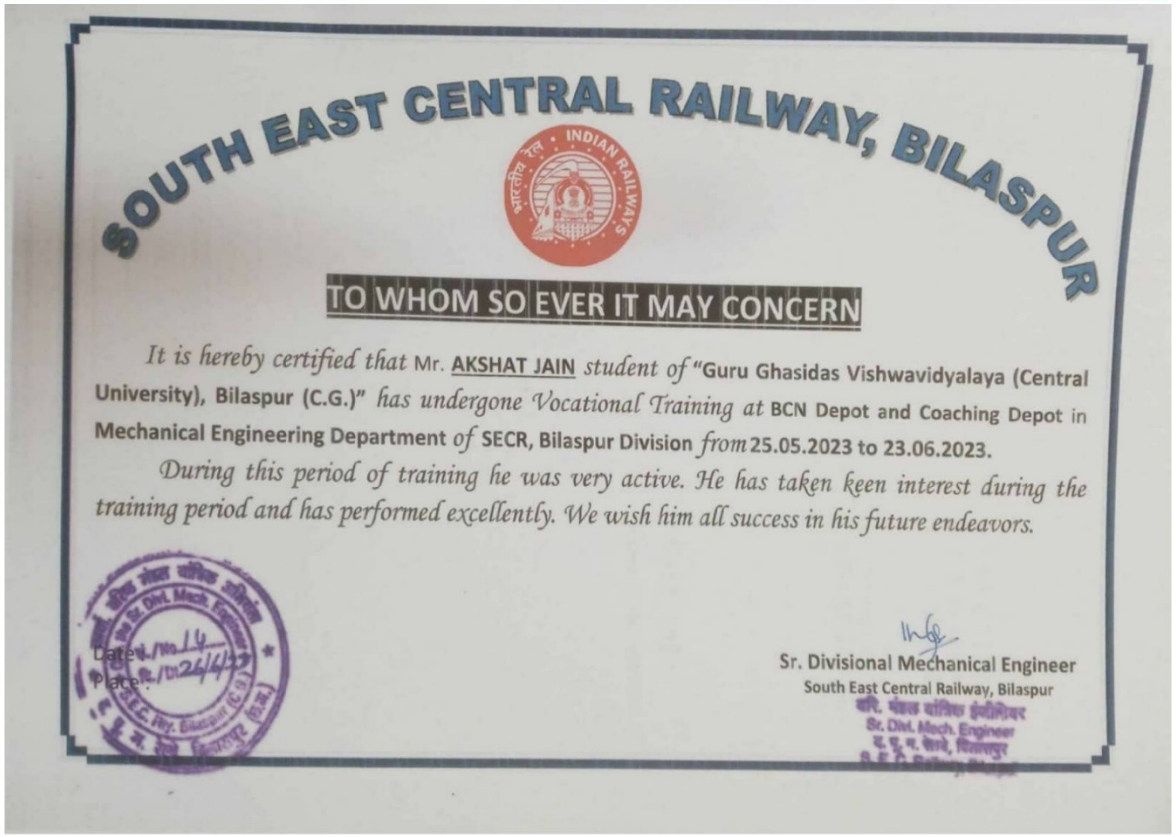
Head

Department of Industrial and Production Engineering

Guru Ghasidas Vishwavidyalaya, Bilaspur



SOUTH EAST CENTRAL RAILWAY, BILASPUR

INDIAN RAILWAYS

TO WHOM SO EVER IT MAY CONCERN

*It is hereby certified that* Mr. **AKSHAT JAIN** *student of* **"Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur (C.G.)"** *has undergone Vocational Training at* **BCN Depot and Coaching Depot** in **Mechanical Engineering Department** *of* **SECR, Bilaspur Division** *from* **25.05.2023 to 23.06.2023.**

*During this period of training he was very active. He has taken keen interest during the training period and has performed excellently. We wish him all success in his future endeavors.*

Date: 24/6/23
Place:

Sr. Divisional Mechanical Engineer
South East Central Railway, Bilaspur

Sr. Divl. Mech. Engineer

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# छत्तीसगढ़ राज्य विद्युत उत्पादन कंपनी मर्यादित

(छत्तीसगढ़ शासन का एक उपक्रम)
(छत्तीसगढ़ राज्य विद्युत मंडल की उत्तरवर्ती कंपनी)

## प्रमाण पत्र
## CERTIFICATE

No.15-29/SE/ Trg./Voca./ 1804 Marwa, Dtd. 30/06/2023

This is to certify that **Ku. Aradhana Bandhade** student of ***Guru Ghasidas Vishwavidyalaya, Bilaspur (Branch-Industrial & Production Engg.)*** has undergone Vocational/Industrial Training in ***ATAL BIHARI VAJPEYI THERMAL POWER STATION Marwa-Tendubhatha*** during the period from **15.06.2023 to 30.06.2023**. His performance and conduct during the training period is ***GOOD***.

30/06/2023
SUPERINTENDING ENGINEER (Training)
ABVTPS, CSPGCL, MARWA

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
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*Internship Letter*

*TO WHOMSOEVER IT MAY CONCERN*

*Date : 30/06/2023*

*This is to certify that Mr. Arpit Mishra (Reg no. GGV/20/01306) pursuing B.Tech(3rd year) Industrial and Production Engineering from Institute of technology, Guru Ghasidas University has completed an internship as product development Executive at A4 Advance Automation Private limited starting from 16-05-2023 to 30-06-2023.*

*During this period he worked on product development and process of implementation of industrial automation system with Advance Automation His performance during this tenure was outstanding.*

*We wish him all the very best for journey forward and looking forward on another collaboration on a long term basis.*

*Atanu Bhattacharjee*
Executive Director

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सेल SAIL

# DECLARATION

I the undersigned solemnly declare that the report of the training work entitled "BHILAI STEEL PLANT" is based on my own work carried out during the course of my study.

I assert that the statements made & conclusions drawn are an outcome of training work. I further declare that to the best of our knowledge & belief that the report does not contain any part of any work which has been submitted for the award of any other degree in this university.

(Signature of the student)

Name: Ashu Patel

Enrollment No:

Ggv/20/013

# CERTIFICATE

This is to certify that the project work titled **"Programming and Operation of CNC Gas Cutting Machine"** by **B.SABITHA** (Trainee no-**100017695**)is being submitted in partial fulfilment internship programme for award of Bachelor of Technology in Industrial & Production engineering at GURU GHASIDAS VISHWAVIDYALAY at Bilaspur is a record of bonafied work carried out by him under my guidance and supervision for a duration of 4 weeks from 8th may 2023 to 3rd June 2023.

K. Srininivas Rao
के. श्रीनिवास राव / K. SRINIVASA RAO
Senior Manager
SSS, ES&Foundry
RINL-Visakhapatanam Steel Plant

VIZAG STEEL
Pride of Steel

Azadi Ka Amrit Mahotsav

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(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
(A Government of India Enterprise)
Visakhapatnam Steel Plant
Visakhapatnam

ISO 9001:2015, ISO 14001, ISO 50001, ISO 27001 & OHSAS 18001 Certified Company

## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100017857

### प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री /This is to certify that Mr./Ms. **BONAGIRI ADARSH** student of (वर्ष/पाठ्यक्रम/शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ENGINEERING SHOPS & FOUNDRY (ES&F)** विभागों मे department from दि. **08-05-2023** से to **03-06-2023** प्राप्त तक किया। परियोजना शीर्षक The Project Title is **PROGRAMMING & OPERATION OF CNC GAS CUTTING** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD**है।

स्थल/Place : Visakhapatnam
दि./Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

# CERTIFICATE

राष्ट्रीय इस्पात निगम लिमिटेड
RASHTRIYA ISPAT NIGAM LIMITED
VIZAG STEEL
Pride of Steel

This is to certify that the project work titled "**Programming and Operation of CNC Gas Cutting Machine**" by **CH.JAYADHEER DORA** (Trainee no-**100017729**)is being submitted in partial fulfilment internship programme for award of Bachelor of Technology in Industrial & Production engineering at GURU GHASIDAS VISHWAVIDYALAY at Bilaspur is a record of bonafied work carried out by him under my guidance and supervision for a duration of 4 weeks from 8th may 2023 to 3rd June 2023.

K. Srininivas Rao
के. श्रीनिवास राव / K. SRINIVASA RAO
Sr. Manager (CSD)
Steel Structural Shop
Engineering Foundry
विशाखपट्टनम इस्पात संयंत्र
Visakhapatnam Steel Plant
Senior Manager
SSS, ES&F
RINL-Visakhapatanam Steel Plant

VIZAG STEEL Pride of Steel

Azadi Ka Amrit Mahotsav

राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
(A Government of India Enterprise)
Visakhapatnam Steel Plant
Visakhapatnam

ISO 9001:2015, ISO 14001, ISO 50001, ISO 27001 & OHSAS 18001 Certified Company

## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100017779

### प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री This is to certify that Mr. Ms. **CHODIMELLA AKHILA** student of (वर्ष पाठ्यक्रम शाखा - Year course Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ENGINEERING SHOPS & FOUNDRY (ES&F)** विभागों मे department from दि. **08-05-2023** to **03-06-2023** प्राप्त तक किया। परियोजना शीर्षक The Project Title is **PROGRAMMING & OPERATION OF CNC GAS CUTTING** है। प्रशिक्षण अवधि में उनका आचरण His Her conduct during the period of training is **GOOD** है।

स्थल Place : Visakhapatnam

दि. Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

Raymond
LIMITED

TEXTILE DIVISION
B 1, A. K. V. N. Kailash Nagar, Sausar,
Chhindwara - 480106, Madhya Pradesh
Tel: (91-07165) 226503 / 226508
Fax: (91-07165) 226512

CIN : L17117MH1925PLC001208

RL/CHH/HR/2023/06
17/06/2023

**TO WHOM SOEVER IT MAY CONCERN**

*This is to certify that* ***Mr. Devansh Anurag Gupta****, a Student of Guru Ghansidas Vishwavidyalaya, Bilaspur, undergone Industrial training in* All Manufacturing processes (RMG to Finish Fabric) & SCM *Department* from *08/05/2023 to 17/06/2023.*

*He was sincere, hard working and punctual to the best of our knowledge.*

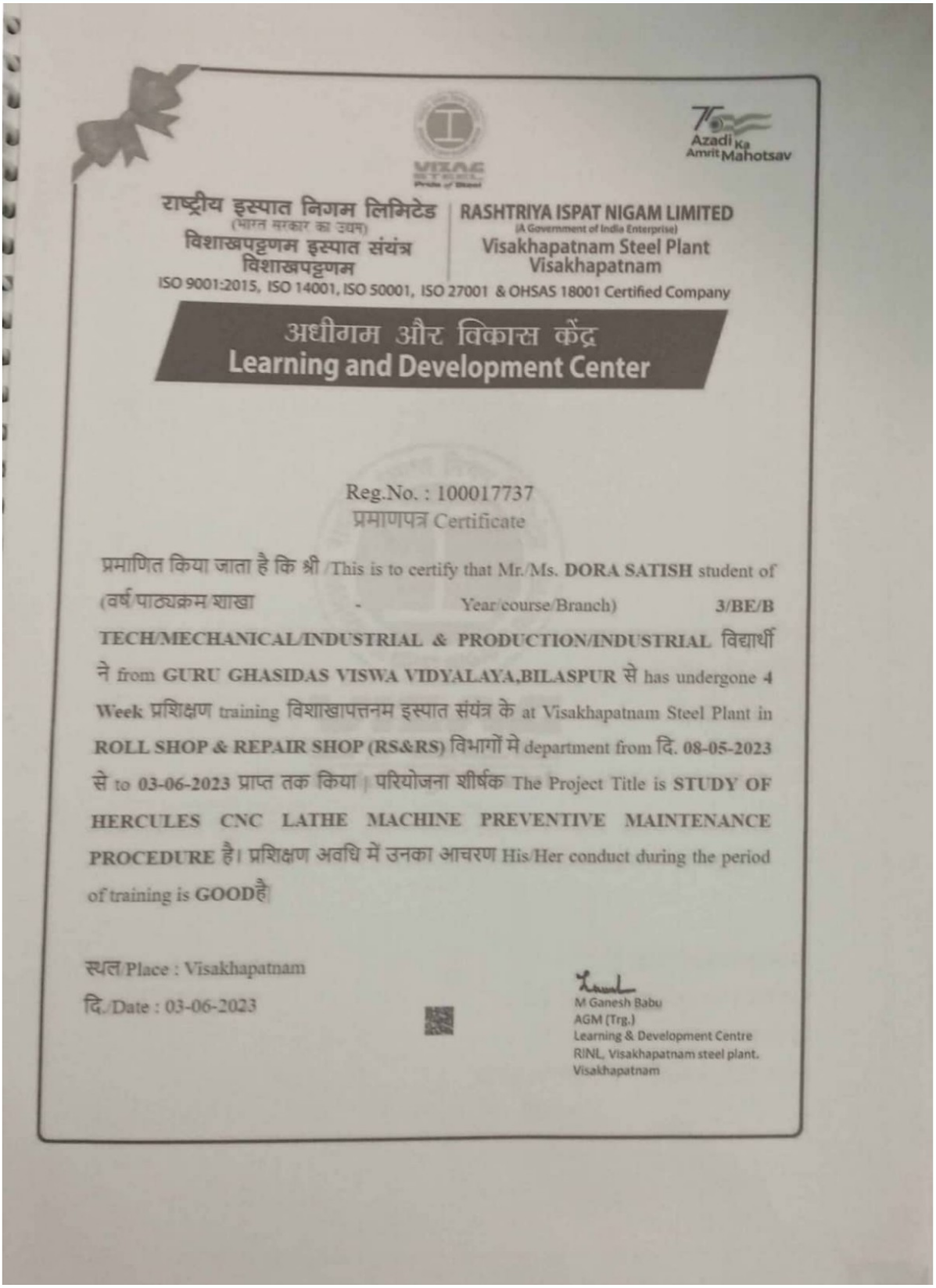
*We wish him success in all his endeavors.*

**FOR RAYMOND LIMITED**
(Textile Division – Chhindwara)

**ASHISH SHARMA**
**EXECUTIVE – HR&ADMN.**

OFFICE
165, Ravindranath Tagore Marg,
Civil Lines, Nagpur - 440 001, India
Tel: (0712) 2535603, 2542465
Fax: (0712) 2527162

REGISTERED OFFICE
Plot No. 156/H No. 2, Village Zadgaon,
Ratnagiri - 415 612, Maharashtra
Tel: (02352) 232514
Fax: (02352) 232513



राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
(A Government of India Enterprise)
Visakhapatnam Steel Plant
Visakhapatnam

ISO 9001:2015, ISO 14001, ISO 50001, ISO 27001 & OHSAS 18001 Certified Company

Azadi Ka Amrit Mahotsav

## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100017737

प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री /This is to certify that Mr./Ms. **DORA SATISH** student of (वर्ष/पाठ्यक्रम शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ROLL SHOP & REPAIR SHOP (RS&RS)** विभागों मे department from दि. **08-05-2023** से to **03-06-2023** प्राप्त तक किया। परियोजना शीर्षक The Project Title is **STUDY OF HERCULES CNC LATHE MACHINE PREVENTIVE MAINTENANCE PROCEDURE** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD**है

स्थल/Place : Visakhapatnam

दि./Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

# TELANGANA STATE POWER GENERATION CORPORATION LIMITED

## CERTIFICATE

This is to certify that Sri **G.RAMBABU (ENROLL NO: GGV/20/01313)** Studying B. Tech. 3rd year **Industrial & Production Engineering in Guru Ghasidas Viswavidyalaya, Bilaspur, Chhattisgarh.** Successfully completed 45 days STUDY PROJECT on **"A DETAILED STUDY ON KTPS-VII STAGE 1X800MW OVERVIEW"** with a specific view on **KTPS - VII** Stage at **PALONCHA** during academic year **2022-2023**.

**1.B Rana Prathap** :
**Assistant - Engineer**
**BM-III / KTPS - VII Stage paloncha ,Kothagudem.**

ASSISTANT ENGINEER
Boiler Maintenance - III
KTPS-VII Stage (1x800MW)
PALONCHA - 507 115

**2. M. Venkateswarlu** :
**Assistant Divisional Engineer**
**BM-III / KTPS - VII Stage paloncha ,Kothagudem.**

ASST.DIVISIONAL ENGINEER
Boiler Maintenance - III
KTPS-VII Stage (1x800MW)
PALONCHA - 507 115

**3. J.V.K.Prasad** :
**Divisional Engineer**
**BM III / KTPS - VII Stage Paloncha, Kothagudem.**

DIVISIONAL ENGINEER
Boiler Maintenance
KTPS-VII Stage (1x800MW)
PALONCHA - 507 115.

JINDAL STEEL & POWER

JSP: RGH: HR&ES:2023

Date :03.07.2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Hariom Dewangan** is pursuing **B.Tech. in Industrial & Production Engineering** from **Guru Ghasi Das University, Bilaspur** has done his industrial training in our organization in **Industrial Engineering Dept**. The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: **15th May'2023 to 30th June'2023**

During the above-mentioned period, Mr. Hariom Dewangan was punctual and sincere in his approach towards training.

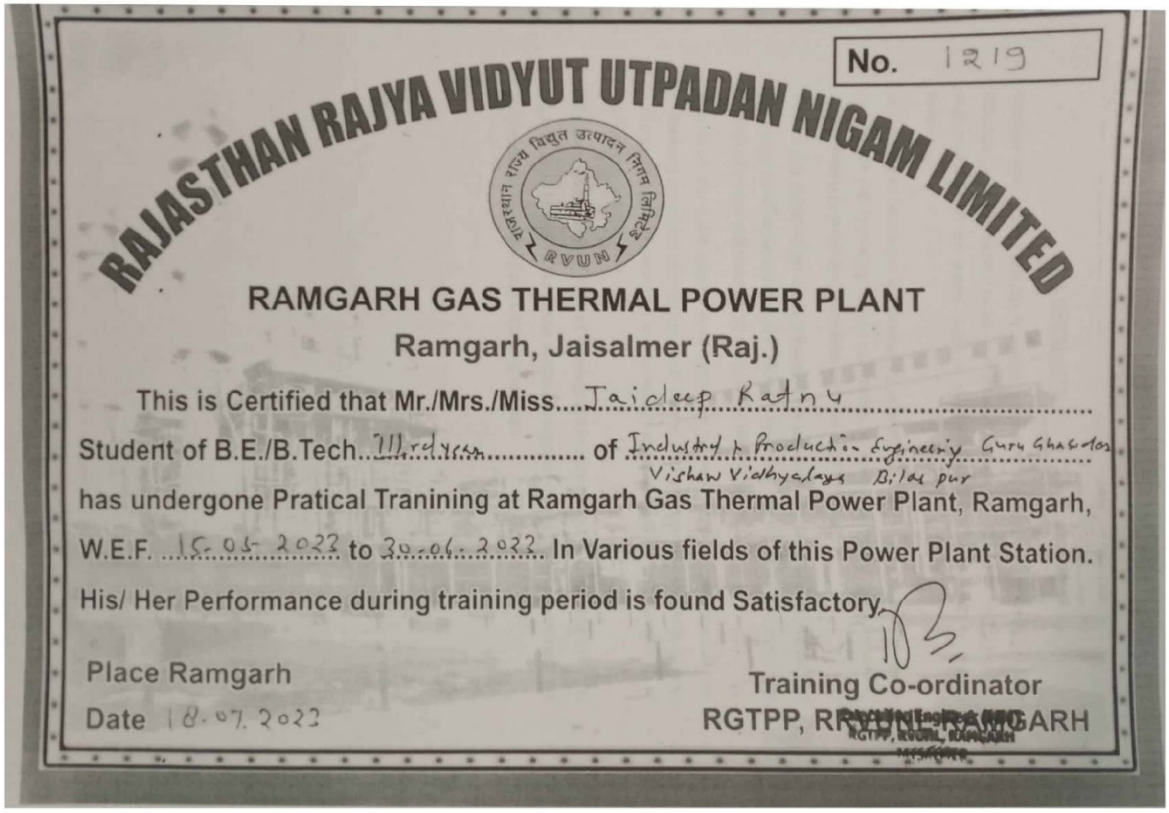
We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

for JINDAL STEEL & POWER

Vimal Srivastava
AGM - HR & ES

Jindal Steel & Power Limited
Post Box No. 16, Kharsia Road, Raigarh – 496 001 (C.G.)
T (07762) 227001- 227005 (5 lines) F 07762 – 227021, 227022 E raigarh@jspl.com
Registered Office O.P.Jindal Marg, Hisar – 125 005 (Haryana)



No. 1219

RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED

RAMGARH GAS THERMAL POWER PLANT

Ramgarh, Jaisalmer (Raj.)

This is Certified that Mr./Mrs./Miss. Jaideep Ratnu

Student of B.E./B.Tech. IIIrd year of Industry & Production Engineering Guru Ghasidas Vishwa Vidhyalaya Bilaspur

has undergone Pratical Tranining at Ramgarh Gas Thermal Power Plant, Ramgarh,

W.E.F. 15.05.2022 to 30.06.2022. In Various fields of this Power Plant Station.

His/ Her Performance during training period is found Satisfactory.

Place Ramgarh

Date 18.07.2022

Training Co-ordinator

RGTPP, RRVUNL, RAMGARH

# CERTIFICATE

राष्ट्रीय इस्पात निगम लिमिटेड
RASHTRIYA ISPAT NIGAM LIMITED
VIZAG STEEL
Pride of Steel

This is to certify that the project work titled "**Programming and Operation of CNC Gas Cutting Machine**" by **Jatoth pavan** is being submitted in partial fulfilment internship program is a record of bonafied work carried out by him under my guidance and supervision for a duration of 4 weeks from 8th may 2023 to 3rd June 2023.

K. Srininivas Rao
Senior Manager
SSS, ES&F
RINL-Visakhapatanam Steel Plant

ADITYA BIRLA
HINDALCO

Date: 15th July 2023

**TO WHOM IT MAY CONCERN**

This is to certify that **Mr. Komal Raj Pradhan,** a student of **Guru Ghasidas Vishwavidyalaya, Bilaspur** has undergone training at Aditya Aluminium, Lapanga, Sambalpur from **15th June 2023** to **15th July 2023.**

During the training period he was found to be disciplined and has taken keen interest in learning different areas he was exposed to.

We wish him all the success in his life.

ADITYA ALUMINIUM * HINDALCO INDUSTRIES LTD. * SAMBALPUR *

Bhavani Mahapatra
Department Head
L&D and HR

Hindalco Industries Limited
Aditya Aluminium: At/P.O.: Lapanga - 768 212, District: Sambalpur, Odisha, India
T: +91 663 2536 247 | Fax: +91 663 2536 499 | E: hindalco@adityabirla.com | W: www.hindalco.com
Registered Office: Ahura Centre, 1st Floor, B-Wing, Mahakali Caves Road, Andheri (East), Mumbai 400 093
Tel: +91 22 6691 7000 | Fax: + 91 222 6691 7001

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. **Mani Rathi**, Student of Industrial & Production Engineering from "**Guru Ghasidas Vishwavidyalaya Bilaspur Chhattisgarh**" has under gone Industrial Training in our organization at Radico NV distilleries Chhatrapati Sambhaji Nagar Maharashtra from 15th May-2023 to 19th June-2023.

During the period of training, he was very active. He has taken keen interest in learning during the training period, and we wish him all success for his future and carrier.

For:

Radico NV Distilleries Maharashtra.

Authorized Signatory

RADICO NV DISTILLERIES MAHARASHTRA PLC
Aurangabad

ISO 9001
ISO 22000
CERTIFIED COMPANY
DNV

**Radico NV Distilleries Maharashtra Ltd.**
(Formerly : Shetkari Baliraja Sugars Ltd.)
Works & Regd. Office : D-192 to D-195, MIDC Shendra Five Star Industrial Area, Aurangabad - 431154
Tel : (0240) 2622018, Fax : (0240) 2622050
CIN No. U15429MH2000PLC193208

# CERTIFICATE

JINDAL STEEL & POWER

JSP:RGH: HR&ES:2023 Date :03.07.2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Mayank Khandekar** is pursuing **B.Tech. in Industrial & Production Engineering** from **Guru Ghasi Das University, Bilaspur** has done his industrial training in our organization in **Industrial Engineering Dept.** The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: **15th May'2023 to 30th June'2023**

During the above-mentioned period, Mr. Mayank Khandekar was punctual and sincere in his approach towards training.

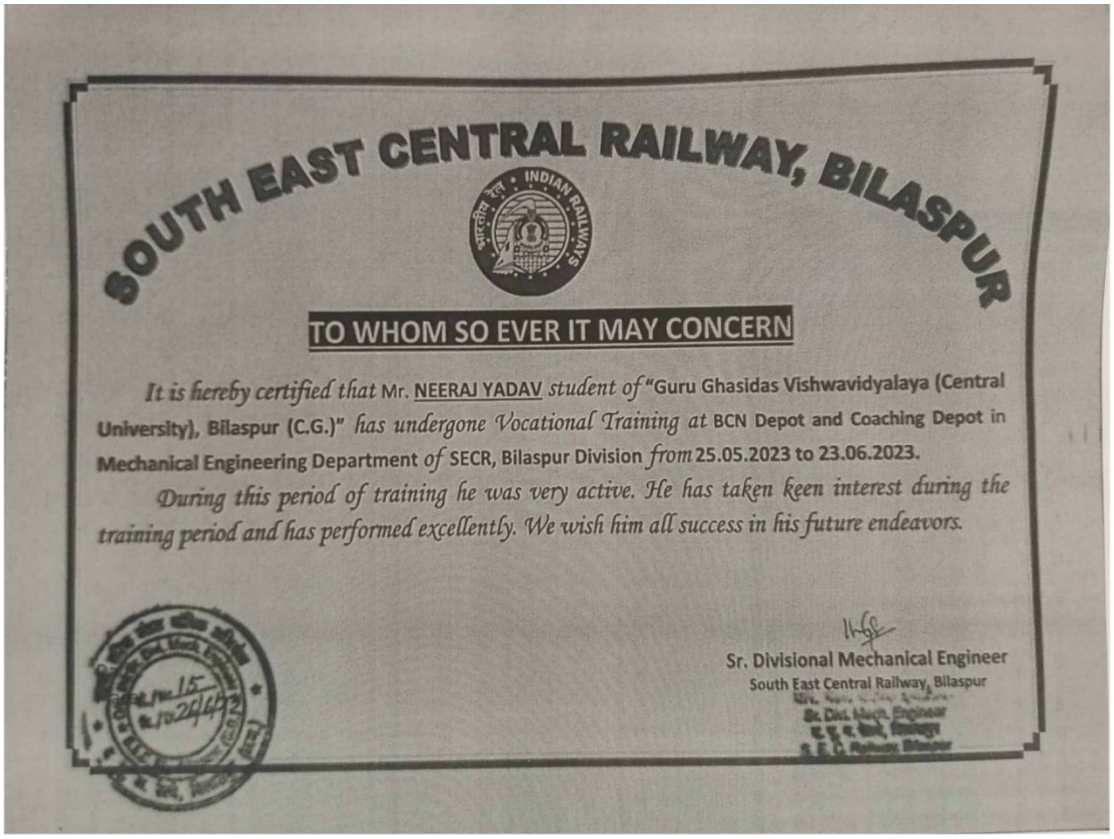
We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

for JINDAL STEEL & POWER

Vimal Srivastava
AGM - HR & ES

Jindal Steel & Power Limited
Post Box No.15, Kharsia Road, Raigarh – 496 001 (C.G.)
T (07762) 227001- 227005 (5 lines) F 07762 – 227021, 227022 E raigarh@jspl.com
Registered Office: O.P Jindal Marg, Hisar – 125 005 (Haryana)



SOUTH EAST CENTRAL RAILWAY, BILASPUR

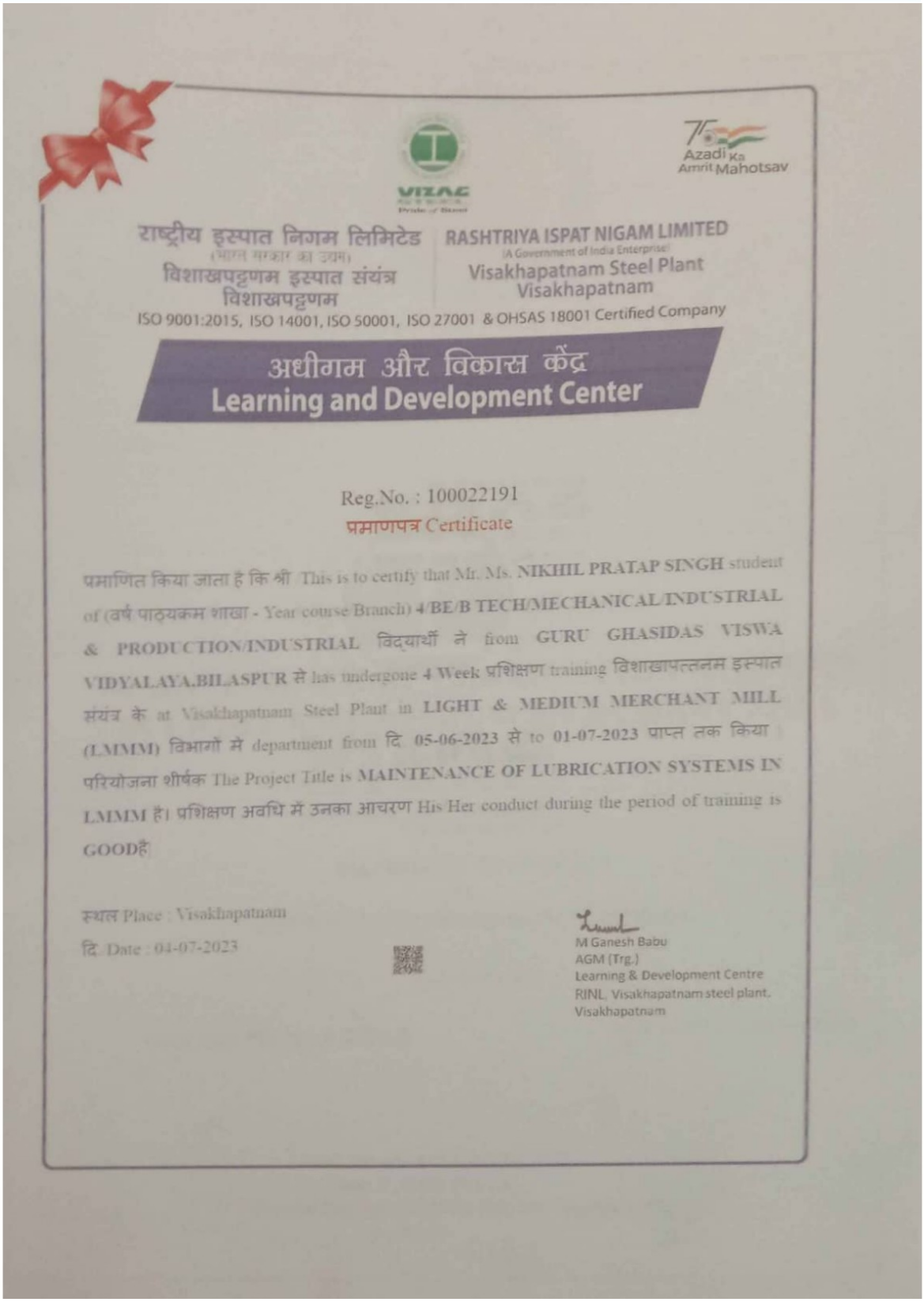
INDIAN RAILWAYS

TO WHOM SO EVER IT MAY CONCERN

*It is hereby certified that* Mr. NEERAJ YADAV *student of* "Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur (C.G.)" *has undergone Vocational Training at* BCN Depot and Coaching Depot in Mechanical Engineering Department *of* SECR, Bilaspur Division *from* 25.05.2023 to 23.06.2023.

*During this period of training he was very active. He has taken keen interest during the training period and has performed excellently. We wish him all success in his future endeavors.*

Sr. Divisional Mechanical Engineer
South East Central Railway, Bilaspur



Azadi Ka Amrit Mahotsav

VIZAG

राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
(A Government of India Enterprise)
Visakhapatnam Steel Plant
Visakhapatnam

ISO 9001:2015, ISO 14001, ISO 50001, ISO 27001 & OHSAS 18001 Certified Company

## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100022191

### प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री This is to certify that Mr. Ms. **NIKHIL PRATAP SINGH** student of (वर्ष पाठ्यक्रम शाखा - Year course Branch) **4/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **LIGHT & MEDIUM MERCHANT MILL (LMMM)** विभागों में department from दि **05-06-2023** से to **01-07-2023** पाप्त तक किया। परियोजना शीर्षक The Project Title is **MAINTENANCE OF LUBRICATION SYSTEMS IN LMMM** है। प्रशिक्षण अवधि में उनका आचरण His Her conduct during the period of training is **GOOD**है

स्थल Place : Visakhapatnam
दि. Date : 04-07-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant,
Visakhapatnam

सेल SAIL

# DECLARATION

I the undersigned solemnly declare that the report of the training work entitled "BHILAI STEEL PLANT" is based on my own work carried out during the course of my study.

I assert that the statements made & conclusions drawn are an outcome of training work. I further declare that to the best of our knowledge & belief that the report does not contain any part of any work which has been submitted for the award of any other degree in this university.

Nikita nimmy

(Signature of the student)

Name: NIKITA NIMMY

Enrollment No:

Ggv/20/01324

WESTERN RAILWAY

ELECTRICAL DEPARTMENT

# CERTIFICATE

This is to certify that **Mr. Paramkush J Nakka** a student of Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur (C.G.) has completed his internship training for 4 weeks from **28.05.2023 to 24.06.2023** in **"Traction Supply of Electricity & Electrical Supply Management"** at Railway Electric substation Kurla, Mumbai.

He was disciplined and showed keen interest in his training besides being regular and punctual.

ADEE(D)/TRD

सहा. प्रभाग इलेक्ट्रिक इंजीनियर (डी)
Asst. Divl. Electric engineer (D)
पश्चिमी रेल्वे, बीकेसी
W. Rly. BCT

JINDAL STEEL & POWER

JSP: RGH: HR&ES:2023

Date :03.07.2023

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Prakhar Bajpai** is pursuing B.Tech. in Industrial & Production Engineering from Guru Ghasi Das University, Bilaspur has done his industrial training in our organization in Industrial Engineering Dept. The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: 15th May'2023 to 30th June'2023

During the above-mentioned period, Mr. Prakhar Bajpai was punctual and sincere in his approach towards training.

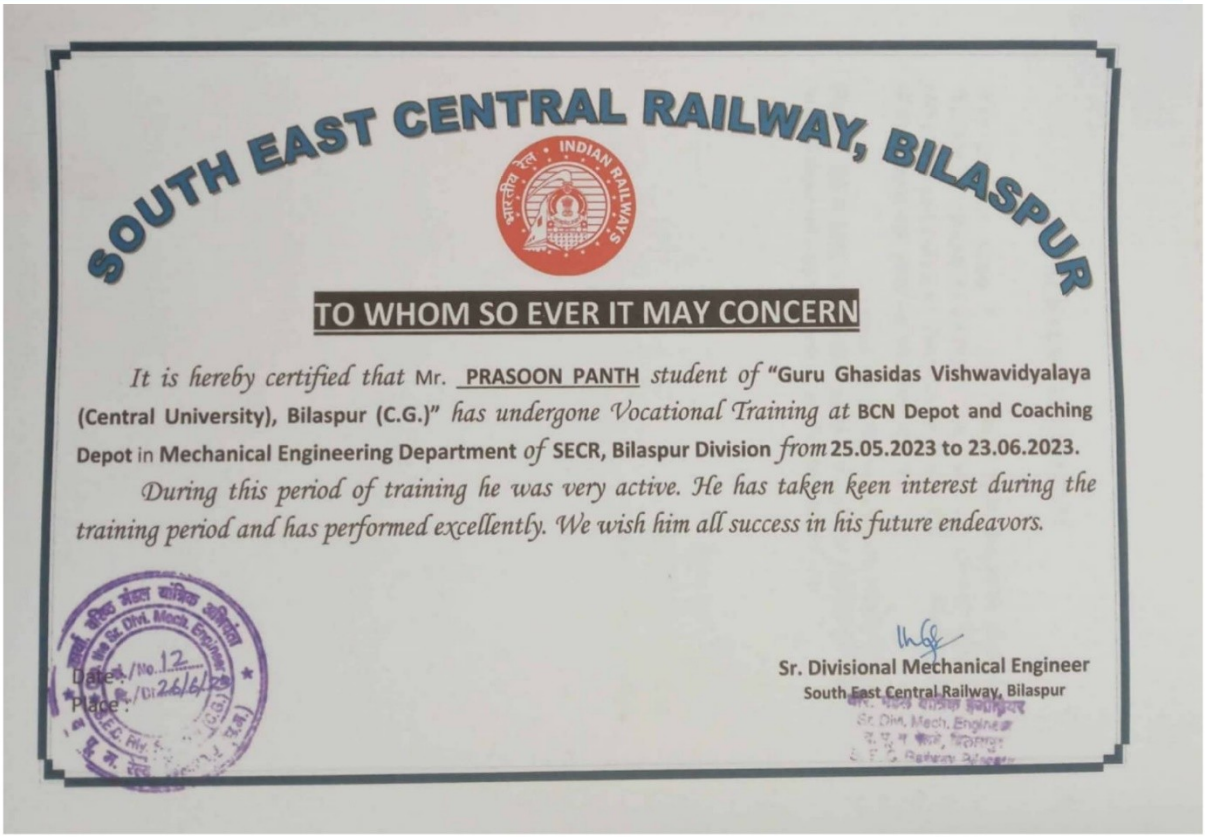
We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

for JINDAL STEEL & POWER

Vimal Srivastava
AGM - HR & ES

Jindal Steel & Power Limited
Post Box No.15, Kharsia Road, Raigarh – 496 001 (C.G.)
T (07762) 227001 - 12/7005 (5 lines) F (07762) – 227021, 227029 raigarh.jr@jspl.com
Registered Office: O.P. Jindal Marg, Hisar – 125 005 (Haryana)



SOUTH EAST CENTRAL RAILWAY, BILASPUR

INDIAN RAILWAYS

## TO WHOM SO EVER IT MAY CONCERN

*It is hereby certified that* Mr. **PRASOON PANTH** *student of* **"Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur (C.G.)"** *has undergone Vocational Training at* **BCN Depot and Coaching Depot** in **Mechanical Engineering Department** *of* **SECR, Bilaspur Division** *from* **25.05.2023 to 23.06.2023.**

*During this period of training he was very active. He has taken keen interest during the training period and has performed excellently. We wish him all success in his future endeavors.*

Date: /No.12
Place: /Dt.26/6/23

Sr. Divisional Mechanical Engineer
South East Central Railway, Bilaspur

Sr. Divl. Mech. Engineer
S. E. C. Railway, Bilaspur

# INTERNSHIP COMPLETION LETTER

NATURE

## CENTURY POLYPLAST INDUSTRIES

16th June'2023

**TO WHOSOEVER IT MAY CONCERN**

This is to certify that **Miss Prerana** has been working as an **INTERN** from **16 May 2023 to 15 June 2023** in our Production Department.

During the course of her internship, we found her able and a highly motivated intern.

We wish her best of luck for all her future endeavours.

For,

Century Polyplast Industries

Arvind Sudhanshu Yunas

(HR & ADMIN – HEAD)

centurypolyplast@gmail.com/ info@centurypolyplast.com www.centurypolyplast.com

century Sunrise

HERO CYCLES

## To Whom It May Concern:

Date: - 21.06.2023

This is to certify that Mr. Pritam Raj vide enrolment number GGV/20/01330 from Guru Ghasidas Vishwavidyalaya Bilaspur C.G. had undergone in-plant training in Production department for One Month from 16th May 2023 and completed on 15th June 2023.

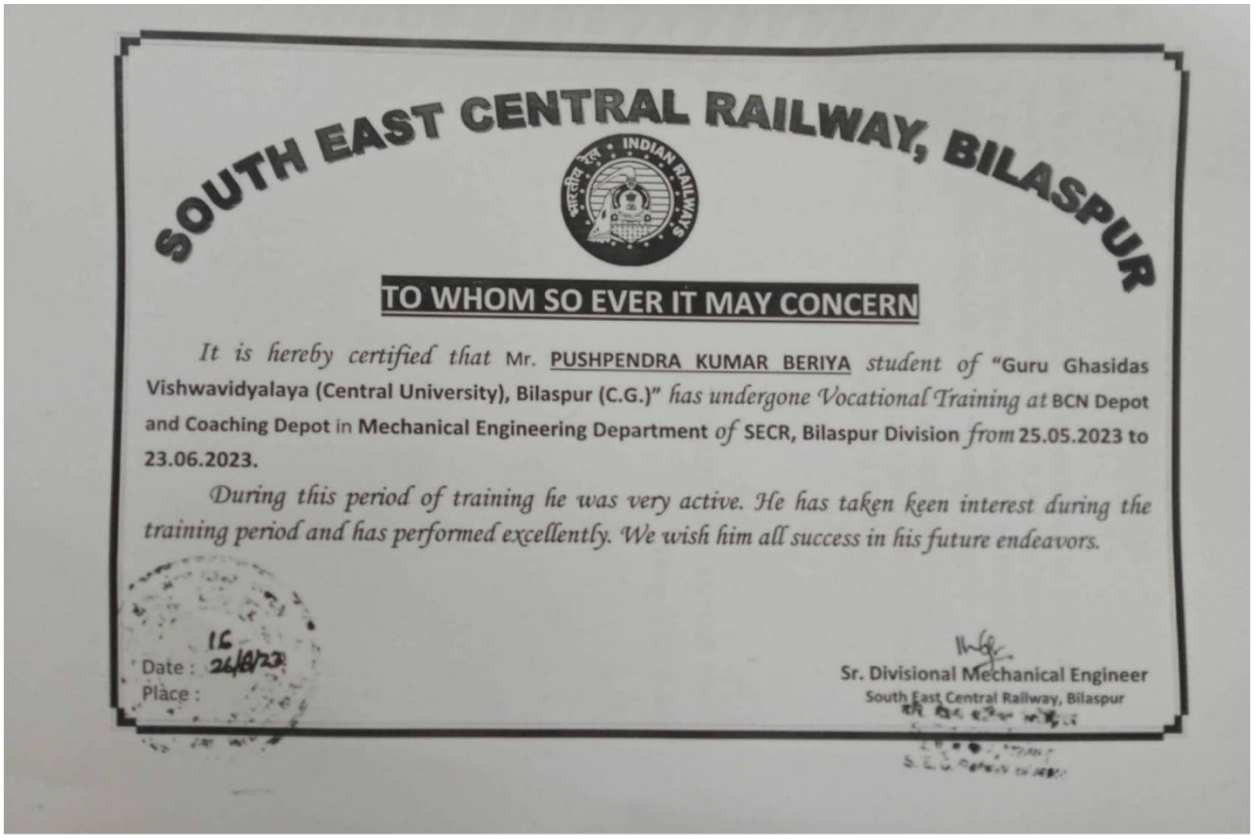
During the period we found his conduct satisfactory.

We wish him a good and successful career ahead.

For Hero Cycles Limited

DGM - HR

HERO CYCLES LTD.
Patna Plant : B-2, Mega Industrial Park, Ambhara, Bihta, Patna - 801106 (Bihar), http://www.herocycles.com
Regd. Office : Hero Nagar, G.T. Road, Ludhiana-141003 (India), CIN No. U35911PB1956PLC002667
Ph. 0161-5026969, Fax. 0161-2529479/79, E-mail: legal@hmcgroup.in, Toll Free : 1800 208 4376



SOUTH EAST CENTRAL RAILWAY, BILASPUR

INDIAN RAILWAYS

**TO WHOM SO EVER IT MAY CONCERN**

*It is hereby certified that* Mr. PUSHPENDRA KUMAR BERIYA *student of* "Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur (C.G.)" *has undergone Vocational Training at* BCN Depot and Coaching Depot in Mechanical Engineering Department *of* SECR, Bilaspur Division *from* 25.05.2023 to 23.06.2023.

*During this period of training he was very active. He has taken keen interest during the training period and has performed excellently. We wish him all success in his future endeavors.*

Date : 16/6/23
Place :

Sr. Divisional Mechanical Engineer
South East Central Railway, Bilaspur

प्रतिष्ठित संस्थान
INSTITUTION OF EMINENCE

## SCHOOL OF PHYSICS
## UNIVERSITY OF HYDERABAD

### CERTIFICATE OF INTERNSHIP

This is to certify that Mr. R. Pavan Sai, B.Tech (Industrial and Production Engineering) IIIrd year student from "Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur (C.G.)" has carried out "Summer Internship Project" during 15th May – 14th June 2023 on the project entitled "CAD Design, 3D Printing, and CNC milling of moulds for shape forming of materials by Slurry Casting".

V. Seshu Bai

Prof. V. Seshu Bai
Mentor
Dr. V. Seshu Bai
Professor Emeritus,
School of Physics
University of Hyderabad

30/6/2023

Dean
School of Physics

संकाय अध्यक्ष / Dean
भौतिकी संकाय / School of Physics
हैदराबाद विश्वविद्यालय
UNIVERSITY OF HYDERABAD
हैदराबाद / HYDERABAD-500 046, भारत / INDIA

T-WORKS

Room No. 423A, 3rd Floor, D-Block
Telangana Secretariat, NTR Marg
Hyderabad, TG 500022

August 16, 2023

Likitha Kangarla,
**Head HR Supervisor,**
**T Works Hyderabad**

To Whom It May Concern,

This is to certify that Mr. Rahul Shirodkar worked as a 3D Printing Intern at T-Works from May 15, 2023, to August 15, 2023. During his internship, Mr. Shirodkar excelled in his role, demonstrating exceptional skills, dedication, and a strong commitment to his responsibilities.

Mr. Shirodkar was responsible for managing and maintaining various 3D printing machines, encompassing both Fused Deposition Modeling (FDM) and Stereolithography (SLA) technologies. His efforts contributed to the smooth and efficient operation of these machines. His technical proficiency and problem-solving abilities ensured high-quality standards and timely project deliveries.

Additionally, Mr. Shirodkar's collaborative contributions to other departments, such as design and laser cutting, were invaluable. His effective communication and cross-functional cooperation enhanced our organization's overall productivity.

For his commendable work, Mr. Shirodkar received a stipend of INR 8,000 per month.

We are confident that Mr. Rahul Shirodkar will continue to excel in his chosen field, and we recommend him without reservation to any prospective employer.

**Sincerly,**

Sujoy

Sujoy Karampuri
CEO
T-Works - India's Leading Hardware Incubator

Azadi Ka Amrit Mahotsav

राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
(A Government of India Enterprise)
Visakhapatnam Steel Plant
Visakhapatnam

ISO 9001:2015, ISO 14001, ISO 50001, ISO 27001 & OHSAS 18001 Certified Company

## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100017696

### प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री / This is to certify that Mr./Ms. **DEVADASU RATNA SRI** student of (वर्ष/ पाठ्यक्रम/शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ENGINEERING SHOPS & FOUNDRY (ES&F)** विभागों मे department from दि. **08-05-2023** से to **03-06-2023** प्राप्त तक किया । परियोजना शीर्षक The Project Title is **PROGRAMMING & OPERATION OF CNC GAS CUTTING** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD**है।

स्थल/Place : Visakhapatnam
दि./Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

JINDAL STEEL & POWER

JSP: RGH: HR&ES:2023

Date :03.07.2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Shailendra Gendle** is pursuing B.Tech. in Industrial & Production Engineering from Guru Ghasi Das University, Bilaspur has done his industrial training in our organization in Industrial Engineering Dept. The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: **15th May'2023 to 30th June'2023**

During the above-mentioned period, Mr. Shailendra Gendle was punctual and sincere in his approach towards training.

We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

**for JINDAL STEEL & POWER**

**Vimal Srivastava**
**AGM - HR & ES**

Jindal Steel & Power Limited
Post Box No.16, Kharsia Road, Raigarh – 496 001 (C.G.)
T (07762) 227001- 227005 (5 lines) F 07762 – 227021, 227022 E raigarh@jspl.com
Registered Office O.P.Jindal Marg, Hisar – 125 005 (Haryana)

JINDAL STEEL & POWER

JSP:RGH: HR&ES:2023 Date :03.07.2023

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Shashank Yadav** is pursuing **B.Tech. in Industrial & Production Engineering** from **Guru Ghasi Das University, Bilaspur** has done his industrial training in our organization in **Industrial Engineering Dept.** The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: **15th May'2023 to 30th June'2023**

During the above-mentioned period, Mr. Shashank Yadav was punctual and sincere in his approach towards training.

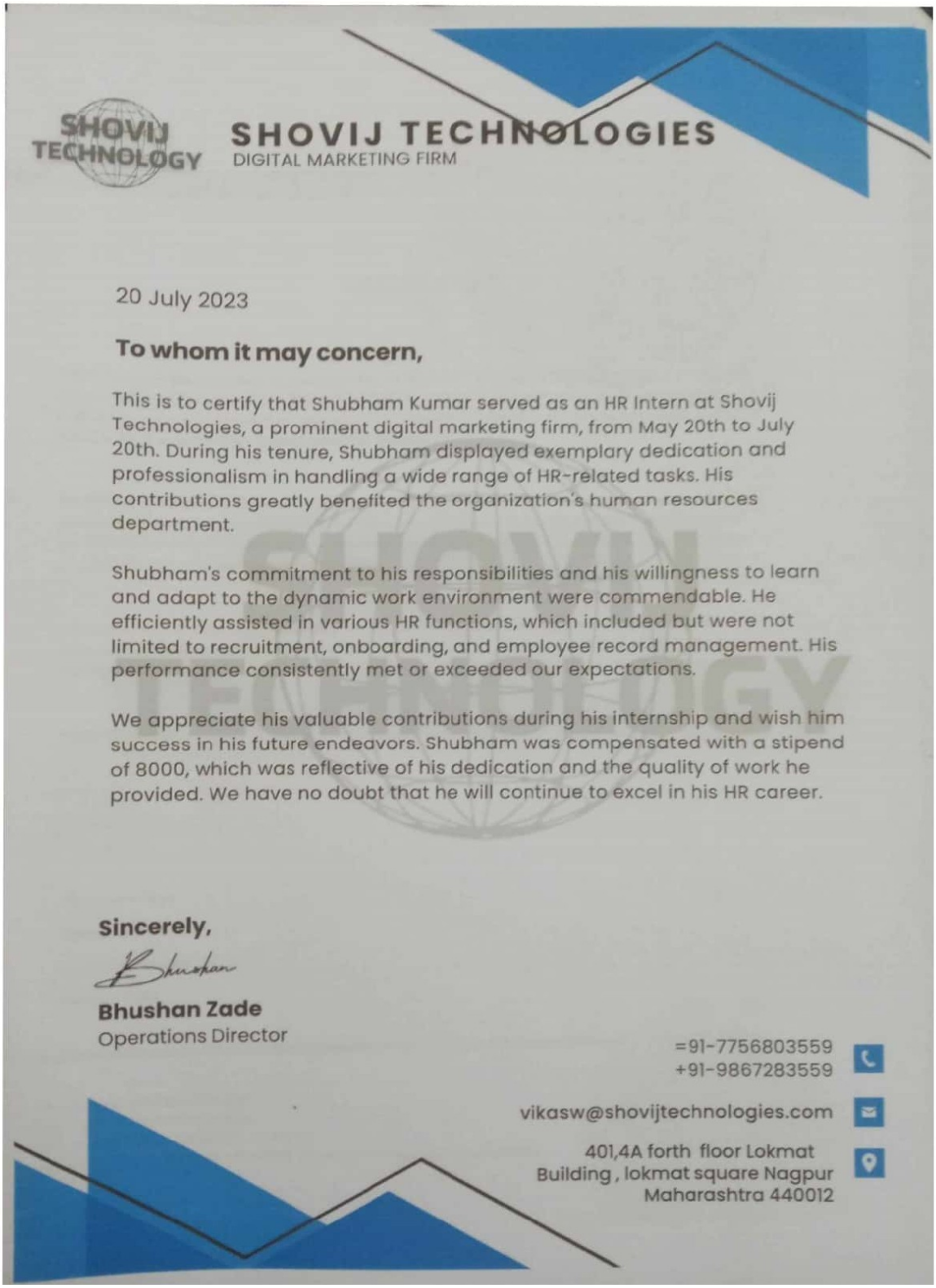
We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

for JINDAL STEEL & POWER

Vimal Srivastava
AGM - HR & ES

Jindal Steel & Power Limited
Post Box No.16, Kharsia Road, Raigarh – 496 001 (C.G.)
T (07762) 227001- 227005 (5 lines) F 227061 – 227023, 227022 E raigarh@jspl.com
Registered Office: O.P.Jindal Marg, Hisar – 125 005 (Haryana)



SHOVIJ TECHNOLOGY

SHOVIJ TECHNOLOGIES
DIGITAL MARKETING FIRM

20 July 2023

**To whom it may concern,**

This is to certify that Shubham Kumar served as an HR Intern at Shovij Technologies, a prominent digital marketing firm, from May 20th to July 20th. During his tenure, Shubham displayed exemplary dedication and professionalism in handling a wide range of HR-related tasks. His contributions greatly benefited the organization's human resources department.

Shubham's commitment to his responsibilities and his willingness to learn and adapt to the dynamic work environment were commendable. He efficiently assisted in various HR functions, which included but were not limited to recruitment, onboarding, and employee record management. His performance consistently met or exceeded our expectations.

We appreciate his valuable contributions during his internship and wish him success in his future endeavors. Shubham was compensated with a stipend of 8000, which was reflective of his dedication and the quality of work he provided. We have no doubt that he will continue to excel in his HR career.

**Sincerely,**

**Bhushan Zade**
Operations Director

=91-7756803559
+91-9867283559

vikasw@shovijtechnologies.com

401,4A forth floor Lokmat
Building , lokmat square Nagpur
Maharashtra 440012

Y.D

# CERTIFICATE

RASHTRIYA ISPAT NIGAM LIMITED

VIZAG STEEL
Pride of Steel

This is to certify that the project work titled **"STUDY OF HERKULES CNC LATHE MACHINE PREVENTIVE MAINTENANCE PROCEDURE"** by**SIRAGAM MAHESH,** is being submitted in partial fulfilment internship programme for award of Bachelor of Technology in Industrial & Production engineering at GURU GHASIDAS VISHWAVIDYALAY at Bilaspur is a record of work carried out by him under my guidance and supervision for a duration of 4 weeks from 8th may 2023 to 3rd June 2023.

Signature:

R.SATYANARAYANA
Dy. General Manager(OPRN.)
RS&RS
RINL-VISAKAPATNAM Steel Plant

VIZAG STEEL Pride of Steel

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राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

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Visakhapatnam

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## अधीगम और विकास केंद्र
## Learning and Development Center

Reg.No. : 100017958

प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री /This is to certify that Mr./Ms. **KANGALA SIREESHA** student of (वर्ष/पाठ्यक्रम/शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ROLL SHOP & REPAIR SHOP (RS&RS)** विभागों मे department from दि. **08-05-2023** से to **03-06-2023** प्राप्त तक किया | परियोजना शीर्षक The Project Title is **STUDY OF HERKULES CNC LATHE MACHINE PREVENTIVE MAINTENANCE PROCEDURE** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD**है|

स्थल/Place : Visakhapatnam

दि./Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

**A4 ADVANCE AUTOMATION PRIVATE LIMITED**
525/A NIRANJAN PALLY, 7TH LANE,
VIDYASAGAR PARK, KOLKATA - 700070

Research and development office
Science and Technology Enterprenure Park (STEP)
IIT Gopali, Kharagpur, 721302

*Internship Letter*

*TO WHOMSOEVER IT MAY CONCERN*

*Date : 30/06/2023*

*This is to certify that Mr. Snehal Kumar Yadav (Reg no. GGV/20/01345) pursuing B.Tech(3rd year) Industrial and Production Engineering from Institute of technology, Guru Ghasidas University has completed an internship as product development Executive at A4 Advance Automation Private limited starting from 16-05-2023 to 30-06-2023.*

*During this period he worked on product development and process of implementation of industrial automation system with Advance Automation His performance during this tenure was outstanding.*

*We wish him all the very best for journey forward and looking forward on another collaboration on a long term basis.*

*Atanu Bhattacharjee*
*Executive Director*

CIN : U29269WB2018PTC225047
MOBILE : 9830609106, 8583998657, 9830535621
E-MAIL : info@a4advanceautomation.com, atanu@a4advanceautomation.com

ISO 9001, ISO 14001, ISO 45001 & ISO 50001
Certified Company

THE RAMCO CEMENTS LIMITED

Ramasamy Raja Nagar, Virudhunagar District
Tamil Nadu, Pin: 626 204
Ph: 04562 - 256 201 to 203
Fax: 04562 – 256 268
Corporate Identity Number: L26941TN1957PLC003566

16/06/2023

**TO WHOMSOEVER IT MAY CONCERN**

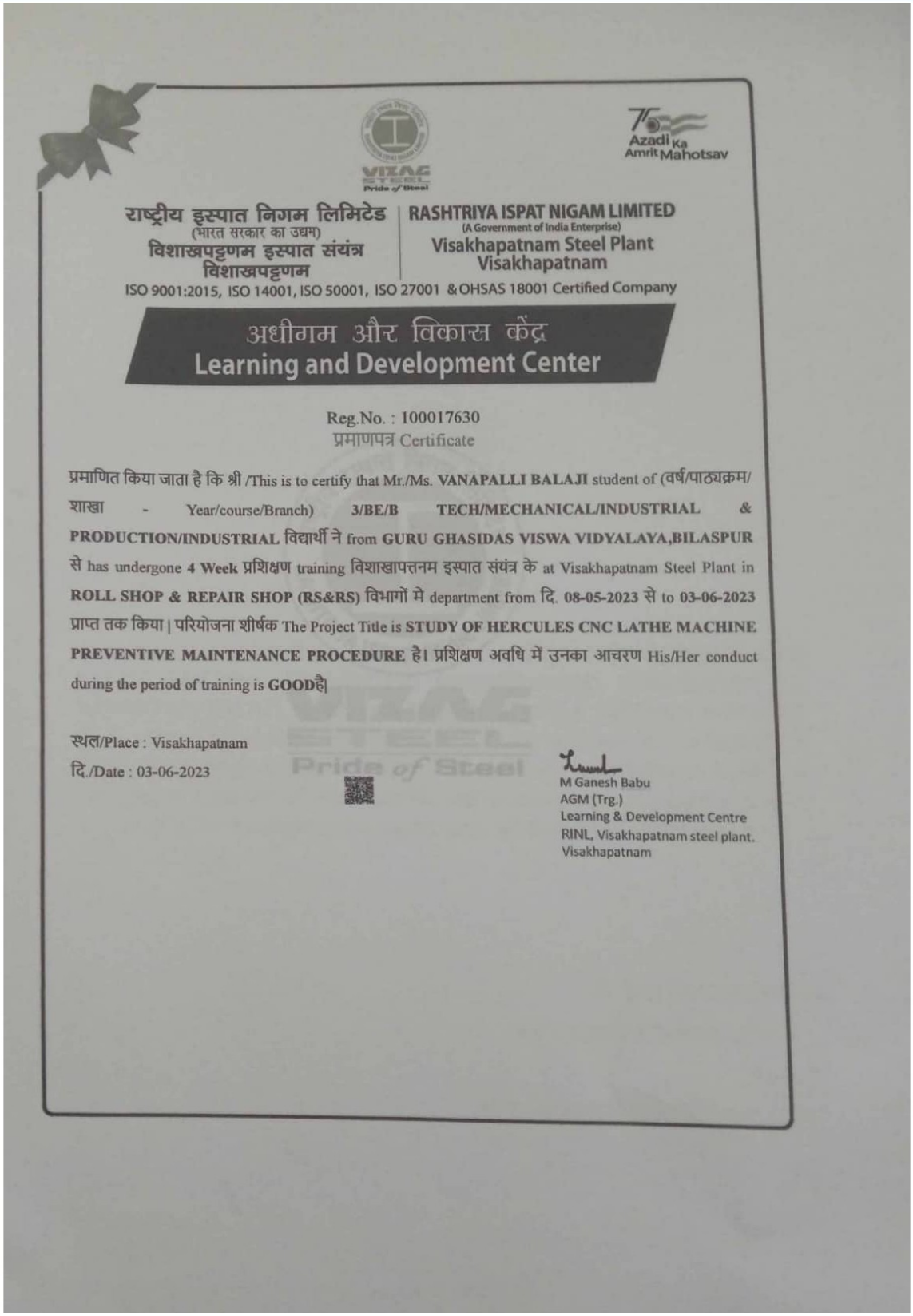
This is to certify that **Ms. Suthi G (Reg no. GGV/20/01346)** of Third year **B.Tech Industrial and Production Engineering** from **Guru Ghasidas Vishwavidyalaya, Chhattishgarh** has undergone **Internship** at Process Department in our R. R. Nagar factory during the period from 16/05/2023 to 16/06/2023.

We wish her good luck and best wishes for all her future endeavours.

For **THE RAMCO CEMENTS LIMITED**

**N. Sridhar**
**Sr.DGM – HR**

THE RAMCO CEMENTS LIMITED R.R. NAGAR



राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

RASHTRIYA ISPAT NIGAM LIMITED
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Visakhapatnam Steel Plant
Visakhapatnam

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अधीगम और विकास केंद्र
Learning and Development Center

Reg.No. : 100017630

प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री /This is to certify that Mr./Ms. **VANAPALLI BALAJI** student of (वर्ष/पाठ्यक्रम/शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ROLL SHOP & REPAIR SHOP (RS&RS)** विभागों मे department from दि. **08-05-2023** से to **03-06-2023** प्राप्त तक किया। परियोजना शीर्षक The Project Title is **STUDY OF HERCULES CNC LATHE MACHINE PREVENTIVE MAINTENANCE PROCEDURE** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD**है|

स्थल/Place : Visakhapatnam
दि./Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

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Trust & Quality

**NEW AGE FAB TECHNOLOGIES PVT. LTD.**

Mfg.: Coded Heat Exchangers, Critical Process Equipment's & Pressure Vessels etc.

Date: 31/07/2023

## TO WHOM IT MAY CONCERN

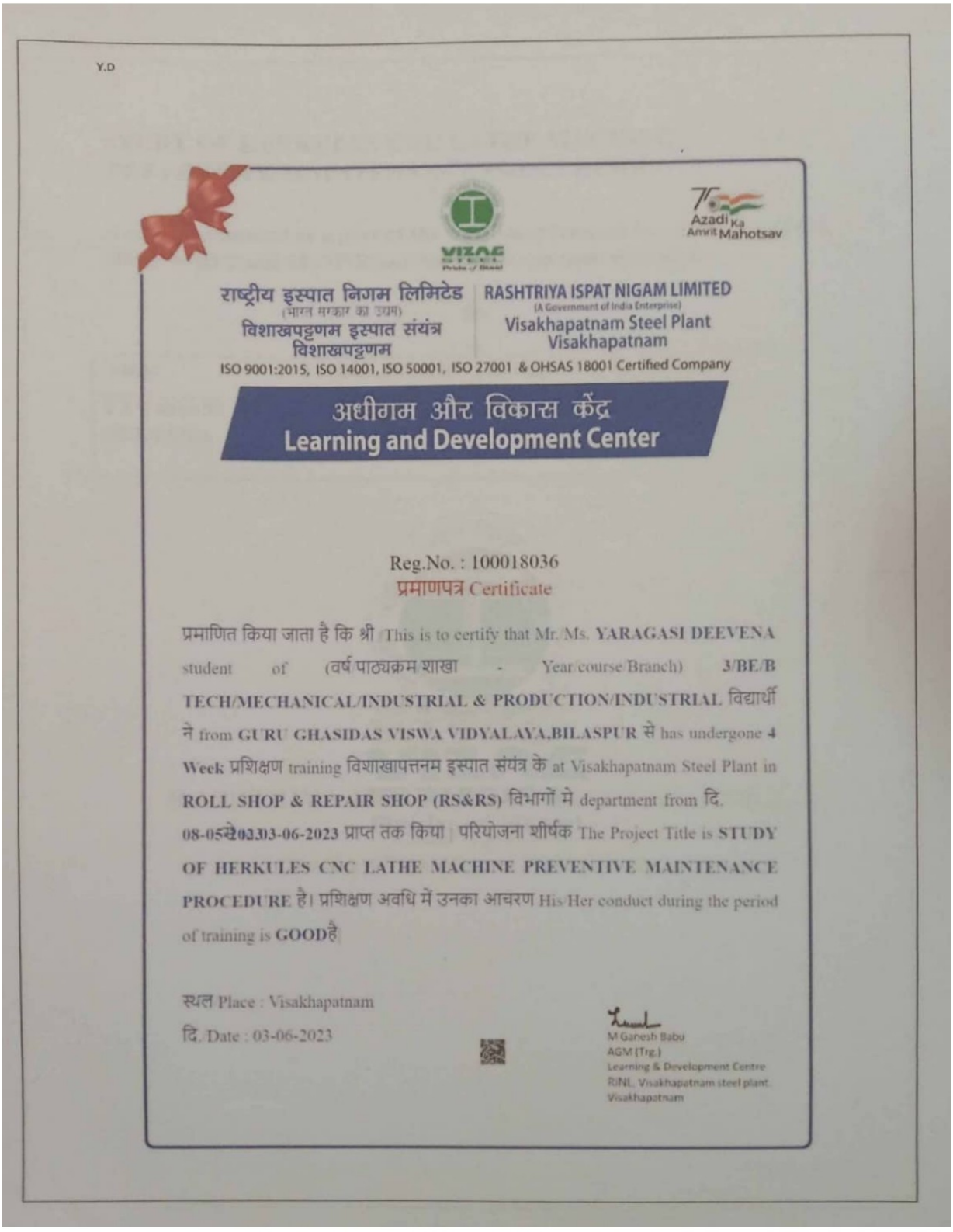
This is to certify that **Vivek Anand**, has successfully completed 03 (Three) months (From 1st May, 2023 to 31st July, 2023) internship programme in **Administration** at this **New Age Fab Technologies Pvt. Ltd.** During the period of his internship programme with us she was found punctual, hardworking and inquisitive.

Yours Sincerely,
For New Age Fab Technologies Pvt Ltd

NEW AGE FAB TECHNOLOGIES PVT. LTD. SURAT
NAFTech
Phone 9099944243

HR Department

Corporate Office: Plot no 181, Bhatpore GIDC, Magdalla-Hazira Road, Opp ONGC, Surat 394510 Gujarat, India.
P.: +91 90999 44243 | E.: naftech.surat@gmail.com | W.: www.naftech.in
CIN. U28112GJ2011PTC066450 | GST. 24AADCN6841N1Z4



Y.D

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राष्ट्रीय इस्पात निगम लिमिटेड
(भारत सरकार का उद्यम)
विशाखपट्टणम इस्पात संयंत्र
विशाखपट्टणम

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Visakhapatnam

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अधीगम और विकास केंद्र
Learning and Development Center

Reg.No. : 100018036

प्रमाणपत्र Certificate

प्रमाणित किया जाता है कि श्री /This is to certify that Mr./Ms. **YARAGASI DEEVENA** student of (वर्ष/पाठ्यक्रम/शाखा - Year/course/Branch) **3/BE/B TECH/MECHANICAL/INDUSTRIAL & PRODUCTION/INDUSTRIAL** विद्यार्थी ने from **GURU GHASIDAS VISWA VIDYALAYA,BILASPUR** से has undergone **4 Week** प्रशिक्षण training विशाखापत्तनम इस्पात संयंत्र के at Visakhapatnam Steel Plant in **ROLL SHOP & REPAIR SHOP (RS&RS)** विभागों मे department from दि. **08-05-2023** से **03-06-2023** प्राप्त तक किया। परियोजना शीर्षक The Project Title is **STUDY OF HERKULES CNC LATHE MACHINE PREVENTIVE MAINTENANCE PROCEDURE** है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is **GOOD** है

स्थल Place : Visakhapatnam

दि. Date : 03-06-2023

M Ganesh Babu
AGM (Trg.)
Learning & Development Centre
RINL, Visakhapatnam steel plant.
Visakhapatnam

# CERTIFICATE

JINDAL STEEL & POWER

JSP:RGH: HR&ES:2023 Date :03.07.2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Yogesh Chandra** is pursuing **B.Tech. in Industrial & Production Engineering** from **Guru Ghasi Das University, Bilaspur** has done his industrial training in our organization in **Industrial Engineering Dept**. The tenure of his internship at JSP Raigarh is as mentioned below:

Duration: **15th May'2023 to 30th June'2023**

During the above-mentioned period, Mr. Yogesh Chandra was punctual and sincere in his approach towards training.

We hope that the exposure at JSP, Raigarh, will definitely sharpen his professional abilities, which will be very helpful in achieving spectacular success in his professional career.

We wish his all the success.

**for JINDAL STEEL & POWER**

**Vimal Srivastava**
**AGM - HR & ES**