JOURNEY OF ENGINEERING EXCELLENCE

25TH ANNIVERSARY

1995-2020

GYANAM ANANTAM

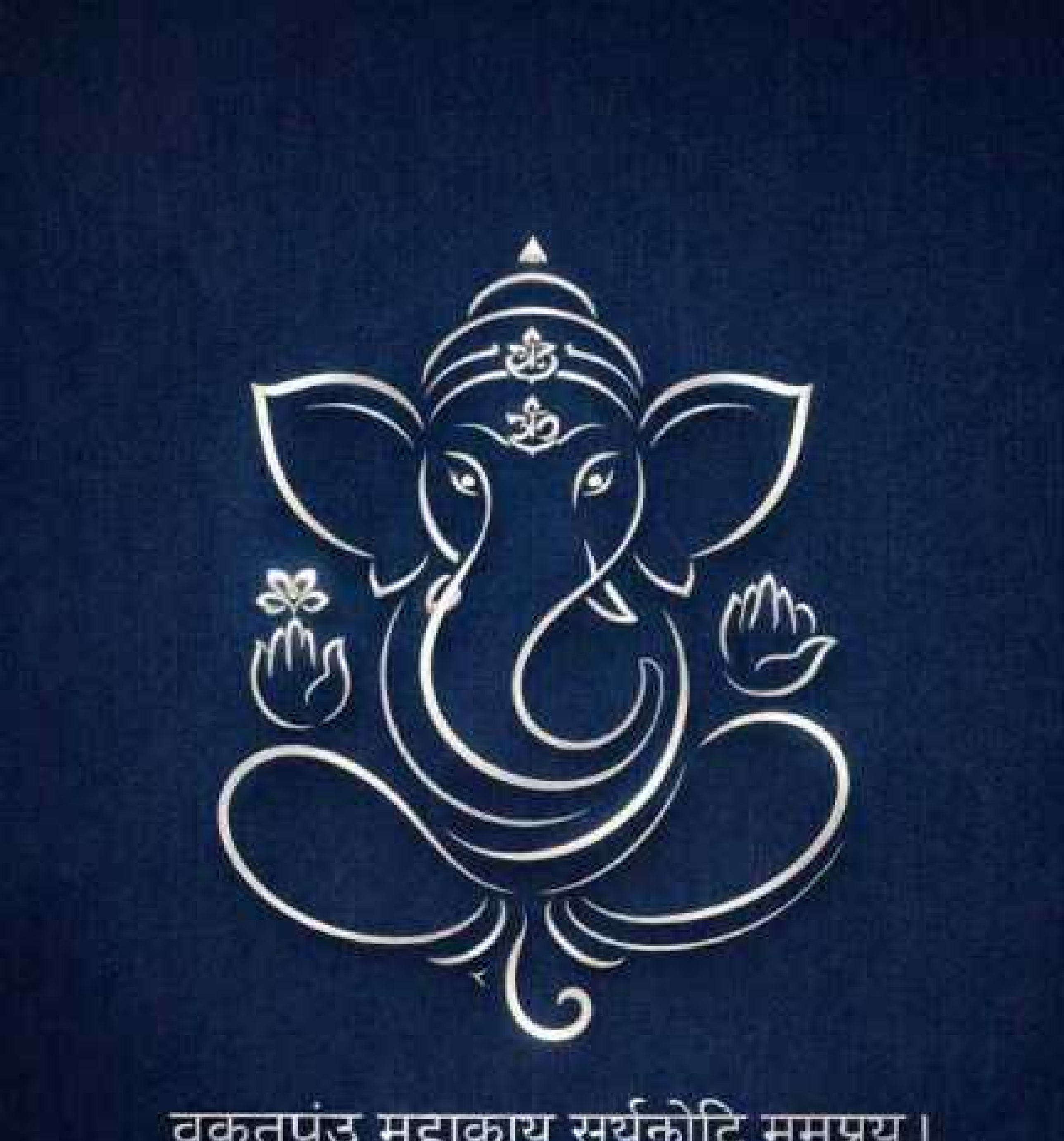
GOVERNMENT COLLEGE OF ENGINEERING, KEONJHAR

SILVER JUBILEE CELEBRATION

GYANAM ANANTAM

GOVERNMENT COLLEGE OF ENGINEERING, KEONJHAR

Government College of Engineering, Keonjhar



वुकतुपंउ महाकाय सूर्यकोटि ममप्रय ।
निबिंथन कुरु मे देव सयंकार्थंबंचु सर्बदा ॥

THIS SOUVENIR IS PUBLISHED

ON THE OCCASION OF THE

SILVER JUBILEE CELEBRATION

IN COMMEMORATION OF THE

25TH YEAR

OF GLORIOUS EXISTENCE OF THE

GOVERNMENT COLLEGE OF ENGINEERING,

KEONJHAR

***

11TH & 12TH APRIL, 2026

Silver Jubilee Celebration

Editor

Dr. Soumya Ranjan Mallick

Designing & Layout

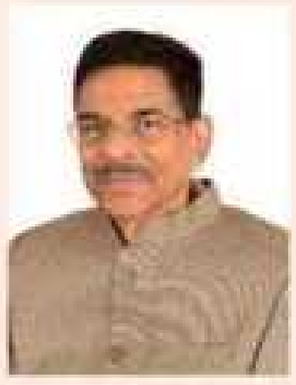
Ankit Kumar Nayak

Graphics

Guptesh Kumar Giri

Cover Page

Byomkesh Mishra



Dr. Hari Babu Kambhampati
Governor, ODISHA

सत्यमेव जयते

LOK BHAVAN
BHUBANESWAR-
751008

MESSAGE

I am delighted to know that Government College of Engineering, Keonjhar is celebrating its Silver Jubilee, marking twenty five years of excellence in technical education and dedicated service to society.

Over the years, the institution has contributed significantly to nurturing skilled engineers and professionals who are playing an important role in the industrial and socio-economic development. Such milestones reflect the commitment of the faculty, alumni and all stakeholders associated with the college.

I am also pleased to learn that a Commemorative Silver Jubilee Souvenir is being brought out on this occasion to highlight the institution's journey, achievements and future aspirations.

I wish the Silver Jubilee celebrations and the publication of the souvenir great success.

(Hari Babu Kambhampati)

MOHAN CHARAN MAJHI
CHIEF MINISTER, ODISHA

सत्यमेव जयते

LOKASEVA BHAVAN
BHUBANESWAR

MESSAGE

I am glad to know that the Government College of Engineering, Keonjhar is celebrating its Silver Jubilee on 11th and 12th April 2026 and bringing out a souvenir in commemoration.

Over the past twenty-five years, GCE Keonjhar has played a significant role in strengthening technical education in Odisha. By nurturing generations of skilled engineers, researchers, and professionals, the institution has contributed meaningfully to the industrial growth and socio-economic development. Its emphasis on quality education, research, and character-building continues to shape responsible citizens dedicated to nation-building.

I extend my warm greetings to the students, faculties on this occasion and wish the celebration all success.

(Mohan Charan Majhi)

ଶ୍ରୀ ସମ୍ପଦ ଚନ୍ଦ୍ର ସ୍ୱାଇଁ

ରାଷ୍ଟ୍ରମନ୍ତ୍ରୀ (ସ୍ୱାଧୀନ)

ଶିଳ୍ପ, ଦକ୍ଷତା ବିକାଶ ଓ ବୈଷୟିକ ଶିକ୍ଷା ଓଡ଼ିଶା

କାର୍ଯ୍ୟାଳୟ : (୦୬୭୪) ୨୫୩୦୬୫୦

ଇ.ପି.ଏ.ବି. ଏକ୍ସ.: ୨୩୨୨୧୯୭

ଇମେଲ:minind2024@gmail.com

ଭୁବନେଶ୍ୱର

ବାର୍ତ୍ତା

କେନ୍ଦୁଝରସ୍ଥିତ ସରକାରୀ ଯାନ୍ତ୍ରିକ ମହାବିଦ୍ୟାଳୟର ରଜତ ଜୟନ୍ତୀ ସମାରୋହ ଆସନ୍ତା ଏପ୍ରିଲ ମାସ ୧୧ ଓ ୧୨ ତାରିଖରେ ପାଳନ ହେଉଥିବା ଏବଂ ଏହି ଅବସରରେ ସ୍ମରଣିକା ପ୍ରକାଶ ପାଉଥିବା ଜାଣି ମୁଁ ଅତ୍ୟନ୍ତ ଆନନ୍ଦିତ ।

ବିଗତ ୨୫ ବର୍ଷ ଧରି ମହାବିଦ୍ୟାଳୟ ବୈଷୟିକ ଶିକ୍ଷା କ୍ଷେତ୍ରରେ ଗୌରବମୟ ଯାତ୍ରା ଅତିକ୍ରମ କରିଆସିଛି । ଗୁଣାତ୍ମକ ଶିକ୍ଷା ପ୍ରଦାନ, ଅଭିନବ ଗବେଷଣା ଏବଂ ଦକ୍ଷ ମାନବ ସମ୍ବଳ ବିକାଶ କ୍ଷେତ୍ରରେ ମହାବିଦ୍ୟାଳୟର ଅବଦାନ ପ୍ରଶଂସନୀୟ । ଆଗାମୀ ଦିନରେ ନୂତନ ଜ୍ଞାନକୌଶଳ ଓ ଗବେଷଣା ମାଧ୍ୟମରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ କେବଳ ନିଯୁକ୍ତିକ୍ଷମ କରିବ ନାହିଁ, ବରଂ ସେମାନଙ୍କୁ ଦକ୍ଷ ଉଦ୍ୟୋଗୀ ଭାବେ ଗଢ଼ି ତୋଳିବାରେ ସହାୟକ ହେବ । ରଜତ ଜୟନ୍ତୀ ଅବସରରେ ପ୍ରକାଶ ପାଉଥିବା ସ୍ମରଣିକାରେ ମହାବିଦ୍ୟାଳୟର ଶୈକ୍ଷିକ ଯାତ୍ରା ଓ ସଫଳତାର ପ୍ରତିଫଳନ ହେବ ବୋଲି ମୋର ବିଶ୍ୱାସ ।

ଏହି ଅବସରରେ ମୁଁ ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟାପକ, ଅଧ୍ୟାପିକା, ସମ୍ପାଦନାମଣ୍ଡଳୀ, ଛାତ୍ରଛାତ୍ରୀ ଏବଂ ଅଭିଭାବକଙ୍କୁ ଆନ୍ତରିକ ଶୁଭେଚ୍ଛା ଜଣାଇବା ସହ ସମାରୋହ ଏବଂ ସ୍ମରଣିକା ପ୍ରକାଶନର ସର୍ବସଫଳତା କାମନା କରୁଛି ।

ସମ୍ପଦ

(ସମ୍ପଦ ଚନ୍ଦ୍ର ସ୍ୱାଇଁ)

ଭୂପେନ୍ଦ୍ର ସିଂ ପୁନିଆ, ଭା.ପ୍ର.ସେ
Bhupendra Singh Poonia,
IAS

କମିଶନର-ତଥା-ଶାସନ ସଚିବ,
ଦକ୍ଷତା ବିକାଶ ଓ ବୈଷୟିକ ଶିକ୍ଷା ବିଭାଗ,
ଓଡ଼ିଶା ସରକାର
Commissioner-cum-Secretary,
Skill Development & Technical
Education Department,
Government of Odisha

MESSAGE

I am pleased to learn that the Government College of Engineering (GCE), Keonjhar, is celebrating its Silver Jubilee on the 11th and 12th April 2026. Completing twenty-five years of distinguished service in the field of technical education is a noteworthy milestone, reflecting the institution's sustained commitment to academic excellence, knowledge creation, and the development of professional talent.

Over the past two and a half decades, GCE Keonjhar has contributed significantly to quality pedagogy, innovative research, and the nurturing of a highly skilled and industry-ready workforce. In an era marked by rapid technological advancement and national priorities in innovation, digital transformation, and self-reliance, institutions of this stature play a vital role in strengthening human capital and fostering future-ready engineers and entrepreneurs.

I commend the faculty, staff, students, and alumni of GCE Keonjhar, as well as the organising committee, for their dedicated efforts in convening the Silver Jubilee celebrations. I also appreciate the initiative to bring out a commemorative souvenir, which will serve as a fitting tribute to the institution's remarkable twenty-five-year journey.

I wish the Silver Jubilee celebration every success and trust that this will inspire renewed commitment, meaningful collaboration, and continued academic excellence in the years ahead.

(Bhupendra Singh Poonia)

Shri Vishal Singh,
I.A.S
Collector & District
Magistrate, Keonjhar

KEONJHAR

MESSAGE

I am pleased to know that Government College of Engineering, Keonjhar is celebrating its Silver Jubilee on 11th & 12th April 2026 and bringing out a Souvenir to mark this important milestone.

The completion of twenty-five years of this esteemed institution is indeed a matter of pride for the district. Over the years, the college has played a significant role in imparting quality technical education and nurturing talented engineers who contribute to the development of society and the nation.

The Silver Jubilee celebration will be a wonderful opportunity for students, alumni, teachers and well-wishers to come together, reflect on the achievements of the past and renew their commitment towards excellence in education and innovation.

I congratulate the organizers for their efforts in arranging this celebration and bringing out the Souvenir. I wish the Silver Jubilee Celebration every success and extend my best wishes for the continued progress and bright future of the institution.

(Vishal Singh)

Prof. Amiya Kumar Rath
Vice Chancellor
BPUT, Odisha

Hd. Qrs.: BPUT Campus,
Chhend, Rourkela-769015
Phone : (0661) 2482557
Fax : (0661) 2482562
E-mail: vc@bput.ac.in

MESSAGE

I am delighted to learn that Government College of Engineering, Keonjhar is going to celebrate its Silver Jubilee function during the academic session 2025-26 marking 25 years of its dedicated service in the field of technical education on 11th & 12th April, 2026. Further, to commemorate the land mark occasion, a SOUVENIR of the celebration is being brought out. I take this opportunity to extend my best wishes to all the faculty members, staff, students and the editorial board who have been instrumental in this Silver Jubilee function and wish all success for the sound growth of this institution.

Amiya Kumar Rath.

(Prof. Amiya Kumar Rath)

संजीव कुमार सिंह
अध्यक्ष एवं प्रबन्ध निदेशक

SANJIV KUMAR SINGH
Chairman & Managing
Director

हिन्दुस्तान कॉपर लिमिटेड
HINDUSTAN COPPER LIMITED
(भारत सरकार का उपक्रम)
(A GOVT. OF INDIA ENTERPRISE)
ताम्र भवन / TAMRA BHAVAN,
1, आशुतोष चौधरी एवेन्यू,
1, ASHUTOSH CHOWDHURY AVENUE कोलकाता /
KOLKATA-700 019
दूरभाष / Phone: (033) 2283-2725, 2281-6222
ई-मेल / E-mail: sanjivkumarsingh@hindustancopper.com
cmd@hindustancopper.com
CIN: L27201WB1967GOI028825

MESSAGE

It gives me immense pleasure to extend my heartiest congratulations to the Government College of Engineering (GCE), Keonjhar, as it celebrates its Silver Jubilee. Over the past 25 years, this institution has transformed from its origins as the Orissa School of Mining Engineering into a premier multi-disciplinary destination for technical education GCE's "Journey of Engineering Excellence" has been. instrumental in nurturing the skilled professionals who drive India's mineral and mining sectors.

The Silver Jubilee Innovation Conclave (SJIC 2026), scheduled for April 11th and 12th, arrives at a critical juncture for our industry. As we look toward Industry 5.0 and the integration of AI-driven technologies in engineering, the themes of this conclave-ranging from Net-zero engineering to the beneficiation of critical and rare earth. minerals are perfectly aligned with the national vision for a sustainable and technologically advanced India.

Hindustan Copper Limited (HCL), as "The Copper Miner to the Nation," is proud to be associated with this milestone as a Silver Sponsor. We recognize that the future of sustainable mining and metal production relies heavily on the synergy between industrial operations and academic research. The participation of practicing engineers, policymakers, and students in this Conclave will undoubtedly spark the innovation required to meet the contemporary challenges of our era.

On behalf of the entire HCL family, I wish the organizers, the Alumni Association, and all delegates a highly productive and inspiring event. May the Silver Jubilee celebrations be a grand success, and may GCE Keonjhar continue to shape competent engineers who contribute to the growth and social responsibility of our nation for decades to come.

Sanjiv Kr. Singh

Sanjiv Kumar Singh
Chairman and Managing Director

Prof. P.K. Senapati
BoG Chairman,
GCE Keonjhar

Government College of Engineering, Keonjhar

MESSAGE

My heartiest congratulations on completing 25 glorious years of excellence! Your Silver Jubilee is a celebration of vision, teamwork, and unwavering dedication. It gives me great pleasure to acknowledge the Silver Jubilee Celebration of the Government College of Engineering (GCE) Keonjhar, scheduled for the 11th and 12th April 2026. The institution's dedication to quality pedagogy, innovative research, and the development of a highly skilled workforce is truly commendable. As we look toward the future, I am confident that the college will continue to leverage emerging technologies to transform students into not only industry-ready professionals but also visionary entrepreneurs.

I extend my warmest congratulations to the faculty, staff, students, the editorial board and wish the Silver Jubilee celebrations every success.

Thank you to everyone who contributed to this incredible journey.

Prof. P. K. Senapati
BoG Chairman, GCE Keonjhar

Prof. Saroj Kumar Sarangi
Principal,
GCE, Keonjhar

Government College of Engineering, Keonjhar

MESSAGE

I heartly congratulate all on completing twenty-five glorious years of excellence. This Silver Jubilee is a celebration of togetherness, memories and milestones, commitment, strength, dedication and beautiful testament to love.

It gives me immense pleasure to acknowledge the Silver Jubilee Celebration of the Government College of Engineering (GCE) Keonjhar, scheduled for 11th and 12th April 2026. The institution's dedication to quality pedagogy, innovative research and the development of a highly skilled workforce is truly commendable. As we look toward the future, I am confident that the college will continue to leverage emerging technologies to transform students into not only industry-ready professionals but also visionary entrepreneurs.

I extend my warmest congratulations to the faculties, staffs and students and I wish the Silver Jubilee celebrations every success. Thank you to everyone who contributed to this incredible journey.

Congratulations to All on this wonderful journey and beyond.

Prof. Saroj Kumar Sarangi
Principal, GCE Keonjhar

Mr. Ajit Patra
President,
Alumni Association

Government College of Engineering, Keonjhar

MESSAGE

It gives me immense pride and heartfelt pleasure to extend my warm greetings to the entire GCE- Keonjhar family on the momentous occasion of its Silver Jubilee celebration.

Twenty-five years is not just a milestone in time, but a testament to the institution's unwavering commitment to academic excellence, innovation, and character building. From its humble beginnings with no infrastructure to its present stature, GCE Keonjhar has grown into a beacon of knowledge, shaping countless young minds and nurturing future ready leaders and responsible citizens.

As an alumnus and serving as the President of the Alumni Association, I feel deeply honoured to be part of this incredible journey. The values, friendships, and experiences we gained here continue to guide us in our personal and professional lives. The bond we share with our alma mater is timeless, and this celebration rekindles those cherished memories while inspiring us to give back even more meaningfully.

The Silver Jubilee is not only a celebration of the past but also a gateway to the future. It is an opportunity for all stakeholders—students, faculty, alumni, and well-wishers—to come together, reflect on achievements, and collectively envision a brighter, more impactful path ahead.

On behalf of the alumni community, I extend my sincere gratitude to the faculty and administration for their dedication and tireless efforts in upholding the legacy of this institution. I also encourage our fellow alumni to stay connected, contribute actively, and support the continued growth and excellence of GCE Keonjhar.

May this institution continue to flourish, inspire, and reach greater heights in the years to come.

Wishing everyone a memorable and grand Silver Jubilee celebration.

With warm regards,

Ajit Patra
President, Alumni Association

Dr. Soumya Ranjan Mallick,
PIC, Alumni Affairs & Convenor, Silver Jubilee Celebration

Government College of Engineering, Keonjhar

MESSAGE

The celebration of the **Silver Jubilee of Government College of Engineering, Keonjhar** is not merely a milestone of time, but a celebration of a legacy shaped by generations of students, faculty, and alumni who have carried the spirit of this institution far beyond its campus.

As the Professor In-Charge, Alumni Affairs and Convenor of this Silver Jubilee Celebration, it is deeply fulfilling to witness the strong and enduring bond that connects our alumni community with their alma mater. Each alumnus is a reflection of the institution's values, achievements, and aspirations, and together they form a vibrant network that continues to inspire and uplift the present generation.

This Silver Jubilee is a unique opportunity to reconnect, to relive cherished memories, and to celebrate the shared journey that binds us all. It is also a moment to acknowledge the contributions of those who have played a role in shaping the institution's growth over the past twenty-five years.

As we come together to mark this significant occasion, we reaffirm our commitment to strengthening alumni engagement, fostering collaboration, and building a future that honours our past while embracing new possibilities.

I extend my heartfelt greetings and best wishes to all members of the GCE Keonjhar fraternity and look forward to welcoming our alumni back to their home—where their journey once began.

With warm regards,

Dr. Soumya Ranjan Mallick
PIC – Alumni Affairs & Convenor, Silver Jubilee Celebration

Dr. Umakanta Behera,
Co – Convenor, Silver Jubilee Celebration

Government College of Engineering, Keonjhar

MESSAGE

Twenty-five years is more than a passage of time—it is a journey of dreams, dedication, and transformation. As we celebrate the Silver Jubilee of our beloved alma mater, we look back with pride on a legacy built on academic excellence, personal growth, and lifelong bonds.

From our humble beginnings as Orissa School of Mining Engineering, Keonjhar (Degree Stream), to the institution we cherish today, every step reflects resilience and aspiration. This Souvenir is not just a collection of memories, but a living tapestry of voices, experiences, and hopes that continue to shape our future.

I extend my heartfelt gratitude to our Alumni Society, dedicated faculty, staff, and spirited students whose commitment keeps this legacy alive.

May this milestone inspire us to reach even greater heights in the years to come.

Umakanta Behera

Dr. Umakanta Behera
Co-Convenor, Silver Jubilee Celebration
Government College of Engineering, Keonjhar

CONTENTS

CONTENTS

CONTENTS

EDITORIAL

DR. SOUMYA RANJAN MALLICK **[GCE, KEONJHAR]**
[EMAIL: mallicksoumyaranjan@gmail.com]

The twenty-fifth year of an institution is a landmark that occurs but once in a lifetime—a Silver Jubilee that radiates a profound sense of fulfilment. As we gather to celebrate this milestone, our hearts swell with the sweetness of shared success, even as we pause in a quiet, solemn moment of silence. We remember those cherished souls who walked these halls with us but have since departed for their heavenly abode; though they are no longer here to share this day, their spirits remain woven into the fabric of our joy.

This anniversary is a living tribute to a vast universe of visionaries. It is the result of the tireless dedication of teachers, the steadfast support of staff, and the vibrant energy of thousands of students who have poured their best selves into this sanctuary of learning. Together, they have sculpted the glory our Alma Mater enjoys today as a beacon of technical education in Odisha. The journey of these twenty-five years is marked by a unique character—a spirit of resilience and excellence that we have sought to capture in the very artistry of this souvenir's cover.

Serving as the editor of this compendium has been a deeply rewarding journey. Within these pages, our alumni have contributed a rich mosaic of articles, the heart of which lies in the "Reminiscences" section. Here, authors have reached back into the "bosom of the Alma Mater," pulling forward memories painted with a tender mix of sentiment, laughter, and perhaps a dash of old-school mischief. As you read, you may find yourself transported, swaying gently back toward the sun-drenched landscapes of your own youth.

To make this souvenir a true collector's item, we have nested several distinct sections:

- **Alma Mater:** This section features exhaustive writings on the history of GCE, Keonjhar, including a meticulous chronicle.
- **Creative & Technical Spaces:** From the "Personal Space" section reflecting life experiences to delicate "Poems" and rigorous "Technical Articles," this compendium offers a balance of heart and intellect.
- **The Archives:** We have gathered rare images spanning the full twenty-five years. While some of the oldest photographs may show the grain of time, their "poor quality" is more than compensated for by the priceless, unforgettable moments they preserve.

This publication is the result of an immense collective effort. I am profoundly grateful to the authors for their "labour of love" and for their grace in handling my persistent reminders. My thanks also go to the friends who rummaged through their personal "kits" to find the photographic gems that grace these pages, and to our valued sponsors whose support made this possible.

While I have strived for perfection, any flaws within these pages rest solely with me. I invite you to read with a graceful heart and let these stories carry you home.

Happy Reading!

ABOUT
ALMA MATER

DR. SOUMYA RANJAN MALLICK, MRS. BHAKTISHREE NAYAK [GCE, KEONJHAR]

Established in 1995 and rooted in the historic legacy of the Orissa School of Mining Engineering (Degree Stream), the Government College of Engineering (GCE), Keonjhar, has emerged as a premier technical institution in Northern Odisha. Over the decades, the college has strategically evolved, integrating modern pedagogical standards with its foundational commitment to technical excellence.

Currently affiliated with the Biju Patnaik University of Technology (BPUT) and approved by the AICTE, GCE Keonjhar offers a comprehensive academic portfolio across seven undergraduate B.Tech disciplines: Mining Engineering, Mechanical Engineering, Electrical Engineering, Mineral Engineering, Metallurgical & Materials Engineering, Computer Science & Engineering, Civil Engineering.

The Government of Odisha has designated GCE Keonjhar as a Centre of Excellence, specifically highlighting its leadership in Mining and allied industries. It holds the distinction of being the only government institution in the state dedicated to Mining and Mineral Engineering. This specialization is bolstered by the college's strategic location in the Keonjhar district—a region globally recognized for its vast reserves of iron ore and diverse mineral wealth.

The Institution’s mission is centered on cultivating high-caliber technocrats equipped to drive national development. This objective is realized through:

1. Expert Faculty: A cadre of experienced and highly qualified educators,
2. Modern Pedagogy: A curriculum designed to meet contemporary industrial demands through advanced teaching methodologies.
3. Industrial Synergy: Strong institutional linkages that facilitate robust internship programs, industrial training, and live projects. By bridging the gap between theoretical academic frameworks and real-world industrial applications, GCE Keonjhar ensures its graduates are uniquely prepared to navigate the complexities of the global engineering sector.

STRATEGIC CONNECTIVITY AND INFRASTRUCTURE

Situated across a sprawling 36.90-acre campus, the Government College of Engineering, Keonjhar, offers a serene academic environment framed by verdant hills and valleys. The institution leverages its picturesque landscape—characterized by natural forests and waterfalls—to foster a setting conducive to both rigorous intellectual pursuit and personal development.

GCE Keonjhar benefits from a prime location on National Highways 6 and 215, ensuring seamless connectivity to major regional economic and academic hubs, including: Odisha: Bhubaneswar, Cuttack, Rourkela, and Sambalpur, & Neighboring Cities: Jamshedpur and Kolkata. The campus is conveniently located 5 km from the Kendujhargarh railway station, with the nearest primary air hub situated in Bhubaneswar. The institution's physical infrastructure is undergoing continuous modernization. Current facilities include: Four Academic Blocks and a dedicated Workshop Block, State-of-the-art Laboratories tailored for specialized technical training & Digital Library, providing students with comprehensive access to global research databases and academic literature.

MISSION AND VISION

The institution aims to develop engineers with global expertise and practical skills, capable of excelling in interdisciplinary environments. It fosters innovation, entrepreneurship, leadership, critical thinking, and problem-solving abilities to enable meaningful contributions to society and industry. Emphasis is placed on sustainable development, ethical values and holistic professional responsibility. The vision is to become a centre of excellence in higher education, producing demand-driven graduates with strong technical expertise, analytical abilities, and adaptability. By integrating advanced technologies and quality education, the institution strives to achieve a distinguished position among premier technical institutes and contribute to academic excellence, industry growth, and nation building.

A LEGACY OF EXCELLENCE: THE 25-YEAR JOURNEY OF GCE, KEONJHAR

Government College of Engineering (GCE), Keonjhar, holds a distinguished position as the premier state-governed engineering institution in Northern Odisha. Its evolution from a specialized mining school to a multi-disciplinary engineering hub is a testament to academic resilience and community leadership.

The Institution's roots trace back to its tenure as the Orissa School of Mining Engineering (Degree Stream). From 1995 to 2000, the college operated under the aegis of the Department of Industries. Following a brief hiatus in student admissions between 1998 and 2000, a concerted advocacy effort was launched to restore the institution's academic functions. This successful revival in 2001 was driven by the collective vision of Shri Mohan Charan Majhi, the present Hon'ble Chief Minister, Shri Ananta Nayak, Hon'ble Member of Parliament, the respected Legislative Assembly members of Keonjhar District & the proactive involvement of the Keonjhar Nagarika Manch and the student body. Marking a new era for the college, the foundation stone for the current integrated campus at Jamunalia was formally laid on December 16, 2006.

“Foundation stone laying ceremony of GCE, Keonjhar (Formerly OSME (Degree stream), Keonjhar)”

The Institution has undergone a significant transformation in its identity, infrastructure, and academic scope over the last three decades, positioning itself as a cornerstone of technical education in Odisha. For fifteen years (1995–2010), the college operated from the diploma wing of OSME, Keonjhar. A major milestone was achieved in 2011 when the institution transitioned to its dedicated permanent campus at Jamunalia, Keonjhar. In 2012, the Skill Development and Technical Education Department officially rebranded the institution as the Government College of Engineering (GCE), Keonjhar, reflecting its expanded mandate beyond its original mining focus. Today, GCE Keonjhar stands as a self-governed, premier technical institution, committed to fostering innovation and excellence from its Jamunalia campus.

STUDENT LIFE AND HOLISTIC DEVELOPMENT

The college prioritizes a balanced student experience through robust residential and extracurricular frameworks:

- Residential Amenities: High-quality hostels for men and women are equipped with essential utilities, including high-speed Wi-Fi, fitness centers, and common recreational zones,

- Engagement & Innovation: Through various technical and cultural clubs, students are encouraged to explore interests beyond the classroom. The flagship annual festival, “Utkarsh,” alongside various technical symposia, serves as a premier platform for showcasing innovation and creative talent,

- Athletics: Dedicated infrastructure for sports such as cricket and badminton ensures physical well-being and fosters a spirit of teamwork.

CAREER ADVANCEMENT AND PLACEMENT

A proactive Training & Placement Section serves as the bridge between academia and industry. By organizing regular placement drives and professional grooming sessions, the Section ensures that students secure opportunities with top-tier organizations. Our students have been successfully placed in leading upstream sectors and prestigious organizations such as Apmosys, Cognizant, Adani Group, Vedanta, Balasore Alloys, MRF Tyres, Kashvi International, LTI Mindtree, Eco space, TMC Mineral Resources, MSP Group, Shyam Metallics, and Lloyds Consulting & Engineering, among others. These placements reflect the strong industry readiness, technical competence, and professional excellence of our graduates. A significant number of GCE students have secured positions among the top ranks in Civil Services examinations (OCS), while many have successfully qualified for prestigious roles such as OPSC Mining Officers and Odisha Engineering Service (OES) Officers, reflecting the academic excellence and competitive strength of the institution.

TECHNICAL SOCIETIES: CULTIVATING HOLISTIC EXCELLENCE AT GCE KEONJHAR

The Student Society at the Government College of Engineering (GCE), Keonjhar, serves as the cornerstone of campus life, fostering an environment rooted in inclusivity, cooperation, and active engagement. Beyond the rigorous academic curriculum, the Society provides a vital platform for students to cultivate a sense of belonging while developing the "soft skills" essential for professional success. Through a diverse portfolio of seminars, workshops, and competitions, the Society bridges the gap between theoretical learning and industry application. These initiatives empower students with leadership experience, ethical grounding, and creative problem-solving abilities, ensuring they graduate as well-rounded professionals. Each academic department at GCE Keonjhar maintains a specialized society or professional chapter, allowing students to align their extracurricular pursuits with their specific career trajectories. By serving as a liaison between students and industry professionals, the Society ensures that the students of GCE Keonjhar are not only technically proficient but also socially aware and industry-ready. Through leadership roles and event management, students gain the confidence required to make meaningful contributions to their future professions and the wider community.

CAMPUS LIFE AND TECHNICAL FESTIVALS

GCE Keonjhar is renowned for its vibrant campus culture, highlighted by several high-energy festivals that promote innovation and inter-disciplinary collaboration: 1. UTKARSH: The flagship annual event, blending cultural heritage with technical prowess, 2. XENESIS: The premier technical symposium, featuring high-stakes competitions such as Hackathons and Robo-Wars, 3. Annual Technical Fest: A regional attraction that draws talent from various colleges to compete in robotics, automation, and IoT challenges. To celebrate the unique identity of each discipline, the college hosts targeted festivals: ANWESHAN, VIDYUTTAM, NIRMAAN, MXPLORE, DHATVIK.

THE STUDENT ACTIVITY CENTRE: A HUB FOR INNOVATION AND CREATIVITY

At the Government College of Engineering (GCE), Keonjhar, the Student Activity Centre (SAC) serves as the primary conduit for student governance and extracurricular excellence. The Institute places a high premium on student perspectives, empowering the collective student body to shape campus culture. This collaborative "team-first" philosophy is the cornerstone of the institution’s success in hosting high-impact events and fostering a dynamic learning environment beyond the classroom.

TECHNICAL & RESEARCH CLUBS

The technical landscape at GCE Keonjhar is driven by a dynamic cluster of student-led societies. Under the strategic guidance of SARC, clubs like Club Innovare and RAW push the boundaries of coding and robotics through hands-on innovation. The Innovation and Entrepreneurship Cell (IEC), also known as Bizruptors, serves as a premier incubator for startup culture and leadership. Complemented by specialized branches for Mining and Mechanical engineering, these groups bridge the gap between classroom theory and industrial application, ensuring every student graduates with a competitive, professional edge.

S.A.R.C. (SPACE ADVANCEMENT & RESEARCH CELL)

Established in 2025, SARC is the frontier for aerospace enthusiasts at GCE. The cell currently focuses on high-altitude challenges and model rocketry. Its strategic roadmap includes: Satellite Design: Developing CubeSats and small-scale orbital projects, Mission Simulation: Conducting astrophysics research and space mission modelling & Industry Collaboration: Partnering with national space agencies to provide students with hands-on technical experience.

ROBOTICS AND AUTOMATION CLUB (RAW)

RAW is a multidisciplinary community dedicated to the design and fabrication of autonomous systems. The club provides a comprehensive support ecosystem for its members, offering: 1. Technical Workshops: Specialized training in mechanical design, electronics, and automation, 2. Resource Support: Access to financial aid, hardware components, and expert mentorship for innovative projects & 3. Competitive Platforms: Organizing internal and inter-collegiate robotics competitions to sharpen real-world engineering skills.

ENTREPRENEURSHIP AND PROFESSIONAL DEVELOPMENT

Inaugurated in 2025, Bizruptors is the epicentre of startup culture on campus. The cell has already established a strong presence by participating in the National Entrepreneurship Challenge (NEC) and hosting the IIT Bombay-affiliated "Illuminate" workshop.The E-Cell of Government College Of Engineering, Keonjhar has secured 31st rank among 4000 colleges competing all across India.

CREATIVE ARTS & MEDIA

The creative and media pulse of GCE Keonjhar is defined by the collaborative synergy between Foresight and the Incredible Dance Crew (IDC). While Foresight serves as the institution’s visual chronicler through professional photography, cinematography, and digital storytelling, IDC acts as the rhythmic heartbeat of the campus, delivering high-energy choreographed performances that span diverse genres. Together, these premier clubs balance the college's technical rigor with artistic excellence, ensuring that every milestone—from scenic campus life to major state-level fests—is both celebrated with passion and preserved through a sophisticated, cinematic lens.

IDC (DANCE & MUSIC CLUB)

The IDC focuses on developing students as physically articulate and expressive communicators of the performing arts. Cadence (Music Wing provides a professional platform for vocalists and instrumentalists across all genres. From the Dramatic Fest to the Technical Fest, these musicians curate high-energy performances that define the campus atmosphere, demonstrating exceptional time management and artistic dedication.

FORESIGHT (THE PHOTOGRAPHY CLUB)

Foresight is a creative collective of amateur photographers and cinematographers from all academic departments. The club serves as the official media body for the college, while providing structured skill development in 1. Technical Mastery: Training in advanced camera operations and lighting, 2. Post-Production: Workshops on professional graphic design and video editing software, 3. Creative Expression: Empowering students to evolve from hobbyists to short-film makers and visual storytellers.
Through these diverse societies, GCE Keonjhar ensures that every student has the opportunity to discover, develop, and deploy their creative and technical talents, preparing them for a multifaceted professional career.

ABOUT THE ALUMNI ASSOCIATION OF GCE, KEONJHAR

Government College of Engineering (GCE), Keonjhar is supported by a strong and dynamic alumni network, represented by the GCE, Keonjhar Alumni Association. Initially established in 2006 as the OSMIANS Degree Society, it was subsequently registered under the Societies Registration Act, 1860 as the GCE Alumni Association in 2025. Notably, two alumni members serve on the Board of Governors, contributing significantly to the institution's governance.

The association comprises accomplished professionals who are well placed in leading companies and upstream industries both in India and abroad, and who actively contribute to the institution's growth and development. Alumni play a crucial role as mentors, providing continuous guidance in academic as well as administrative matters. The college also organizes an annual alumni meet, "Samaavesh," to foster stronger connections and sustained engagement.

The Alumni Association has further played a pivotal role in organizing the Silver Jubilee Celebration, with its members actively participating through their representation in the Steering Committee.

FUTURE DEVELOPMENT

Plans are underway to expand the campus footprint with additional academic wings, advanced residential quarters, administrative facilities, and integrated recreational parks. Over the next 25 years, GCE aims to evolve into a well-recognized centre of excellence in engineering education and research. It will strengthen industry collaborations, promote innovation and startups through incubation centres, and enhance research output. Infrastructure will be modernized with smart classrooms, advanced laboratories, and digital learning platforms. Emphasis will be placed on exceptionally well-structured academics, faculty development, and interdisciplinary learning. GCE aspires to produce industry-ready graduates, contribute to technological advancement, and play a significant role in national and global development.

CONCLUSION

GCE Keonjhar remains steadfast in its commitment to excellence, serving as a premier hub for learning and innovation. By integrating technical mastery with social responsibility, the institution continues to shape the next generation of industry-ready engineers

Thriveni Earthmovers and Infra Private Limited

THRIVENI

A Global Mining Company which believes in Inclusive Growth

Our Business Segments


Mining Joint Venture


Mining MDO


Contract Mining


Irrigation & Construction


Exploration


HEMM Leasing


Pellet Manufacturing


Logistics & Trading


Manufactured Sand

- Producing 250 Million BCM per Annum of Minerals
- State of the art Heavy Earthmoving Machinery(HEMM) Refurbishment Facility
- Iron Ore, Coal, Baryte, Manganese, Aggregate Mining in India & Indonesia
- 26 Years Old Company
- 15000 Team Strength
- 5000 Mining Fleets

"Thriveni" is world class leading Mine Developer & Operator with a revenue of ~USD 1 Billion. We operate some of the largest mines in India, Indonesia and presence in DRC and Australia.

We currently handle and move more than 250 million bcm of minerals and associated Overburden per annum. We have wide experience across a wide range of minerals:

- Largest private iron ore producer in India (42 MTPA)
- Operating single largest coal pit for National Thermal Power Corporation Ltd (NTPC), India (18 MTPA)
- Operating largest Baryte mine in the world for APMDC, India (3 MTPA)
- Thriveni Rebuild Centre (TRC) equipment refurbishment and testing, one of the largest in Asia.
- Integrated Iron ore pellet plant (4MTPA) & Beneficiation plant (4.7MTPA) with underground slurry pipeline of 218Km, one of the largest in India.
- Operating Thermal Coal Mines in Indonesia with an annual production of 4 Million Tons of coal per year.
- Started operation of Gold mines at Jonnagiri.
- Started Copper Mines at DRC.

We have Invested in Lloyds Surjagarh Iron Ore mine, BRPL iron ore slurry pipelines and pellet manufacturing facility at Odisha.

Thriveni is also the mining service provider with ISO 9001:2008, ISO 14001:2004, BS OHAS 18001:2007

Regional Office Address

Thriveni Earthmovers and Infra Private Limited

At.Rugudii, Po. Guali, Dist. Keonjhar, Odisha - 758086

+91-427-2447667 www.thriveni.com

Find us on:

@Thriveni_Group

VPR

ENGINEERS LIMITED

INTEGRATED INFRASTRUCTURE & TECHNOLOGY SOLUTIONS

DIVERSIFIED CAPABLE INTEGRATED

OUR STRENGTHS

WATER & ENVIRONMENT

IRRIGATION

POWER T&D

ROADS & TUNNELS

MINING

PORTS

SMART METERING

IT INFRASTRUCTURE SOLUTIONS

DELIVERING EXCELLENCE ACROSS 6 KEY SECTORS — PAN INDIA

29 YEARS OF EXCELLENCE

12 INDIAN STATES

HIGH CALIBRE PROJECTS DELIVERED

COMMITTED TO QUALITY, SAFETY & SUSTAINABILITY

TECHINCAL ABSTRACTS/ EXTENDED ABSTRACTS

JOURNEY OF ENGINEERING EXCELLENCE

CRITICAL MINERALS IN ODISHA

AND THE CURRENT SCENARIO

DR. SOUMYA RANJAN MALLICK & MAHESH MUNDA **[GCE, KEONJHAR]**
EMAIL- mallicksoumyaranjan@gmail.com , mahesh.rjm123@gmail.com

EXTENDED ABSTRACT

Critical minerals have emerged as a cornerstone of economic development, technological advancement, and national security for modern economies. These minerals are characterised by their essential role in strategic sectors and their vulnerability to supply disruptions due to limited availability or geographically concentrated production. Recognising their importance, the Government of India identified 30 critical minerals through a comprehensive assessment considering factors such as resource availability, import dependency, clean energy applications, and industrial demand. These include minerals such as cobalt, lithium, nickel, rare earth elements (REE), graphite, titanium, and others that are vital for emerging technologies and sustainable development.

Odisha plays a significant role in India's critical mineral landscape, hosting 10 out of the 30 identified minerals, namely cobalt, copper, graphite, nickel, platinum group elements (PGE), rare earth elements, tin, titanium, vanadium, and zirconium. Among these, graphite and titanium have confirmed reserves, while others are primarily in the resource stage. The state is particularly rich in cobalt, accounting for approximately 69% of India's total resources, mainly concentrated in the Sukinda region of Jajpur district. Similarly, Odisha contributes about 68% of India's PGE resources and has substantial nickel deposits in the Sukinda Valley and surrounding districts. Graphite reserves are widely distributed across districts such as Nayagarh, Balangir, and Kalahandi, while titanium and zirconium are associated with coastal placer deposits. This mineral wealth positions Odisha as a strategic hub for supporting India's ambitions in clean energy, advanced manufacturing, and technological self-reliance.

The importance of critical minerals is closely linked to India's transition towards a low-carbon economy and its commitment to achieving net-zero emissions by 2070. Minerals such as lithium, cobalt, and nickel are fundamental to lithium-ion battery technologies that power electric vehicles (EVs), renewable energy storage systems, and portable electronics. With India targeting 30% EV penetration by 2030 and aiming to achieve 500 GW of renewable energy capacity, the demand for these minerals is expected to increase significantly. In addition, critical minerals like gallium and germanium are essential for semiconductor manufacturing, while vanadium and graphite are important for next-generation energy storage solutions. The development of domestic capabilities in the exploration, extraction, and processing of these minerals can reduce import dependency, enhance strategic autonomy, and strengthen India's position in global supply chains.

Despite its potential, India faces several challenges in securing a stable supply of critical minerals. A major concern is the high level of import dependency, particularly on countries like China, which dominates global production and processing of rare earth elements and other critical minerals. Limited exploration data and inadequate geological surveys have resulted in low investor confidence, as many mineral blocks lack advanced exploration status. Additionally, India faces a significant processing gap, as domestic refining and value addition capabilities remain underdeveloped. Policy implementation challenges, high capital investment requirements, long project gestation periods, and environmental concerns further complicate the development of the sector. The growing volume of electronic waste also highlights the need for efficient recycling systems, as valuable minerals such as cobalt and rare earth elements are often lost due to informal recycling practices.

Addressing these challenges requires a comprehensive and integrated policy framework. The establishment of a dedicated national authority or centre of excellence for critical minerals would enable effective coordination across exploration, extraction, processing, and recycling activities. Strategic stockpiling of high-demand minerals can serve as a safeguard against potential supply disruptions. In addition, targeted policy interventions—such as fiscal incentives, including subsidies, tax concessions, and concessional financing—can stimulate greater private sector participation in exploration and mining. Strengthening international collaboration through mineral diplomacy and engagement in global partnerships can further diversify supply chains and mitigate geopolitical risks. Moreover, the promotion of downstream industries through production-linked incentive (PLI) schemes can enhance domestic manufacturing capabilities in key sectors, including batteries, solar technologies, and electric vehicle components.

The development of a robust and efficient recycling ecosystem is equally critical for the recovery of valuable minerals from electronic waste and end-of-life batteries. Enhanced investment in research and development, particularly in advanced exploration technologies and sustainable mining methodologies can significantly improve resource efficiency while minimizing environmental impacts. Furthermore, the expansion of infrastructure in mineral-rich regions, including transportation networks and energy systems, is essential to support and streamline mining operations. A strong emphasis on environmentally responsible mining practices, coupled with community engagement and targeted skill development initiatives, will ensure that resource extraction is conducted in a manner that is both ecologically sustainable and socially inclusive.

In conclusion, Odisha is the backbone of India's strategic autonomy in the green energy transition, hosting 10 of India's 30 critical minerals — especially Cobalt (69% of the national total), PGE (68%), and Nickel. Cobalt, Nickel, and PGE together represent over 78% of Odisha's total critical mineral resources by tonnage. Aligning Odisha's mineral wealth with India's Net-Zero 2070 target requires urgent action on domestic processing, policy reform, international partnerships, and sustainable mining practices.

Keywords: Sustainable Mining; Critical Minerals; Odisha; Energy Transition; Supply Chain Security

References:

1. Government of India, Ministry of Mines. (2023, December 11). Rajya Sabha unstarred question no. 919: Critical minerals mining.

2. Government of India, Ministry of Mines. (2025, July 23). Lok Sabha unstarred question no. 469: Exploration and value addition of rare earth elements (REEs) in Odisha.

3. Ministry of Mines, Government of India. (2025, January). National critical mineral mission.

4. Ministry of Mines, Government of India. (2023, June). Critical minerals for India: Report of the committee on identification of critical minerals.

5. Ministry of Mines, Government of India. (2023). Indian minerals yearbook 2023 (ISSN 0972-3625).

ANTHROPOGENIC STRESS AND ECOLOGICAL DEGRADATION

IN THE ARAVALLI HILLS

BHAKTISHREE NAYAK **[GCE, KEONJHAR]**
EMAIL- b_nayak@gcekjr.ac.in

ABSTRACT

The Aravalli Hill System, recognised as one of the oldest salt mountain ranges, features a delicate geoeconomic environment that is crucial for climate management, groundwater replenishment, and wildlife conservation in northwestern India. Despite its antiquity and ecological significance, anthropogenic forces in the Aravalli region lead to ongoing degradation, exemplified by mining, urban expansion, deforestation, and land transformation that result in unregulated land use and diversification, particularly within the Delhi-NCR corridor. This study offers a comprehensive geographical analysis of landscape use and alterations in land cover, ecological deterioration, and hydrologically induced pressures in the Aravalli Hills, employing multitemporal satellite imagery, GIS-based spatial analysis, and supplementary socio-environmental data layers. In light of a recent judicial clarification by the Supreme Court of India in 2024, which stipulates that landforms exhibiting less than approximately 100 m of relative relief should not be automatically classified as part of the Aravalli Hill System for regulatory purposes, this study robustly employs geomorphological analysis in accordance with the legally recognised definition to differentiate core hill systems from low- relief land systems, while also addressing the current environmental changes within the study area. The results indicate significant degradation and fragmentation of natural vegetation, a marked increase in mining-affected and urbanised areas, and evident stress in the groundwater recharge zone, with considerable spatial variation based on topographical accessibility and governance factors. It is essential to recognise that even regions not encompassed by the legal definition of Aravalli offer ecological and hydrological assistance, underscoring the inherent limitations of relief-based classification standards. This work emphasises the necessity for comprehensive geoecological zonation research, systematic land-use planning, and GIS-based monitoring strategies aimed at reconciling environmental conservation and developmental requirements. This initiative integrates physical geography, spatial analysis, and contemporary legal interpretation to discuss landscape management alternatives for the Aravalli Hill in a rapidly evolving context.

.

Keywords: Aravalli Hills, Land Use Land Cover, Anthropogenic Stress, GIS and Remote Sensing, Ecological Degradation, Groundwater Recharge, Urban Expansion, Environmental Governance, Supreme Court Judgment

ADOPTING
SMART MINING SYSTEM

FOR OPERATIONAL EXCELLENCY, SAFE & SUSTAINABLE MINING

SURYANSHU CHOUDHURY **[ADITYA BIRLA GROUP, MUMBAI]**
EMAIL- suryanshu6@gmail.com

EXTENDED ABSTRACT

Today's Mining Industry is in the process of tremendous transition of technology into all its activities as compared to the traditional age-old approaches. With the onset of concept Industry 4.0, modern industrialization breathed new life on adopting smart mining system which has driven us to explore lot of potential benefits at different stages of the mining processes. The benefits of smart mining system are numerous and their potential role in achieving operational excellence and supporting a circular economy is significant. They enable reduced product development lifecycle times, improved manufacturing quality control system, more efficient use and recovery of resources across the lifecycle. Over the last decade there have been significant applications of smart mining system into mining operations of leading mining companies across the globe.

The mining industry is at a critical inflection point where traditional practices must evolve to meet rising demands for productivity, safety, and environmental responsibility. The adoption of Smart Mining Systems powered by digital technologies such as IoT, Artificial Intelligence (AI), automation, and advanced analytics has emerged as a transformative pathway to achieve Operational Excellence, enhanced Safety, and Sustainable Mining. Smart mining integrates real-time data, intelligent systems, and automated processes to create a connected and responsive mining ecosystem. This shift enables mining operations to move from reactive decision making to predictive and prescriptive approaches, ensuring higher efficiency and reduced operational risks.

Operational excellence in mining is achieved by optimizing resources, minimizing downtime, and improving overall productivity. Smart mining systems enable real-time monitoring of equipment, processes, and production metrics. With the help of sensors and data analytics, mining companies can track equipment health and predict failures before they occur, significantly reducing unplanned breakdowns. Automation of core mining activities such as drilling, hauling, and material handling improves precision and consistency while reducing cycle times. Intelligent fleet management systems optimize haul routes, reduce fuel consumption, and enhance asset utilization. Additionally, data-driven mine planning ensures better ore recovery, reduced dilution, and improved grade control. By integrating all operational data into centralized control systems, decision-makers gain complete visibility of mining operations, enabling faster and more informed decisions. This leads to improved productivity, cost efficiency, and overall operational reliability. Smart mining systems play a crucial role in minimizing risks and ensuring a safer working environment. Real-time monitoring systems equipped with sensors can detect hazardous conditions such as gas leaks, ground instability, dust levels, and equipment malfunctions. These systems provide instant alerts, allowing for proactive intervention before incidents occur.

The future of mining lies in intelligent, automated, and data-driven operations where technology not only enhances efficiency but also ensures the well-being of workers and the preservation of natural resources. Organizations that embrace this transformation will be better positioned to remain competitive, compliant, and responsible in an evolving global landscape.
The successful adoption of smart mining requires a holistic approach that combines technology, processes, and people. It involves building digital infrastructure, integrating data systems, and upskilling the workforce to adapt to new technologies.

Smart mining systems play a crucial role in minimizing risks and ensuring a safer working environment. Real-time monitoring systems equipped with sensors can detect hazardous conditions such as gas leaks, ground instability, dust levels, and equipment malfunctions. These systems provide instant alerts, allowing for proactive intervention before incidents occur. The future of mining lies in intelligent, automated, and data-driven operations where technology not only enhances efficiency but also ensures the well-being of workers and the preservation of natural resources. Organizations that embrace this transformation will be better positioned to remain competitive, compliant, and responsible in an evolving global landscape.

The successful adoption of smart mining requires a holistic approach that combines technology, processes, and people. It involves building digital infrastructure, integrating data systems, and upskilling the workforce to adapt to new technologies.

Keywords: Mining; Smart Mining Systems; Industry 4.0; Operational Excellence; Mining Automation

References

1. International Council on Mining and Metals. (2021). Innovation for cleaner, safer vehicles in mining. ICMM. World Economic Forum. (2017).

2. Digital transformation initiative: Mining and metals industry. Geneva: WEF.

3. Parra, A., & García, J. (2019). Smart mining: Integration of Industry 4.0 technologies in mining operations. Resources Policy, 63, 101–112. https://doi.org/10.1016/j.resourpol.2019.101451

4. Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. International Journal of Production Economics, 210, 15–26. https://doi.org/10.1016/j.ijpe.2019.01.004

5. Lee, J., Bagheri, B., & Kao, H. A. (2015). A cyber-physical systems architecture for Industry 4.0-based manufacturing systems. Manufacturing Letters, 3, 18–23. https://doi.org/10.1016/j.mfglet.2014.12.001

GEOTECHNICALLY CONSTRAINED OPENCAST MINE DESIGN IN THICK ALLUVIAL OVERBURDEN:

A CASE STUDY OF MANDAR PARVAT COAL BLOCK, INDIA

SUDARSAN RATH & RAKESH KUMAR PRADHAN **[CMPDIL, RANCHI]**
EMAIL- pradhanrakesh@zohomail.com

EXTENDED ABSTRACT

The Mandar Parvat Opencast Coal Project represents a highly challenging and unconventional mining scenario within the Indian coal sector due to the presence of an exceptionally thick alluvial overburden. This study presents a comprehensive geo-technically governed mine design framework developed specifically for this deposit, where conventional mining approaches are rendered unsuitable. The research emphasizes the critical role of ground conditions in dictating mine planning, equipment selection, and slope stability strategies.

The geological setting of the Mandar Parvat coal block is characterized by a thick Quaternary alluvial cover, averaging approximately 82 meters in depth, overlying the productive Barakar coal measures. A significant proportion of this overburden consists of weak clay materials exhibiting very low bearing capacities ranging from 50 to 450 kN/m². Such conditions pose severe limitations on the deployment of conventional shovel-dumper systems, as the ground pressure exerted by heavy dumpers exceeds the load-bearing capacity of the substrate. This fundamental geotechnical constraint necessitated the development of an alternative mining system aligned with the prevailing ground conditions.

A detailed geotechnical investigation was conducted to characterize the mechanical behavior of the overburden and underlying strata. Laboratory testing and field assessments revealed that the clay-dominated overburden is highly susceptible to deformation, bearing failure, and flow-type instability. Additional hazards such as heave, viscous flow failure, and liquefaction of sandy horizons further complicate mine design. These findings underscore the importance of adopting a design philosophy driven by geo-mechanical parameters rather than conventional mining practices.

The study proposes a hybrid mining system tailored to the stratigraphic and geotechnical conditions of the site. For the excavation of top overburden, compact Bucket Wheel Excavator (BWE) systems integrated with conveyor-based material handling are recommended. These systems operate with significantly lower ground pressure due to crawler-mounted configurations, making them suitable for weak clayey terrains. The continuous mode of operation also enhances productivity and reduces reliance on haul roads, which are prone to failure in such conditions.

Inter-seam partings comprising relatively competent materials such as sandstone and shale are excavated using hydraulic shovels and dumpers. These materials are strategically utilized in the construction of stabilizing structures for overburden dumps. Coal extraction is carried out using surface miner technology, enabling blast-free mining. This approach minimizes ground vibrations, thereby enhancing slope stability and ensuring safe extraction in weak geological formations. Additionally, surface miners provide improved selectivity and eliminate the need for primary crushing.

A major innovation presented in this study is the concept of Ring Dump stabilization for external overburden dumps. In this approach, competent parting materials are used to construct a peripheral containment bund around the dump. This engineered structure confines the weak clayey material within, preventing lateral flow and reducing the risk of slope failure. The ring dump system effectively distributes load and enhances overall stability, addressing common failure mechanisms observed in clay-based dumps.

Slope stability analysis forms a critical component of the mine design framework. The study employs limit equilibrium methods in compliance with regulatory guidelines to evaluate slope configurations under varying geological conditions. Distinct slope angles are adopted for different strata, with flatter slopes in clay-rich zones and steeper angles in competent rock formations. The design achieves acceptable factors of safety for both pit slopes and overburden dumps, ensuring long-term stability. Groundwater control measures, including dewatering and pore pressure monitoring, are also incorporated to mitigate adverse hydro geological effects.

The mine planning strategy includes a phased approach to pit development, with detailed configurations at different stages of the mine life. This enables systematic advancement, continuous monitoring, and timely corrective actions. Internal backfilling is integrated into the design to reduce the footprint of external dumps and promote sustainable land use. The final mine plan also considers post-mining void management and the potential for utilizing residual voids for future overburden disposal.

Production planning indicates a normative capacity of 15 million tonnes per year, with a peak output of 17.5 million tonnes over an operational life of approximately 18 years. The integration of continuous mining systems, optimized slope design, and innovative dump stabilization techniques ensures both operational efficiency and safety.

In conclusion, this study demonstrates that successful opencast mining in thick alluvial deposits requires a paradigm shift from conventional design practices to a geo-technically driven approach. The Mandar Parvat project highlights the importance of detailed site characterization, adaptive equipment selection, and innovative engineering solutions. The methodologies and design principles developed in this work provide a valuable reference framework for similar mining conditions in India and globally. By aligning mining practices with ground realities, the study establishes a pathway for safe, efficient, and sustainable exploitation of challenging coal deposits.

Keywords: Geotechnical Mine Design; Alluvial Overburden; Bucket Wheel Excavator; Slope Stability; Ring Dump Stabilization

References

1. Birla Institute of Technology, Mesra. (2019). Slope stability study report for Mandar Parvat OCP, BCCL. Ranchi, India: Author.

2. Coal India Limited. (2015). Minutes of the 317th CIL board meeting: Administrative cost guidelines. Kolkata, India: Author.

3. Directorate General of Mines Safety. (2020). Technical circular no. 03 of 2020: Factor of safety for slope stability in opencast mines. Dhanbad, India: Author.

4. Ministry of Coal, Government of India. (2020). Guidelines for preparation of mining plan (F. No. 34011/28/2019-CPAM). New Delhi, India: Author.

5. Rath, S. (2020). Recast project report for Mandar Parvat OCP (Normative capacity: 15 Mty, peak rated capacity: 17.5 Mty) (Job No. 200218013). Ranchi, India: Opencast Division, Central Mine Planning & Design Institute Ltd. (CMPDI).

LESSONS FROM
MINE EXPLOSION DISASTERS IN INDIA:

A CASE STUDY BASED ANALYSIS

DR. ASHISH KUMAR DASH **[NIT, RAIPUR]**
EMAIL-ashishdash1991@gmail.com

EXTENDED ABSTRACT

Coal mining remains one of the most hazardous industrial activities, where accidents typically result from complex interactions among technical failures, human errors, and latent organizational deficiencies. Despite advancements in safety systems, explosion-related disasters continue to pose serious threats in underground coal mines due to the presence of inflammable gases, coal dust, and ignition sources such as spontaneous heating. A critical review of past incidents demonstrates that such disasters are rarely caused by a single factor; instead, they evolve through a chain of failures across multiple layers of the safety management system. Understanding these interactions is essential for developing effective accident prevention strategies.

The Anjan Hill coal mine disaster of 2010 in India serves as a significant case for examining the systemic nature of mining accidents. The explosion occurred in a depillaring panel susceptible to spontaneous combustion, where the accumulation of inflammable gases and coal dust created an explosive environment. The presence of oxygen and an ignition source in the form of advanced-stage mine fire triggered a gas explosion followed by a coal dust explosion. The consequences were severe, resulting in fatalities both underground and on the surface, indicating failure not only in hazard control but also in emergency response and risk communication. A detailed review of the sequence of events indicates that multiple warning signs were present prior to the disaster. Elevated carbon monoxide levels, abnormal air blasts, and indications of spontaneous heating were observed but not adequately acted upon. Production activities continued despite these signals, reflecting deficiencies in hazard perception and risk assessment. This highlights a recurring issue in high-risk industries, where operational priorities often overshadow safety considerations, leading to normalization of hazardous conditions.

To systematically analyze such accidents, structured methodologies are essential. In this context, three key methods are widely adopted: Event Sequence Analysis, Fault Tree Analysis (FTA), and the Swiss Cheese Model (SCM). These methods complement each other by providing chronological, logical, and systemic perspectives of accident causation.
The Event Sequence Analysis provides a step-by-step reconstruction of the accident, identifying how initial conditions evolved into a catastrophic event. It helps in recognizing early warning signals and understanding the timing of critical decisions. In the present case, it revealed that multiple pre-explosion events were ignored, allowing hazardous conditions to escalate.

The Fault Tree Analysis (FTA) is a deductive, logic-based method used to trace the pathways leading to a specific undesired event, such as an explosion. It identifies combinations of failures-technical, human, and organizational that must occur for the accident to happen. Through FTA, it becomes evident that factors such as inadequate gas monitoring, poor coal dust management, and ineffective fire control collectively contributed to the disaster.

The Swiss Cheese Model (SCM) offers a systemic perspective by illustrating how failures in multiple layers of defense align to permit an accident. Each layer, representing organizational processes, technical systems, and human actions, contains inherent weaknesses or “holes”. When these holes align, hazards pass through all defenses, resulting in a disaster. In this case, failures were observed in preventive barriers (gas monitoring, dust control), mitigative measures (explosion barriers,

emergency response), and administrative controls (risk assessment, safety procedures). The analysis of these methods reveals that organizational factors were the dominant contributors to the disaster. The absence of effective gas monitoring systems prevented early detection of hazardous conditions. Inadequate procedures for handling mine fires and coal dust accumulation further increased the risk. Additionally, the lack of a structured emergency response plan and re-entry protocol led to poor decision-making, such as sending personnel into hazardous areas without proper risk evaluation. The presence of workers near the mine portal during the explosion further indicates a failure in hazard communication and site management.

Human factors also played a critical role, particularly in terms of risk perception and decision-making. The inability to interpret warning signs and assess the severity of the situation reflects insufficient training and lack of competency. The normalization of abnormal conditions contributed to continued operations under unsafe circumstances. This behavioral aspect, combined with organizational shortcomings, created a highly vulnerable system. The failure of safety barriers across multiple levels demonstrates the need for a systems-based approach to accident prevention. Technical measures such as real-time gas monitoring, effective dust suppression, and early fire detection must be integrated with managerial practices, including standard operating procedures and risk-based decision-making. Furthermore, organizational commitment to safety, supported by training and accountability mechanisms, is essential to ensure the effectiveness of these measures.

This review highlights the importance of comprehensive accident investigation frameworks that go beyond identifying immediate causes. The integration of Event Sequence Analysis, Fault Tree Analysis, and the Swiss Cheese Model provides a holistic understanding of accident causation, enabling identification of root causes and their interrelationships. Such an approach facilitates the development of targeted corrective actions and strengthens the overall safety management system.
In conclusion, mining disasters are the result of complex interactions among technical, human, and organizational factors. The case under review demonstrates that failure to recognize and respond to early warning signals, combined with inadequate safety systems and poor decision-making can lead to catastrophic outcomes. A proactive and integrated approach to safety management, supported by structured analytical methods and a strong safety culture, is essential for preventing similar incidents in the future. Continuous learning from past accidents and effective implementation of preventive measures can significantly enhance safety performance in the mining industry.

Keywords: Disasters; Explosion; Accident analysis; Root cause; Lessons learnt

References:

1. Bhattacharjee, R. M., Dash, A. K. and Paul, P. S., (2019). “A Root Cause Failure Analysis of Coal Dust Explosion Disaster - Gaps and Lessons Learnt”, International Journal of Engineering Failure Analysis, Elsevier Science, Volume 111, pp. 1-17.

2. Directorate General of Mines Safety. (2011). Report on the Anjan Hill Mine Disaster. Ministry of Labour & Employment, Government of India.

3. Directorate General of Mines Safety. (2017). Coal Mines Regulations, 2017. Government of India.

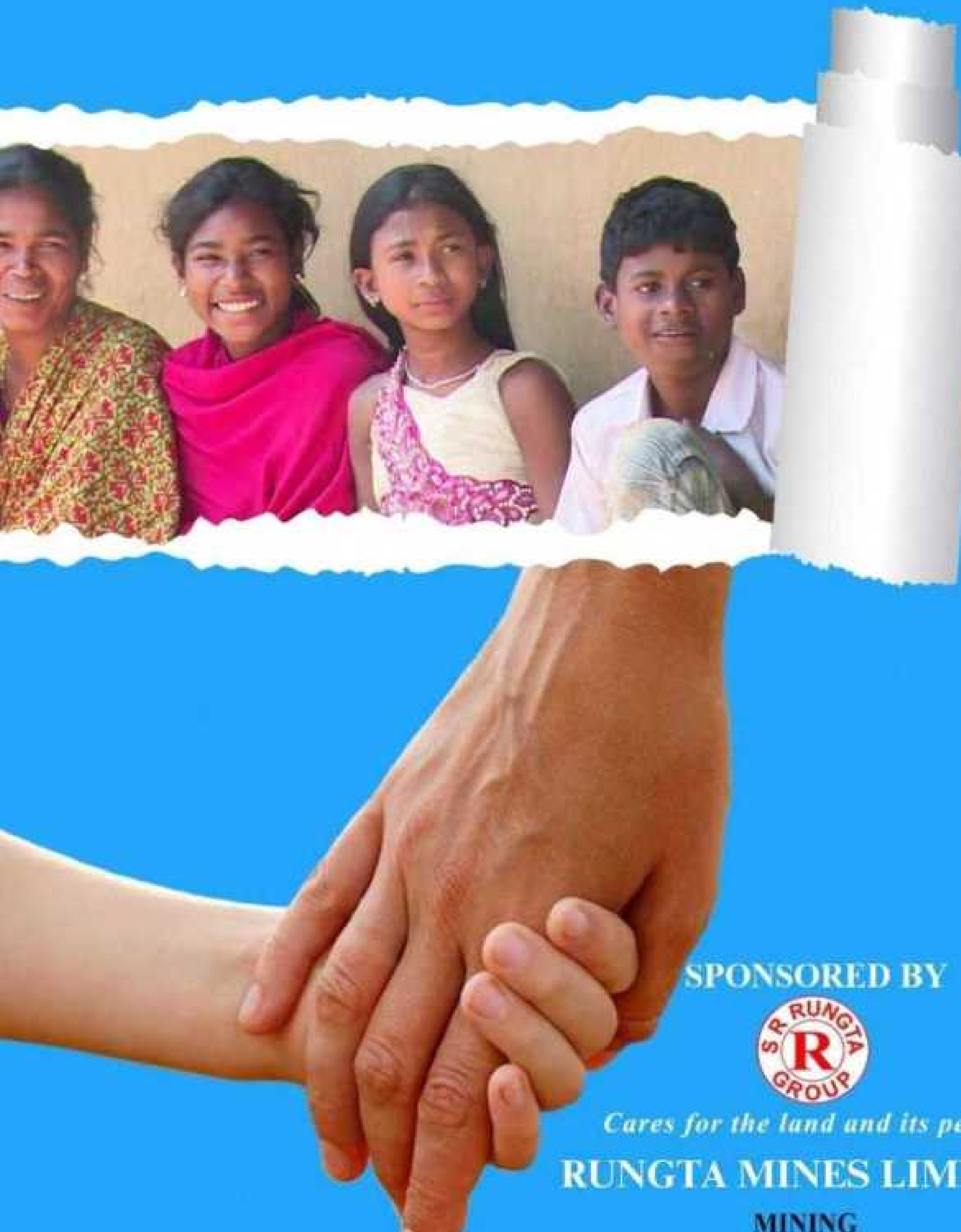
4. National Institute for Occupational Safety and Health. (2011). Explosion prevention in underground coal mines. U.S. Department of Health and Human Services.

5. Reason, J. (1997). Managing the risks of organizational accidents. Ashgate Publishing.

6. Sklet, S. (2004). Comparison of some selected methods for accident investigation. Journal of Hazardous Materials, 111(1–3), 29–37.

Taking the Community Along

towards a better tomorrow



SPONSORED BY

SR RUNGTA GROUP

Cares for the land and its people

RUNGTA MINES LIMITED

MINING

Rungta House, Chaibasa, Jharkhand - 833201

JINDAL PANTHER® TMT REBARS

HAMESHA KE LIYE

Your home is your legacy, where your memories, dreams and hopes all live on. Jindal Panther TMT Rebars are strong from the outside, yet flexible on the inside, and they ensure excellent bonding with cement to make your house sturdy and resilient, increasing its longevity substantially. So your family has a home it loves, for a long, long time.

SACCHE SARIYE KI PEHCHAN
JINDAL PANTHER KA NISHAAN

ADVANTAGES OF JINDAL PANTHER TMT REBARS

- 4-6% Savings on steel
- Excellent controlled chemistry
- Excellent bonding with cement
- Earthquake-resistant
- Excellent bendability
- Superior weldability

India's First and Largest Producer of Fe 550D TMT Rebars

A PRODUCT OF JINDAL STEEL & POWER | @JindalPanther | JindalPanther | jindal-panther

Contact us: shop.jindalpanther.com
Toll free number on 1800 208 2008

ESTIMATION OF REAL-TIME PM EXPOSURE AND **ASSOCIATED HEALTH RISK OF HEMM OPERATORS**

USING LOW-COST SENSORS IN HIGHLY MECHANIZED OPENCAST COAL MINE

DR. DHRUTI SUNDAR PRADHAN **[GP, DEOGARH]**
EMAIL-dspradhaniitkgp@gmail.com

EXTENDED ABSTRACT

India is the second highest coal producing country in the world, next to China. Coal production in India is steadily increasing due to the application of modern technology. Based on the demand analysis, the Ministry of Coal projects to increase the annual production from the present level to over 1.5 billion tonnes of coal by the financial year 2030 to reduce the demand-supply gap and non-essential import of coal in India (MOC, 2025). Surface mines in India account for ~ 90% of India's current coal production. Shallow and thick deposits are best suited for surface mining method that makes the method cost-effective. Particulate matter (PM) is a prevalent pollutant emitted from surface mining activities, as almost every unit operation—including drilling, blasting, loading, unloading, and the transport of minerals and waste—releases particles into the surrounding air. Where the surface miner is used for excavation coal, drilling and blasting is usually confined to overburden removal. Surface mining operations employ advanced technologies, including heavy earth-moving machinery, to optimize production and minimize environmental impact. These operations require several heavy earth moving machineries (HEMM) such as dumper, shovel, drill, surface miner, grader, and dozer. As a result, surface coal mining has been identified as one of the significant sources of PM inside the mine and in its surroundings. Exposure to PM among surface mining workers can lead to common diseases such as asthma, silicosis, bauxite fibrosis, asbestosis, siderosis, inflammation, and pneumoconiosis. Several studies have linked PM emissions from surface mining operations to higher disease rates in miners. The adverse health effects of inhaling dust depend on its nature, composition, exposure duration, and mass concentration.

Traditional methods of monitoring pollutant exposure, such as fixed-point sampling by high volume samplers and portable instruments, in addition to being expensive and bulky, do not provide continuous data. This study explores the potential of low-cost, lightweight sensors for real-time, spatial, and temporal monitoring of PM exposure in surface mines, with a focus on estimation of exposure to PM by HEMM operators. Recent advancements in low-cost sensors (LCS) have enabled real-time monitoring of PM concentration, providing a cost-effective solution and dust management strategies in mining environments. This serves as the foundation for the research. The research's main objective was to assess in-cabin particulate matter (PM) exposure levels in three commonly used heavy earth-moving machines (HEMMs), i.e., dumper, shovel, and drill in surface mines and determine the associated health risks for operators.

Two field studies have been conducted in a large surface coal mine during two seasons (Summer and Winter). Particulate pollutants such as PM1, PM2.5, and PM10 have been measured inside the operator's cabin and outside HEMM. In addition to using portable instruments, the exposure concentrations were also measured using sensors. The results reveals that the HEMM cabins with air conditioning significantly reduced in-cabin PM concentrations. The reductions range from 30-50%, with greater reduction efficiency for coarse particles (PM10) compared to fine particles (PM2.5 and PM1). Non-air-conditioned cabins, such as those of drill machines, exhibited the highest in-cabin PM10 concentrations, approximately 3.3 times higher than cabins of shovels and dumpers. The exposure trend among operators followed the pattern: drill > shovel > dumper. Factors contributing to elevated PM levels in drill cabins included the lack of dust suppression systems, open cabin doors, and operational variables such as drill bit rotation speed, applied pressure, and rock properties. While cabin structures provided some protection, smaller cabins with limited air volume and inefficient filtration systems led to higher in-cabin PM accumulation.

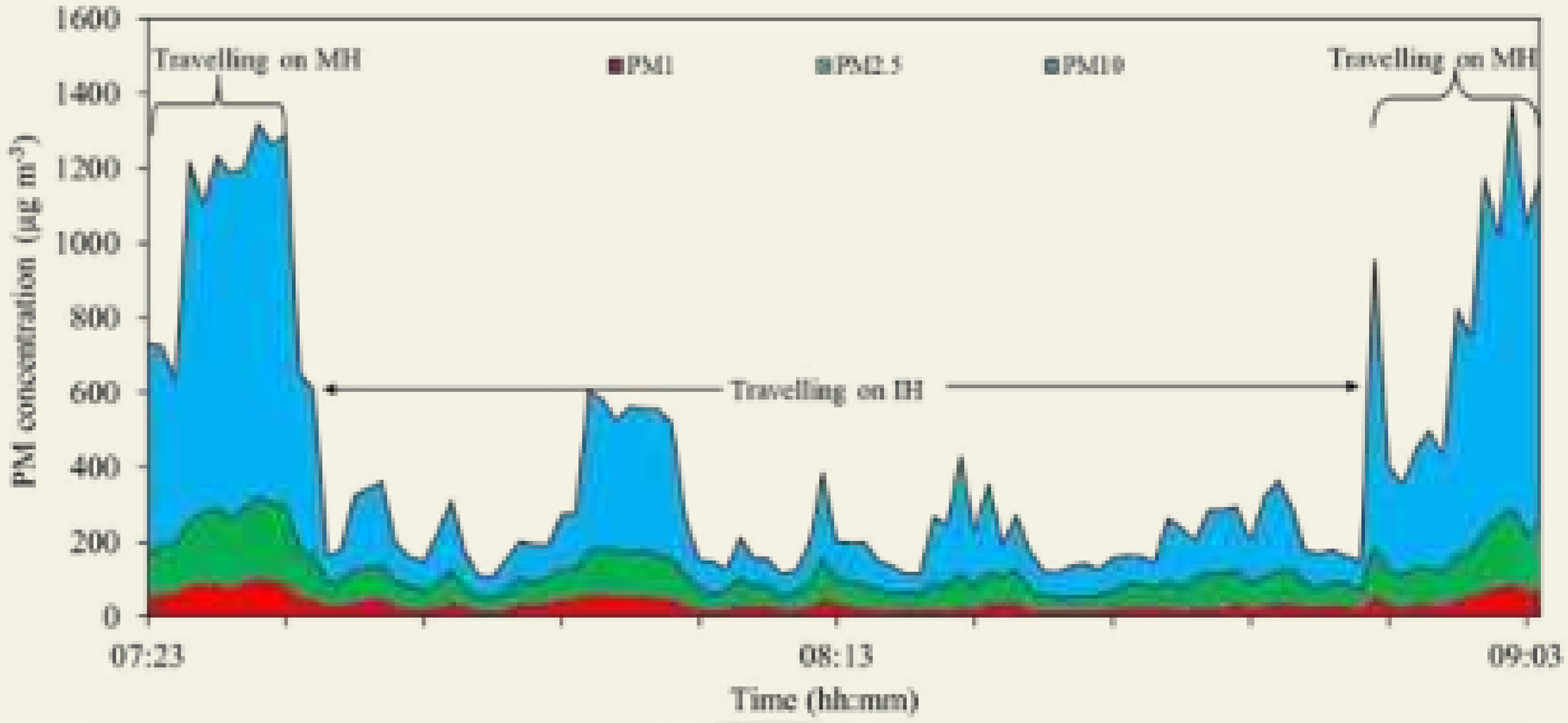


Fig. 1 Temporal variation of dumper in-cabin PM concentration (MH- Main haul road, IH- Internal haul road)

Meteorological factors, including temperature, relative humidity, and wind speed, influenced PM concentration variability. Temperature emerged as the most significant meteorological determinant, explaining 3-30% of variability, while relative humidity and wind speed accounted for 3-8% and 1-6% variability, respectively. A Generalized Linear Model (GLM) explained 65-90% of PM concentration variability, identifying HEMM type as the most influential factor. The evening shift consistently recorded higher PM concentrations than the morning shift. The correlation between in-cabin and outdoor PM levels (moderate, 0.5-0.8) indicated that external environmental conditions strongly influence in-cabin exposure.

References:

1. Pradhan, D. S., Patra, A. K., Santra, S., Penchala, A., Sahu, S. P., & Nazneen. (2024). In-cabin particulate matter exposure of heavy earth moving machinery operators in Indian opencast coal mine. Aerosol Science and Engineering, 1–18. https://doi.org/10.1007/S41810-024-00258-01

2. Pradhan, D. S., Patra, A. K., Penchala, A., Santra, S., (2025). Estimation of real-time PM exposure and associated health risk of HEMM operators using low-cost sensors in a highly mechanised opencast coal mine. Air Quality, Atmosphere and Health, https://doi.org/10.1007/s11869-025-01769-6

3. Penchala, A., Patra, A. K., Santra, S., Dubey, R., Mishra, N., & Pradhan, D. S. (2025). Assessment of vertical transport of PM in a surface iron ore mine due to in-pit mining operations. Measurement, 240, 115580. https://doi.org/10.1016/j.measurement.2024.115580

UNDERGROUND MINING IN INDIA: MODERN TECHNOLOGIES

AND SUSTAINABLE PATHWAYS TO THE FUTURE

DR. SANTOSH KUMAR BEHERA [IIT(ISM),DHANBAD]
EMAIL-skbehera@iitism.ac.in

ABSTRACT

Underground mining in India is undergoing a significant transformation driven by the dual imperatives of increasing resource demand and achieving sustainable development goals. As shallow deposits are gradually exhausted and environmental concerns associated with opencast mining intensify, underground mining is emerging as a viable and strategic alternative. It offers reduced surface disturbance, improved land-use efficiency, and access to deeper mineral reserves, making it central to the future of India's mining sector.

Recent advancements in underground mining technologies have accelerated this transition. Mechanized mining systems such as continuous miners and highwall mining are being increasingly adopted to enhance productivity and operational efficiency. Indigenous manufacturing capabilities, supported by companies are further strengthening the technological ecosystem. In addition, innovations like Self-Advancing Goaf Edge Support (SAGES) and integration of paste backfilling with continuous miner operations represent cutting-edge developments tailored to Indian geo-mining conditions.

Digitalization is playing a transformative role in modern underground mines. IoT-enabled systems facilitate real-time monitoring of mine environment, equipment performance, and worker safety. Technologies such as miner tracking with audio-visual communication, gas and strata monitoring, water level detection, and real-time production analytics are improving decision-making and risk management. Tele-remote operation of Load–Haul–Dump (LHD) machines, drilling rigs, and other equipment is enabling safer operations in hazardous zones, supported by high-definition cameras, and robust underground communication networks.

A key pillar of sustainable underground mining in India is the adoption of paste backfill technology. This technique utilizes mine waste, fly ash, and other industrial by-products to fill voids created during mining, thereby improving ground stability, reducing subsidence, and enabling higher extraction of coal and ore from pillars. Successful implementation in underground metal mines such as SK mine, Rampura Agucha, Rajpura Dariba, and Malanjkhand has demonstrated significant gains in production and cost efficiency. Ongoing pilot and planned projects in underground coal mines further indicate its growing relevance in India.

Looking ahead, the vision for underground mining in India emphasizes sustainable, demand-driven production aligned with net-zero targets, responsible mine closure, and diversification into cleaner energy pathways such as coal gasification and renewables. Workforce reskilling and capacity building will be critical to support mechanized and digital mining environments.

In conclusion, the future of underground mining in India lies in the integration of advanced mechanization, digital technologies, and sustainable practices. By leveraging innovations, intelligent monitoring systems, and automation, India can achieve safer, more efficient, and environmentally responsible mining, ensuring long-term resource security and sustainable growth.
Keywords: Mechanisation, digital twin, sustainable mining, automation, safety, productivity.

AIMING FOR THE STARS:
INDIA'S JOURNEY IN SPACE

BIJAYA KUMAR PATRA **[ISRO, BANGALORE]**
EMAIL-bkpatra@ursc.gov.in

This article offers valuable insights into India's Extraordinary space journey from pioneering satellite missions to deep-space exploration and high lighting the growing role of innovation, indigenisation and collaboration in strengthening India's global leadership in space industry. This article also underlines how space technologies are enabling national development, scientific advancement and future ready governance.

As envisaged by Dr. Vikram Sarabhai, to initiate space research activities in India, Indian National Committee for Space Research (INCOSPAR) was established in 1962 by Government of India.
On August 15, 1969 INCOSPAR was replaced by Indian Space Research Organisation (ISRO) to further develop and utilize space technology for national development.

ISRO has evolved from humble beginning in 1969 to a global space power, achieving historic milestones like Chandrayaan-3's lunar south pole landing, Mangalyaan (Mars mission) and Aditya-L1 solar study mission. Known for cost-effective engineering, ISRO has launched over 400 foreign satellites and in now advancing towards human spaceflight though the Gaganyaan programme.

The Indian Space Research Organisation (ISRO) is the national space agency of India. ISRO is primarily responsible for space-based operations, space explorations, international space cooperation and the development of related technologies. The pioneer space agency maintains a constellation of imaging, communication and remote sensing satellites.

ISRO's programmes have played a significant role in socio-economic development of our nation. It has supported both civilian and military domains in various aspects such as disaster management, telemedicine, navigation and reconnaissance.
Vikram Sarabhai, the founder of ISRO envisioned space technology for the benefit of common man.

Photo-1: ISRO's incredible journey from carrying rocket parts on cycle to roaring of LVM-3 vehicle onboard Chandrayaan-3 from Satish Dhawan Space Centre, Sriharikota

Photo-2: Rocket parts carried on bi-cycle

Photo-3:India’s first communication satellite “Apple” transportation by bullock cart during 1981.

Satellite categories:

The Indian Space Research Organisation (ISRO) operates a diverse fleet of satellites categorized primarily into Earth observation, communication, Navigation and Scientific/Experimental missions.

- Earth Observation Satellites: India has one of the largest operational remote sensing constellations in the world, which includes Indian Remote Sensing (IRS), Resourcesat, Cartosat, Oceansat & RISAT series for natural resouces, disaster management and surveillance.

- Communication Satellites: INSAT & GSAT series provides services for television broadcasting, t elecommunication and meteorological services.

- Navigation Satellites: The Navigation with Indian Constellation (NAVIC) or Indian Regional Navigational Satellite system (IRNSS) is a regional system providing services over India and surrounding regions.

- Small/Student Satellites: Nano satellites are basically designed for quick-turn around imaging or technology demonstration. Nanosatellites often developed by academic institutions.

- Scientific & inter planetary exploration Satellites: Spacecrafts for research in areas like astronomy, astrophysics, planetary and earth sciences, atmospheric sciences & Physics.

Few prestigious missions brought national pride our country:

CHANDRAYAAN-1:
Chandrayaan-1was the first lunar mission launched by ISRO on 22 October 2008. This mission was a major boost to India's Space programme as India researched and developed its own technology to explore the Moon. Chandrayaan-1 was inserted into lunar orbit on 8 November 2008. On 14 November 2008 one pay load namely Moon Impact Probe (MIP) separated from the orbiter and struck the south pole of moon in a controlled manner. The polar regions were of special interest as there was a high chance of finding water ice. Chandrayaan-1 detected the presence of water molecules in lunar soil.

MARS ORBITER MISSION (MOM):
MOM was India's first interplanetary mission. MOM was launched by PSLV-C25 on 5 November 2013. MOM also made ISRO the first national space agency in the world to reach mars orbit with an indigenously developed propulsion system and the second national space agency to succeed on the maiden attempt.

CHANDRAYAAN-2:
Chandrayaan-2 is the second lunar exploration mission by ISRO. It consists of the lunar obiter, the lunar lander (named VIKRAM) and PRANGYAN (The Rover) all of them were fully developed in India the Spacecraft was launched on 22 July 2019. The VIKRAM lander attempted a lunar soft landing on 6 September 2019; the lander crashed due to a software glitch.
The orbiter continues to operate around the moon and providing huge useful scientific data to the science community.

CHANDRAYAAN-3:
Chandrayaan-3 was launched on 14 July 2023and entered lunar orbit on 5 August 2023 and touched down near the lunar south pole on 23 August 2023. With this glorious landing India became the 4th nation to successfully land on the moon and the first country in the recorded human history to achieve a soft landing near the lunar south pole.

Later to celebrate this prestigious achievement honourable prime minister of India announced that the touchdown point of the Vikram lander would henceforth be known as Shiv Shakti Point. He further declared that 23 August, the day the Vikram lander landed on the Moon to be celebrated as National Space Day. The landing/crash point of Chandrayaan-2 lander (Vikram) is named as "Triranga Point". It serves as a reminder that failure is not final, symbolising India's determination.

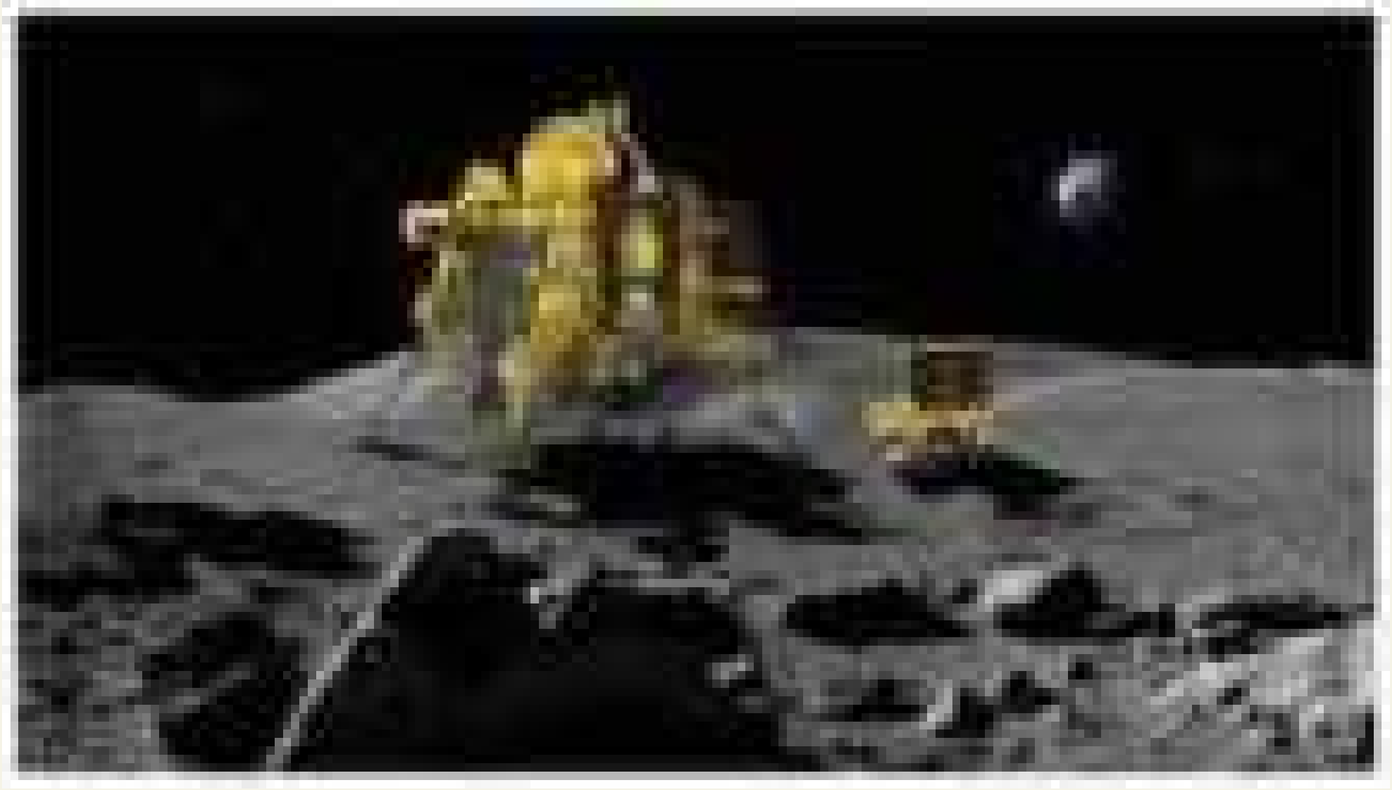


Photo-4: Chandrayaan-3 lander Vikram along with rover Pragyan after soft landing on lunar south pole

Aditya-L1:
Aditya-L1 is the first Indian mission dedicated to observe and study the Sun. Aditya-L1 was launched aboard PSLV-C57 on 2 September, 2023 and inserted on the Halo orbit of Lagrangian point L1 on 6 January 2024 after travelling 126days in deep space.

The main objectives of Aditya-L1 mission are: (a). To observe the dynamics of the Sun's chromosphere and corona, (b). to study space weather, and the origin, composition and dynamics of solar wind, (c). to determine the sequence of processes in multiple layers below the corona that leads to solar eruptions.

SPADEX:
Spadex or Space Docking Experiment is a twin satellite mission developed by the Indian Space Research Organisation (ISRO) to mature and demonstrate technologies related to orbital rendezvous, docking, formation flying which will have future applications in areas such as human spaceflight, in-space satellite servicing and other proximity operations. During the proximity operations one Spacecraft acts as Chaser (Spadex-1) and the other Spacecraft acts as Target (Spadex-2).

Both the Spacecrafts launched together from Satish Dhawan Space Centre, Sriharikota by a dedicated Polar Satellite Launch Vehicle (PSLV-C60 on 30 December 2024 and subsequently injected into slightly different orbits.

After successful deployment of solar panels, the two spacecrafts then executed manoeuvres to bring them together again. The Chaser approached the target and then precision manoeuvres carried out to complete a successful docking. With this magnificent success, India became one of the few countries in the World to have achieved a successful in-space docking using indigenous technology, Power transfer technology and undocking experiments also demonstrated successfully by Spadex mission bring glory to national pride.

What Next: the upcoming missions of ISRO

- Gaganyaan series: Multiple uncrewed, then crewed missions to demonstrate human space flight capability.

- Venus orbiter Mission: A mission to study the Venusian atmosphere, clouds and surfaces.

- Lunar Polar Exploration Mission (LUPEX): A collaborative mission of India (ISRO) with Japan (JAXA) to explore the lunar south pole for water ice.

- Bharatiya Antarikshya Station (BAS): Long term goal to establish Bharatiya Space Station.

- Chandrayaan 4: Landing on moon, drilling & collecting sample soil & return to earth

Applications of Satellite communication:
India uses its satellite communication network – one of the largest in the world- for applications such as land management, water resources management, natural disaster forecasting, radio networking, weather forecasting, meteorological imaging, carto graphic studies, tele medicines and space-based surveillance to our geographical boarder.

- Tele medicine: ISRO has applied its technology for tele medicines, directly connecting patients in rural areas to medical professionals in super special hospitals in urban areas. Since high quality healthcare is not available in some of the remote areas of our country, patients in those areas are diagnosed and analysed by doctors in urban centres in real time via video conferencing. The patient is then advised on medicines and treatment, and treated by the staff at one of the super-speciality hospitals as per the instruction.

- Radar Imaging: The Radar Imaging earth observation Satellites (RISAT) series is the eye in sky meant for military uses. Satellite images help our soldiers in boarder for strategic planning during war and national emergency.

Conclusion:
Department of Space (DOS) under Government of India mandated with execution of Indian space programme. Research and development in Space Sciences and Technology for serving the end of applying them for national development.
ISRO's space programme is dedicated to serve humanity in a better and broader perspective. Department of Space through its agency ISRO accomplishes space missions to fulfil its vision, mission and objectives.

References:

1. Indian Space Research Organisation, press release, Chandrayaan-3 mission update Aug05, 2023.
2. Indian Space Research Organisation, press release, Aditya-L1 mission update September 02, 2023.

COAL MINE
HAUL ROAD DESIGN: A REVIEW

DR. SOUMYA RANJAN MALLICK **[GCE, KEONJHAR]**
[EMAIL: mallicksoumyaranjan@gmail.com]

ABSTRACT

Opencast mining plays a major role in meeting the demand of fossil fuel for thermal power generation. Haul roads are the lifeline of any opencast mine. The expansion of opencast mines has led to the deployment of large-capacity haul trucks or dumpers. The carrying capacity of these dumpers has increased from merely 10 t to 400 t in recent years. The introduction of large-capacity dumpers requires well-designed haul roads to prevent pot holing, rutting, cracking, corrugations, dustiness, stoniness, etc. in the haul roads. For efficient utilization of large-capacity dumpers, haul roads should be smooth with high bearing capacity. A well-designed haul road ensures low maintenance of mobile equipment (dumpers, dozers, shovels, etc.) and operating costs of the mine. At present design of haul roads is based on past experiences and empirical methods. Traditionally least attention is given to haul road design, construction, and maintenance. Poor construction material in sub-grade, sub-base, or base reflects in adverse performance of surface course. Opencast mines displace large amounts of overburden as waste material. The sub-grade, sub-base, and/or base of haul road typically uses those overburden materials. It has been found that the overburden material only fills the voids instead of offering any structural improvement. As a result, the surface course often exhibits potholes, sinking, settlement, and rutting as well as overall deterioration. Strengthening of sub-base and/or base courses would reduce those adverse conditions. Poor haul road adversely affects mine economics in terms of reduced production, more accidents and vehicular breakdowns, and poor working environment e.g. poor visibility and dusty atmosphere, etc. A smooth, durable, and high-bearing capacity haul road can be constructed by addressing four major design aspects e.g. (i) geometrical, (ii) structural, (iii) functional, and (iv) maintenance. Smooth surfacing reduces rolling resistance which enhances the efficiency of the vehicle and reduces fuel consumption and tire wear and tear. Smooth surfacing also reduces dust emission which enhances visibility and provides an adequate working environment for vehicle operators. Durable haul road provides uninterrupted movement of dumpers and finally result in less operating cost.

Keywords: opencast mining, haul road, mine overburden, coal mine, pavement design

.

CAN ALKALI-ACTIVATED **MATERIALS BE TRULY SUSTAINABLE?**

GLOBAL INSIGHTS AND EMERGING RESEARCH DIRECTIONS

SHASWAT KUMAR DAS **[CNRS (CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE), FRANCE]**
EMAIL-skd.gtcr@gmail.com

EXTENDED ABSTRACT

Alkali-activated materials (AAMs), including geopolymers, have emerged over the past two decades as one of the most promising alternatives to conventional Portland cement (PC)-based binders. The growing interest in these materials is driven by a combination of factors: the urgent need to reduce the environmental footprint of the construction sector, the increasing availability of industrial by-products, and the demonstrated ability of AAMs to achieve high mechanical and durability performance. Compared to PC-based systems, AAMs offer a much wider design space, allowing the use of diverse aluminosilicate-rich precursors such as fly ash, blast furnace slag, and other industrial or agricultural residues. This flexibility has positioned AAMs as a key candidate for more sustainable and resilient infrastructure development.

Early research on AAMs largely focused on their performance advantages [1]. Numerous studies reported high early-age strength, good long-term mechanical properties, and superior resistance to aggressive environments such as acidic, sulphate-rich, or chloride-rich conditions [2]. These benefits were often attributed to the nature of the binding gels formed in AAMs, such as N-A-S-H or C-(A)-S-H type phases and the absence of free calcium hydroxide (portlandite), which is known to be vulnerable to chemical attack in PC-based concretes. As a result, AAMs were frequently presented not only as technically superior materials but also as inherently more sustainable alternatives to traditional cement.

However, as the field grew, it became increasingly clear that performance alone is not sufficient to justify claims of sustainability. From the early 21st century onwards, many publications emphasized the reduced CO2 emissions of AAMs compared to PC, primarily due to the exclusion or significant reduction of clinkers. While this argument holds in a broad sense, recent advances in life cycle assessment (LCA) have shown that the sustainability narrative around AAMs is more complex than initially assumed. Several studies, including our own have demonstrated that although AAMs often show lower global warming potential than PC-based systems, they may exhibit higher impacts in other environmental categories [3,4].

A critical contributor to these impacts is the alkali activator, especially sodium silicate [3]. Sodium silicate is one of the most effective and widely used activators due to its proven ability to enhance reaction kinetics and mechanical performance. At the same time, its industrial production is highly energy-intensive and associated with significant emissions. LCA studies consistently identify sodium silicate as the dominant contributor to the overall environmental footprint of many AAM formulations, in some cases accounting for the majority of the impacts. This finding challenges the early assumption that simply replacing PC with alkali-activated binders automatically results in a low-impact material.

.

This realization has led to an important shift in research focus over recent years. Rather than asking whether AAMs are more sustainable than PC in general, the key question has become how AAMs can be designed to be genuinely low-impact and practically viable. One of the most active research directions addressing this question is the development of alternative alkali activators derived from waste or secondary resources. In particular, silica-rich by-products such as rice husk ash, silica fume, waste glass, and other industrial residues have been explored as substitutes for commercial-grade

sodium silicate. These materials are often locally available, require lower processing temperatures, and can significantly reduce both the environmental and economic cost of the activator. Figure 1 resents the most commonly adopted methods for producing alternative alkaline activators.

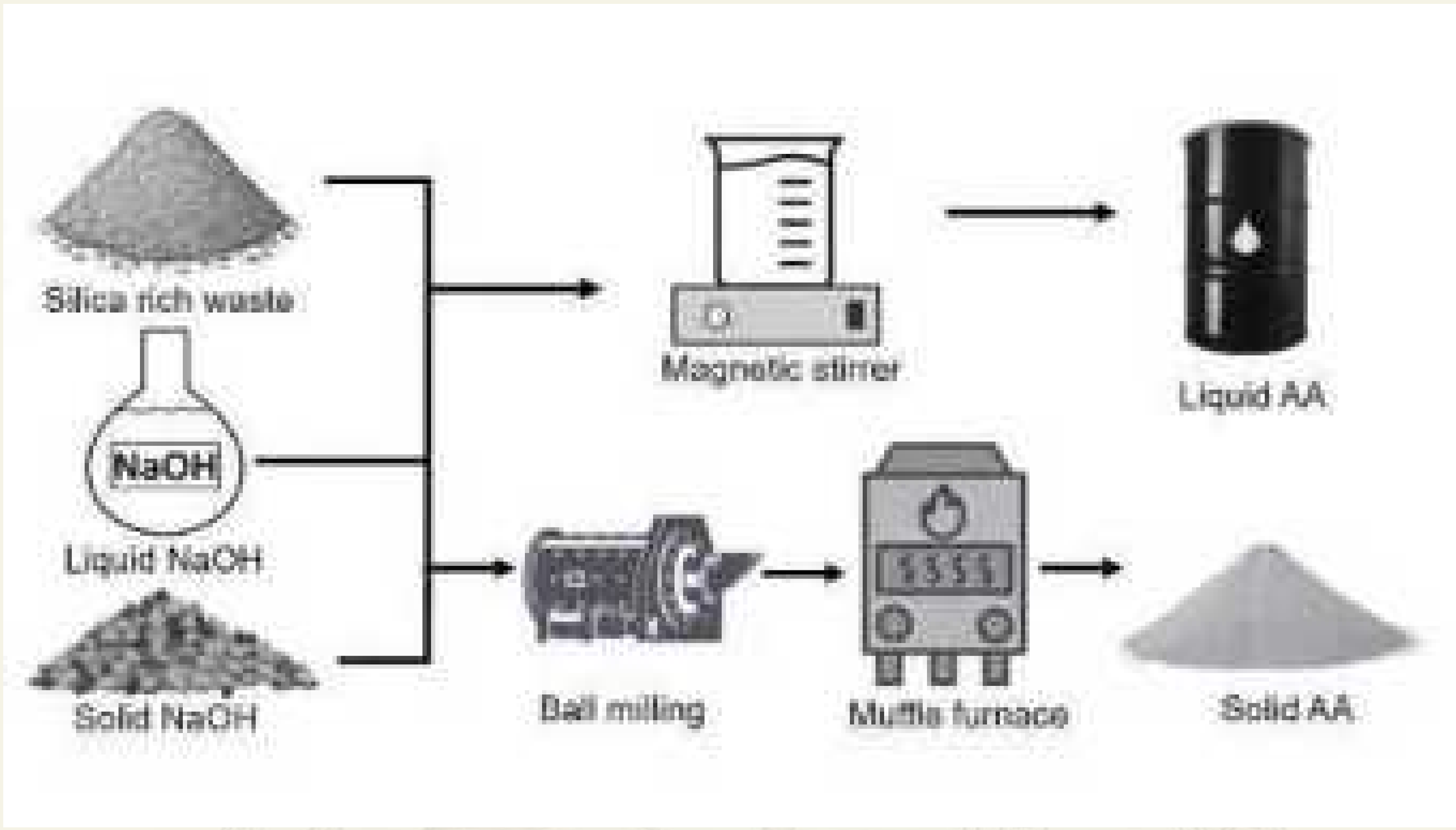


Figure 1. Schematic illustration of alternative AA production

Several recent studies have shown that alternative activators produced from such materials can deliver mechanical and durability performance comparable to, or in some cases better than, that achieved with conventional sodium silicate solutions [5]. From a sustainability perspective, this is a crucial development, as it demonstrates that high-purity, commercially produced silicates are not always necessary for effective alkali activation. Instead, reactive-grade silicates tailored for specific precursor systems may be sufficient, opening the door to more application-oriented and context-specific binder design.

Alongside the development of alternative activators, there has also been growing interest in one-part AAM systems [6]. Traditional AAMs are typically produced using a two-part system, where a solid precursor is mixed with a highly alkaline liquid activator. While effective, this approach presents practical challenges, particularly for on-site construction. The handling of corrosive alkaline solutions raises safety concerns, requires trained personnel, and complicates storage and transport. These issues have often been cited as barriers to large-scale adoption of AAMs in the construction industry.
One-part AAMs aim to address these challenges by using solid alkali activators that can be blended with the precursor and activated simply by adding water, similar to PC-based systems. Early attempts in this direction relied on solid sodium hydroxide or sodium carbonate, but these approaches faced limitations related to safety, storage stability, and performance. More recently, attention has shifted towards solid sodium silicate-type activators synthesized at moderate temperatures using silica-rich waste materials. Such systems offer a promising balance between performance, safety, and sustainability, while also improving the practicality of AAMs for real-world applications.

Despite these advances, several challenges remain before AAMs can be widely adopted as mainstream construction materials. One important issue is the long-term performance of AAMs activated with alternative or low-alkali systems. While short-term mechanical and durability results are often encouraging, there is still limited data on long-term behaviour under real exposure conditions. Carbonation resistance, reinforcement corrosion, and long-term phase stability remain areas where further systematic investigation is required.

Another challenge relates to supply chains and scalability. Although waste-derived silica sources are attractive from a sustainability perspective, their availability, consistency, and quality can vary significantly depending on location. This introduces additional complexity in mix-design and quality control, particularly for industrial-scale production. Existing concrete producers may also face practical barriers in adopting in-house synthesis of alternative activators, due to technical requirements and the need for reliable access to suitable raw materials.

Beyond technical considerations, non-technical factors also play an important role. The construction sector is inherently conservative, and the dominance of PC-based systems is reinforced by established standards, regulations, and industrial infrastructure. Overcoming these barriers will require not only further scientific and technological development but also close collaboration between researchers, industry stakeholders, and policymakers.

In conclusion, alkali-activated materials represent a highly promising class of binders with the potential to outperform traditional PC-based systems in terms of both performance and sustainability. However, their true environmental benefit depends strongly on system-level design choices, particularly the selection and production of alkali activators. Recent progress in alternative and solid activator development, including one-part AAMs, marks an important step towards more practical and genuinely sustainable solutions. Continued research focusing on long-term performance, life-cycle assessment, and real-world implementation will be essential to fully realize the potential of AAMs as construction materials for a more sustainable and resilient built environment.

References:

1. Provis, J. L. Alkali-activated materials. Cement and Concrete Research Preprint at https://doi.org/10.1016/j.cemconres.2017.02.009 (2018).

2. Fernandez-Jimenez, A., García-Lodeiro, I. & Palomo, A. Durability of alkali-activated fly ash cementitious materials. J. Mater. Sci. https://doi.org/10.1007/s10853-006-0584-8 (2007) doi:10.1007/s10853-006-0584-8.

3. Das, S. K. et al. Comparative Life Cycle Assessment of Paver Blocks Made with Fly Ash-Slag Alkali Activated Binders and Portland Cement . (2025).

4. Nikravan, M., Firdous, R. & Stephan, D. Life cycle assessment of alkali-activated materials: a systematic literature review. Low-carbon Materials and Green Construction 1, 13 (2023).

5. Das, S. K., Nayak, M. K., Patro, S. K. & Suda, Y. Durability Properties of Ambient Cured Geopolymer Mortar Made from Rice Husk Ash–Based Alkali Activator: A Comparative Study with Conventional Alkali Activator. Adv. Civ. Eng. Mater. 12, 20230069 (2023).

6. Hajimohammadi, A. & van Deventer, J. S. J. Characterisation of One-Part Geopolymer Binders Made from Fly Ash. Waste Biomass Valorization 8, 225–233 (2017).

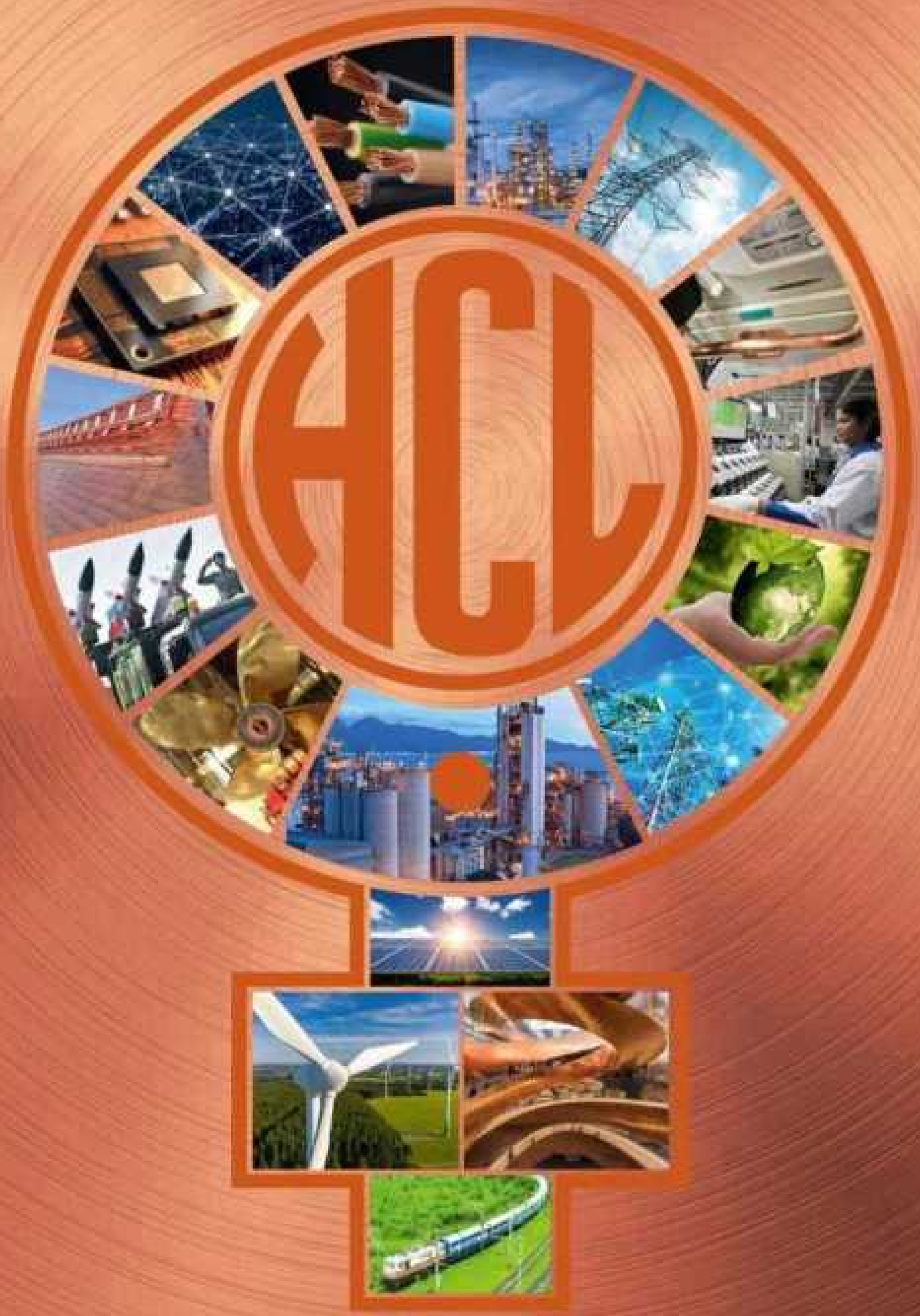
7. Das, S. K. Improvement of carbonation resistance of alkali activated materials using reactive MgO. (University of the Ryukyus, Japan, Okinawa, 2024).

हिन्दुस्तान कॉपर लिमिटेड

HINDUSTAN COPPER LIMITED

Schedule "A" CPSE under Ministry of Mines, Govt. of India

The Copper Miner to the Nation



www.hindustancopper.com

hindcopper copper_ltd hindustancopper @hindustancopperlimited4616 Hindustan Copper Limited hindustancopper

Azadi Ka Amrit Mahotsav

SMILES
TO A MILLION
ENERGY SECURITY
TO A BILLION

MAHANADI COALFIELDS LIMITED

(A Govt. of India Undertaking & Subsidiary of Coal India Limited)

Jagruti Vihar, Burla, Dist: Sambalpur-768020 (Odisha)

@www.mahanadicoal.in | @mahanadicoal

Enabling Ease of Living...

STUDY OF FUNCTIONAL SAFETY **PARAMETERS FOR RELIABILTY OF**

DUMPERS FOR IMPROVED OPERATIONAL EFFICIENCY BY USING AI/ML TECH

DR. BIJAY MIHIR KUNAR **[NIT, SURATHKAL]**
EMAIL- bkunar@nitk.edu.in

ABSTRACT

Dumpers play a pivotal role in opencast metal mining operations, where their reliability and safe functioning directly influence production efficiency, operational costs, and worker safety. However, continuous operation under high load conditions, challenging terrain, and harsh environmental factors makes dumpers highly susceptible to mechanical failures and safety hazards. This study presents a comprehensive assessment of dumper reliability, functional safety, and operational effectiveness in two mechanized opencast iron ore mines located in Odisha, India.

The research integrates Hazard Identification and Risk Analysis (HIRA), Failure Mode and Effects Analysis (FMEA), reliability engineering metrics, and Artificial Intelligence/Machine Learning (AI/ML) techniques to evaluate dumper performance over an operational period of approximately 2.5 years. A total of 20 Komatsu HD785-7 dumpers were analysed using breakdown records, maintenance logs, safety incident reports, and field observations. The key reliability indicators such as Mean Time Between Failures (MTBF), Mean Time to Repair (MTTR), availability, and failure frequency were evaluated to identify critical subsystems and high-risk components.

The study identified that engine-related issues (26.4%) tyre failures (16.3%), and suspension problems (11.1%) collectively account for more than half of total breakdowns, significantly affecting equipment availability. Risk assessment results revealed that hazards such as collision, run-over incidents, overturning, and fall from benches fall under the “Requiring Immediate Attention” category as per DGMS risk criteria (% of workers Exposed >20-40%). Functional safety features including proximity sensors, Seat belt Alarm, payload indicator, emergency steering system, dump body lifting signal, automatic fire detection and suppression systems (AFDSS) and speed limiting systems were examined to assess compliance with relevant safety standards and regulatory guidelines. (DGMS Circular no. 6 of 2020)

Further, the research explores the application of AI/ML models techniques in top5 categories (engine related issues, suspension oil, oil leakage, and transmission issues and hydraulic system issues) accounts approximately 80% of the total breakdown events, failure modes for predictive maintenance by integrating quantitative failure data with qualitative inputs such as operator feedback and safety surveys. The gradient boosting ML Model predicts highest accuracy achievement of 96.3% (severity) 97.9% accuracy (in occurrence) and 91.8% (detection model) for failure of dumper prediction in mining operations. The findings demonstrate that combining structured risk assessment with data-driven predictive models enhances failure prediction accuracy, reduces unplanned downtime, and improves overall operational productivity.

KEYWORDS: Failure Model, Reliability, Functional Safety, AI/ML, Meantime between failure (MTBF), Mean Time to Repair (MTTR).

UNLOCKING CRITICAL MINERALS **FROM MINE AND MINERAL WASTES:**

A PATHWAY TO INDIA'S RESOURCE SECURITY AND SUSTAINABLE ENERGY TRANSITION

PROF. DEVI PRASAD MISHRA & PROF. PRABODHA RANJAN SAHOO **[IIT([ISM), DHANBAD]**
EMAIL-dpmishra@iitism.ac.in

EXTENDED ABSTRACT

The transition to clean energy requires specialized critical minerals, with global demand projected to reach nearly 3 billion tons by 2050 (World Bank, 2020). However, factors such as concentrated ore deposits, trade barriers, and geopolitical constraints have led to severe supply shortages and increased import dependency for these niche elements (Pitron, 2022). With accelerating global action and investments to address climate change and reduce carbon footprint, the demand for these minerals is expected to grow exponentially. The rapid expansion of the renewable energy sector and the electrification of transportation will require critical minerals at unprecedented scales (Dold, 2020). Limited occurrences of these critical mineral deposits, low concentration and exploration challenges have risked the availability for these minerals. In this context, secondary resources, such as waste rocks from mining and mill tailings from mineral processing, offer a promising opportunity to recover some of the associated critical minerals previously discarded due to unawareness about the presence of minerals/metals or their low concentrations or extraction complexities. Characterisation studies by the USGS and the European Commission have confirmed the presence of recoverable quantities of valuable metals in mine and mineral wastes (Lottermoser, 2021). These accumulated wastes represent a significant large-scale secondary resource stream that can be harnessed to support circular economy objectives while enhancing resource efficiency and reducing environmental risk on a long term basis (Dold, 2020).

India has set ambitious renewable energy targets that necessitate reliable access to critical minerals essential for clean energy technologies, electric vehicles (EVs), wind turbines, solar panels, and advanced batteries. However, the country lacks adequate domestic reserves of several key minerals, including lithium (Li), vanadiu (V), cobalt (Co), nickel (Ni), niobium (Nb), tantalum (Ta), platinum (Pt), palladium (Pd), cadmium (Cd), rhodium (Rh), rare earth elements (REEs), and graphite. As global mining capacity struggles to keep pace with rapidly rising demand for these relatively scarce minerals, India faces growing challenges related to import dependence. These challenges are further exacerbated by uneven geographical distribution of resources, trade restrictions, geopolitical tensions, and underinvestment in mining and mineral processing infrastructure.

Recognising the strategic importance of critical minerals, the Ministry of Mines, Government of India, has initiated several measures to explore and develop domestic sources. In a significant step, the government launched it's first-ever auction of critical mineral blocks, valued at over $5 billion, on 29 November 2023 in New Delhi (Reuters, 2023). This landmark initiative aims to strengthen domestic resource availability and enhance mineral security in alignment with India's sustainable energy transition goals. The auction includes minerals such as lithium, vanadium, graphite, and rare earth elements, which are currently facing increasing global shortages (Bloomberg, 2023). It reflects a clear policy focus on ensuring resource adequacy for emerging manufacturing sectors.

Conventional mining and mineral processing activities for coal, base metals and precious metals generate substantial quantities of waste materials in the form of overburden and mill tailings. Traditionally considered as waste, these materials are increasingly being recognized as valuable secondary resources that can be processed to recover critical minerals. Their utilization represents an important step toward sustainability, reducing environmental impacts while improving resource efficiency.

The accumulated secondary stocks in mine and mineral wastes, resulting from over a century of mining and mineral processing activities of coal, chromite, bauxite, copper, lead and zinc, constitute largely underutilized indigenous repositories that can supplement primary mineral production. As India moves towards self-reliance in critical raw materials, assessing the potential of waste-hosted deposits becomes increasingly important. In particular, mill tailings and overburden from base metal (Pb, Zn, Cu), gold, bauxite and chromite deposits across different regions of the country present significant opportunities for possible recovery of some of the associated critical metals. In this context, comprehensive assessment and inventory development of both primary and secondary mineral resources will play a pivotal role in guiding investments in extraction technologies and processing infrastructure. Systematic mineralogical, geochemical, and elemental characterization of these materials is essential to evaluate their potential for critical mineral recovery.

As India’s economy expands and demand for critical minerals continues to rise, the characterisation of mine waste and mill tailings can help identify untapped domestic resources and reduce reliance on imports. These secondary resources offer a viable pathway to strengthen mineral security while supporting the country’s clean energy and electric mobility ambitions. Overall, a systematic and integrated approach to assessing both primary and secondary mineral inventories is essential to ensure long-term resource adequacy and sustainable development.

References

1. Bloomberg. (2023). India Kicks Off Critical Minerals Auction to Bolster EV Ambition. https://www.bloomberg.com/news/articles/2023-11-29/india-kicks-off-critical-minerals-auction-to-bolster-ev-ambition

2. Dold, B. (2020). Sourcing of critical elements and industrial minerals from mine waste—The final evolutionary step back to sustainability of humankind? Journal of Geochemical Exploration, 219, 106638.

3. Lottermoser, B.G. (2021). Mine Wastes: Characterisation, Treatment, Environmental Impacts. Springer Nature, Switzerland.

4. Pitron, G. (2022). The Geopolitics of the Rare-Metals Race. The Washington Quarterly, 45, 135-150.

5. Reuters. (2023). India launches first part of critical minerals auction worth $5.4 billion. https://www.reuters.com/world/india/india-launches-first-part-critical-minerals-auction-worth-54-bln-2023-11-29/

6. World Bank. (2020). Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition. World Bank Group.

THE FUTURE OF ARTIFICIAL INTELLIGENCE IN **MINING AND MINERAL BENEFICIATION**

A CRITICAL REVIEW OF EMERGING TECHNOLOGIES, INDUSTRIAL IMPLEMENTATIONS, AND THE ROAD AHEAD

TANMAY MOHARANA(1) & RAKESH PRADHAN(2)
[1- BRIDGESTONE MOBILITY SOLUTIONS,GERMANY][2-CMPDI, RANCHI]
EMAIL-pradhanrakesh@zohomail.com

EXTENDED ABSTRACT

The mining and mineral processing industry is undergoing a profound transformation driven by rapid advancements in Artificial Intelligence (AI) and digital technologies. Traditionally characterized by low levels of automation and slow adoption of digital tools, the sector is now transitioning toward data-driven, autonomous, and intelligent operations. This extended abstract synthesizes recent developments in AI applications across mining value chains, including exploration, extraction, beneficiation, and sustainability, while also addressing key challenges and future pathways. AI adoption in mining has accelerated significantly over the past decade. Earlier studies indicated limited penetration of advanced technologies, with predictive analytics and automation largely confined to pilot projects. However, recent trends show a substantial increase in investment and implementation. Global spending on AI in mining is projected to grow rapidly, reflecting industry recognition of its potential to improve efficiency, safety, and profitability. In mineral exploration, AI techniques such as machine learning (ML) and deep learning are revolutionizing the identification of mineral deposits. By integrating geospatial data, satellite imagery, and historical mining records, AI models can detect complex patterns and predict mineralization zones with high accuracy. These approaches significantly reduce exploration time, cost, and uncertainty compared to traditional methods. Notably, AI-driven exploration has demonstrated the ability to identify a large proportion of known deposits using only a fraction of available data, highlighting its efficiency and scalability. Autonomous equipment represents another major frontier in AI-enabled mining. The deployment of driverless haul trucks, drilling systems, and robotic machinery has improved operational efficiency and reduced human exposure to hazardous environments. These systems rely on advanced sensors, GPS, LiDAR, and real-time data analytics to operate safely and efficiently. In addition to productivity gains, AI-powered automation contributes significantly to worker safety by minimizing human involvement in high-risk activities. Wearable technologies further enhance safety by continuously monitoring environmental conditions and worker health parameters. In mineral beneficiation, AI plays a critical role in optimizing complex processes such as froth flotation, grinding, and separation. Froth flotation, which accounts for a large proportion of mineral processing operations, has particularly benefited from AI integration. Convolutional Neural Networks (CNNs) and other deep learning models analyze real-time images of froth surfaces to predict process performance and optimize control parameters.

Similarly, Artificial Neural Networks (ANNs) and genetic algorithms function as soft sensors, enabling real-time adjustments in feed rate, reagent dosage, and operating conditions. These innovations lead to improved recovery rates, reduced energy consumption, and enhanced process stability. The emergence of Digital Twins and Industrial Internet of Things (IIoT) technologies has further enhanced the capabilities of AI in mining. Digital twins create virtual replicas of physical systems, enabling real-time monitoring, simulation, and optimization of operations. When combined with IIoT sensors, these systems facilitate predictive maintenance by identifying equipment faults before failure occurs. This reduces downtime, lowers maintenance costs, and improves overall operational efficiency. The integration of cyber-physical systems represents a significant step toward fully automated and intelligent mining operations. Despite these advancements, several challenges continue to hinder widespread AI adoption. Connectivity remains a critical barrier, particularly in remote mining locations where reliable network infrastructure is limited. Workforce skill gaps also pose a significant challenge, as the implementation of AI systems requires expertise in data science, automation, and digital technologies. Additionally, concerns related to cybersecurity, high initial investment costs, and the absence of clear implementation roadmaps further complicate adoption efforts.

AI also plays a vital role in promoting sustainability and Environmental, Social, and Governance (ESG) objectives. Intelligent monitoring systems enable real-time assessment of environmental parameters such as air quality, water usage, and tailings stability. These capabilities support regulatory compliance and enhance transparency. Furthermore, AI-driven optimization reduces energy consumption and emissions, contributing to more sustainable mining practices. As global demand for critical minerals increases due to the energy transition, AI will be essential in balancing productivity with environmental responsibility. Looking ahead, several transformative pathways are expected to shape the future of AI in mining. These include full-scale automation of mining fleets, the use of generative AI for exploration, closed-loop beneficiation systems, predictive ESG compliance frameworks, and the democratization of AI tools through cloud-based platforms. Together, these developments indicate a shift from isolated AI applications to fully integrated, intelligent mining ecosystems. In conclusion, AI is no longer a peripheral innovation but a central driver of transformation in the mining and mineral processing industry. While significant progress has been made, the focus must now shift toward scalable implementation, workforce development, and ethical deployment. By addressing existing challenges and leveraging emerging opportunities, the mining sector can achieve safer, more efficient, and more sustainable operations in the coming decade.

Keywords: Mining; Mineral Beneficiation; Artificial Intelligence; Machine Learning; Industry 4.0

References:

1. Bai, Z. et al. (2025). AI in mineral processing: A review. J. Environ. Chem. Eng., 13, 118313.

2. BHP (2024). Artificial Intelligence is Unearthing a Smarter Future. BHP Insights.

3. ConnectOre (2025). Artificial Intelligence in Mining and Metals. ConnectOre Pulse Briefing.

4. Moharana, T. (2017). Digital Transformation in Mining and Mineral Processing. Master's Thesis, TU Bergakademie Freiberg.

5. S&P Global Market Intelligence (2025). AI Revolution in Mining: Promise Meets Peril.

FUTURE OF
ARTIFICIAL INTELLIGENCE(AI)
IN ELECTRICAL ENGINEERING

DR. SANGRAM KESHORI MOHAPATRA **[GCE, KEONJHAR]**
EMAIL- sangrammohapatra_fee@gcekjr.ac.in

ABSTRACT

Artificial Intelligence (AI) in Electrical Engineering refers to the use of intelligent algorithms and data-driven models to improve the design, control, and operation of electrical systems. By combining traditional electrical engineering principles with Artificial Intelligence techniques, engineers can create systems that learn from data, adapt to changing conditions, and make decisions automatically. AI is widely applied across power systems, electronics, communications, and control engineering. For example, AI helps optimize energy distribution in smart grids, detect equipment faults before failure, enhance signal processing, and enable intelligent automation across industries. These applications often rely on methods such as machine learning and Neural Networks. Overall, AI is transforming electrical engineering by making systems more efficient, reliable, and autonomous, opening up new possibilities for innovation in energy, technology, and infrastructure.

The following point summarizes the primary pillars of this evolution:

1. **Smarter Power Systems (AI-driven Grids)**
   AI is revolutionizing power generation, transmission, and distribution:
- Smart grids use AI to predict demand, balance loads, and prevent outages.
- Integration of renewables (solar and wind) becomes easier with AI-based forecasting.
- Self-healing grids automatically detect and fix faults.
  This area heavily intersects with Power Systems Engineering and Artificial Intelligence.

2. Predictive Maintenance & Fault Detection
  AI analyses sensor data to predict equipment failures.
- Downtime and maintenance costs are reduced.
- Industrial system safety is improved.
  This relies on concepts such as machine learning and Neural Networks.

3. Intelligent Electronics & Embedded Systems
  AI is moving onto chips:
- Edge AI allows devices to make decisions locally (no cloud needed)
- Smart IoT devices optimise energy usage and performance.
- Microcontrollers with AI are becoming common.
  This blends electrical engineering with Embedded Systems.

4. Automation, Robotics, and Control Systems
  AI enables adaptive, real-time learning in control systems.
- Autonomous robots improve manufacturing and plants.
- Industrial automation becomes much smarter with AI.
  This builds on Control Systems Engineering.

5. AI in Semiconductor Design (Chip Design Revolution)
  AI is accelerating chip design:
- Optimising layouts and circuits faster than human engineers.
- Processor and IC design cycles are shortened.
- Chips become more efficient and powerful with AI.
  Companies like NVIDIA and Intel are already investing heavily in AI-driven design.

6. Renewable Energy Optimisation

AI improves efficiency in:

- Solar panel positioning and performance.
- Wind turbine control systems.
- Energy storage and battery management.

This connects to Renewable Energy Engineering.

7. Signal Processing & Communications

AI is transforming how signals are analysed:

- AI-based noise reduction and filtering.
- Smarter wireless communication (5G/6G optimisation).
- Spectrum management using AI.

8. Human–Machine Collaboration

Future electrical engineers will:

- Work alongside AI tools for design and simulation.
- Use AI assistants to debug circuits and systems.
- Focus more on system-level thinking than manual calculations.

Keywords: Smart Grids; Predictive Maintenance; Embedded Systems; Renewable Energy Engineering; Control Systems

NET-ZERO ENGINEERING: **PATHWAYS TO CARBON NEUTRALITY**

SIDDHARTH SANKAR JENA **[ROURKELA STEEL PLANT, SAIL]**
EMAIL- siddharthsankar42@gmail.com

ABSTRACT

Net zero engineering is best understood as a progressive and adaptive approach rather than a complete replacement of existing industrial systems and processes. Many metallurgical processes, particularly in iron & steel making, have relied on conventional fossil fuels like coke for over a century, making abrupt transitions both technically and economically challenging. Instead, integrating alternative technologies, materials, and process modifications systematically can create a viable pathway towards carbon neutrality.

In iron & steelmaking, the blast furnace route remains one of the largest contributors to CO_2 emissions, primarily because it uses conventional coke as both a fuel and a reducing agent. Completely eliminating coke is currently unrealistic; however, partial substitution strategies are in focus. One such approach is the injection of biochar through tuyeres. Biochar, derived from biomass, has proven successful in reducing coke consumption and lowering overall carbon emissions. Although challenges such as lower mechanical strength, variability in material quality, and higher reactivity exist, controlled usage has shown that furnace stability can be maintained while achieving environmental benefits.

Hydrogen is another promising reductant being explored to partially replace coke in ironmaking. Hydrogen injection can be done through tuyeres, replacing PCI. The reduction of ferrous oxide produces water vapour as a by-product rather than CO_2, making it an attractive alternative. However, large-scale implementation is constrained by the high cost and energy intensity of hydrogen production, especially when aiming for green hydrogen routes. A major breakthrough in raw material preparation and innovation is micro-palletisation. The process uses 100% waste oxides to produce small, durable pellets, typically 4–6 mm in size, followed by sintering, which reduces the need for coke breeze and lowers emissions when used as a charge material in a blast furnace. Similarly, fluxed pellets offer improved efficiency, thereby reducing furnace fuel consumption.

Beyond the blast furnace, recent technologies such as carbon capture and utilisation (CCU) and Electric Arc Furnace (EAF)-based steelmaking are being actively evaluated to further reduce the steel industry's carbon footprint.

In essence, net zero engineering is not a singular technological breakthrough but a phased integration of incremental improvements. By combining alternative fuels, innovative raw-material preparation techniques, and optimised processes, it is possible to significantly reduce carbon emissions without compromising process stability or operational continuity.

Key words: Net-Zero Engineering; Iron and Steel Decarbonisation; Biochar & Hydrogen; Blast Furnace Optimization; Carbon Capture and Utilisation.

.

EFFECT OF **THERMAL TREATMENT**

ON COMMUNITION OF LOW-GRADE IRON ORE

RAHUL KUMAR DAS **[OSME, KEONJHAR]**
EMAIL-rahulbls.das71@gmail.com

ABSTRACT

The banded Iron formation of Banded Hematite Jasper is a very low-grade Iron ore that usually contains Fe at 30-40%, depending on the origin. Banded Hematite Jasper was obtained from Donimalai Mines of NMDC Ltd for study. Banded Hematite samples were treated at 400°C, 500°C, 600°C and 700°C under a muffle furnace of high and medium temperature types. After heat treatment, the samples were polished and observed under an optical microscope. Intergranular fractures occurred between the Hematite and Jasper boundaries within the sample, facilitating the easy liberation of hematite from the gangue material. Grinding tests were performed to determine the breakage rates of both treated and untreated samples using a laboratory Ball Mill. The breakage rate was much lower in the treated sample than in the untreated samples.

Keywords: Iron Ore; Ore Beneficiation; Banded Hematite Jasper; Thermal Treatment; Grinding Kinetics

STRENGTHENING SAFETY CULTURE: LAUNCH OF TSMPL

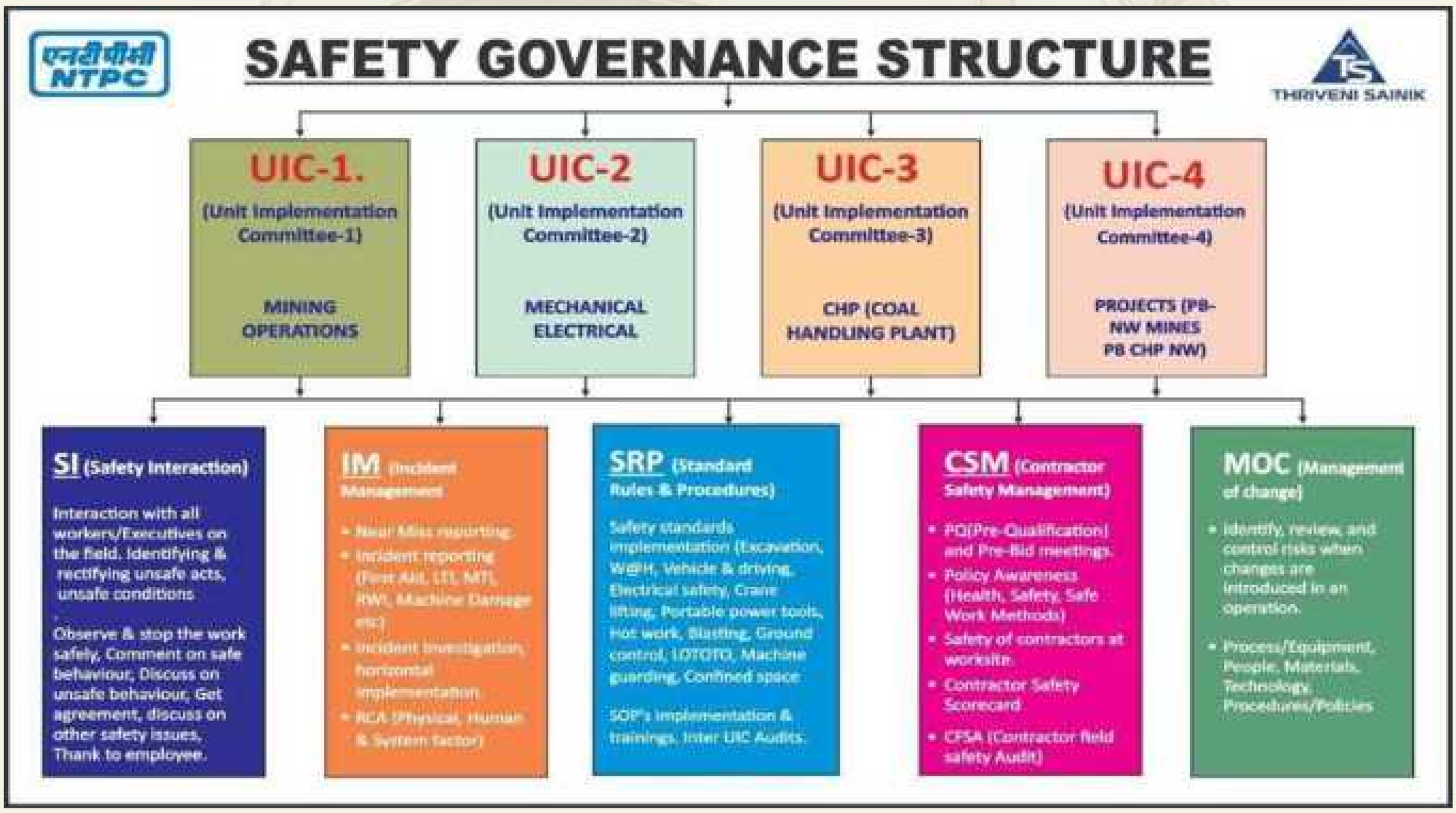
SAFETY GOVERNANCE STRUCTURE

MALAYA BEHERA & AMAN VOHRA
EMAIL-malaya.mining@gmail.com
[THRIVENI SAINIK MINING PVT. LTD.]

EXTENDED ABSTRACT

The Thriveni Sainik Mining Pvt. Ltd. (TSMPL) recognizes occupational safety as a fundamental element of operational excellence. In pursuit of this objective, a comprehensive Safety Governance Structure has been established as a systematic and integrated framework to strengthen workplace safety and promote a proactive, risk-informed safety culture across all organizational levels.

The governance framework is chaired by the Chief Executive Officer (CEO), thereby ensuring strong leadership engagement, clear accountability, and strategic oversight. This top-driven approach facilitates effective implementation, continuous monitoring, and periodic review of safety performance, fostering a culture of continual improvement and adherence to best practices in safety management.



Unit Implementation Committees (UICs)

UIC-1 (Mining Operations): Responsible for the safe execution and monitoring of mining activities.
UIC-2 (Mechanical & Electrical): Responsible for safety in mechanical, electrical, and related operations.
UIC-3 (CHP – Coal Handling Plant): Responsible for safety in coal handling and processing operations.
UIC-4 (Projects – PB NW Mines & PB CHP NW): Responsible for safety compliance in project execution and development operations.

Safety Subcommittees

1. Safety Interaction (SI) Subcommittee: Facilitates engagement between employees and management to actively identify and address unsafe acts or conditions. This subcommittee focuses on six key areas: Reaction, Position, PPE, Procedures, Tools & Equipment, and Plant Upkeep, aiming to improve awareness and intervene proactively.

2. Incident Management (IM): A structured system for incident reporting, thorough investigations, and Root Cause Analysis (RCA) covering physical, human, and systemic factors. The following incidents are being reported and tracked through the IM subcommittee.

3. Standard Rules & Procedures (SRP): Reinforcing safety standards, SOPs, and protocols across all operational areas, the SRP Subcommittee ensures consistent implementation and adherence to standardised safety practices throughout the organisation. This framework is further strengthened through inter-UIC safety audits, designed to verify compliance and drive continual improvement. As part of this framework, 12 Safety Standards have been launched, each addressing a critical area of workplace safety and risk management: Excavation, W@H, Driving, Electrical, Lifting, Tools, Hot Work, Blasting, Ground Control, LOTOTO, Machine Guarding, and Confined Space.

4. Contractor Safety Management (CSM): Focused on managing and ensuring the safety of all TSMPL contractors by driving compliance through pre-qualification checks, policy awareness, safety audits, and contractor performance scorecards.

5. Management of Change (MOC): Ensuring comprehensive risk assessment and control during any change in processes, equipment, workforce, or technology.

6. Identify, review, and control risks associated with change.

7. Address modifications in process, equipment, people, materials, technology, procedures, or policies.

8. Ensure all risks are evaluated and mitigated before implementation.

Digital Transformation EHS Portal:

The Digital Environment, Health, and Safety (EHS) Module has been implemented in collaboration with M/s Delta Four as a strategic initiative to strengthen the organization’s “Zero Harm” vision. This system enhances the efficiency, speed, and transparency of reporting related to safety observations and incidents. The module facilitates seamless capturing, tracking, and closure of safety-related events through a structured and integrated digital platform, ensuring improved accountability, data accuracy, and timely action across all operational levels.

Unsafe Acts, Unsafe Conditions. Safe Acts–Fatal Potential Observations (FPOs) - Near Miss VFL (Visible Felt Leadership) Incidents – Categorised into LTI (Lost Time Injury), MTI (Medical Treatment Injury), First Aid Case, Restricted Work Injury (RWI), and Fatal incidents.

Keywords: Safety governance; Safety culture; Incident management; Risk assessment; Workplace safety

Reference:

1. Heinrich, H. W., Petersen, D., & Roos, N. (1980). Industrial accident prevention: A safety management approach (5th ed.). New York: McGraw-Hill.

2. Hollnagel, E. (2014). Safety-I and Safety-II: The past and future of safety management. Farnham, UK: Ashgate Publishing.

3. International Labour Organization (ILO). (2021). Safety and health at the heart of the future of work: Building on 100 years of experience. Geneva: ILO.

4. International Organization for Standardization (ISO). (2018). ISO 45001:2018 Occupational health and safety management systems Requirements with guidance for use. Geneva: ISO.

5. Reason, J. (1997). Managing the risks of organizational accidents. Aldershot, UK: Ashgate Publishing.

PREDICTING ROCK SLOPE FAILURES **USING ACOUSTIC EMISSION ENERGY**

AND TWO STAGE NEURAL NETWORK MODELING

ANSHUMAN MOHANTY(A), ANURAG MALLIK(B), DEBASHIS PARIDA(B)
[A-COLORADO SCHOOL OF MINES,USA], [B- M/S. M.G MOHANTY, KOIRA, SUNDERGARH, ODISHA, INDIA]
EMAIL-anshumanmohanty918@gmail.com

EXTENDED ABSTRACT

Rock slope failures are a significant geotechnical hazard, and the conventional monitoring methods are limited in detecting stability issues until significant deformation has already occurred. As the frequency of rock slope failures worldwide continues to rise, there is a strong demand for earlier, more sensitive, and proactive detection techniques capable of identifying precursory failure signals. Acoustic emissions (AE) have shown huge potential for predicting rock failure by detecting and analyzing micro-scale fracture processes prior to macroscopic damage. However, the integration of AE data into slope stability assessment systems still remains underdeveloped.

This gap can be filled by a study proposing a two-stage Artificial Neural Network (ANN) framework for proactive slope stability monitoring using AE signals. AE recordings from controlled uniaxial compressive tests can be classified as clean training data for the predictive model. The geotechnical parameters, namely mean stress, mean strain, elastic strain energy, and dissipated strain energy, were used as inputs to develop an ANN-based regression model to predict AE energy. This predicted AE energy, along with the geotechnical parameters, was further used in a classification ANN to determine slope stability conditions (stable or failure). The results showcase the potential of an AE-based monitoring system for excellent detection of slope failures, providing useful data for geotechnical real-time monitoring and early warning systems.

The results demonstrated that the proposed two-stage framework achieves high predictive accuracy in both AE energy estimation and stability classification. The trained model is set for recognising patterns in the field scale data. This predictive model showcases strong capability to detect progressive deterioration in rocks and formation of cracks at the microscopic level. Hereby, providing a reliable and real-time geotechnical monitoring system with early warning signals for rock slope failures.

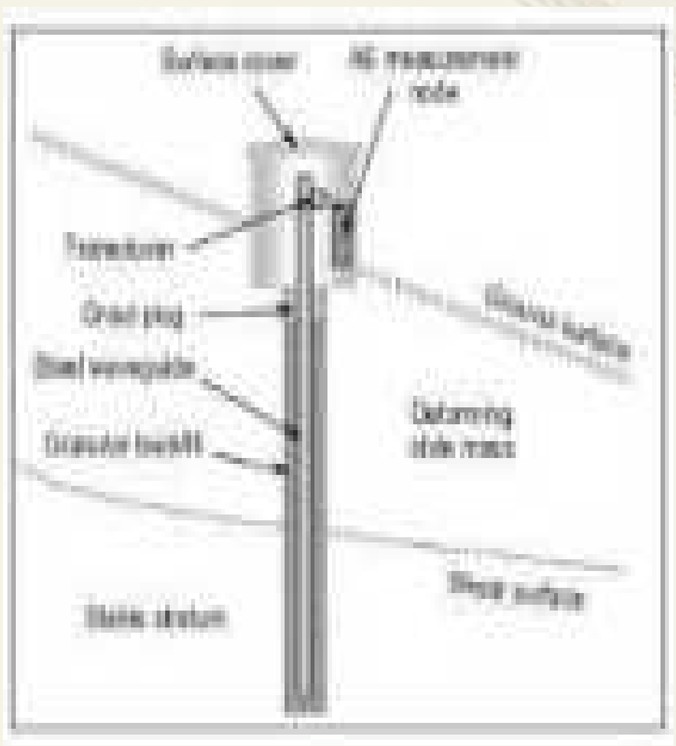


Fig. 1

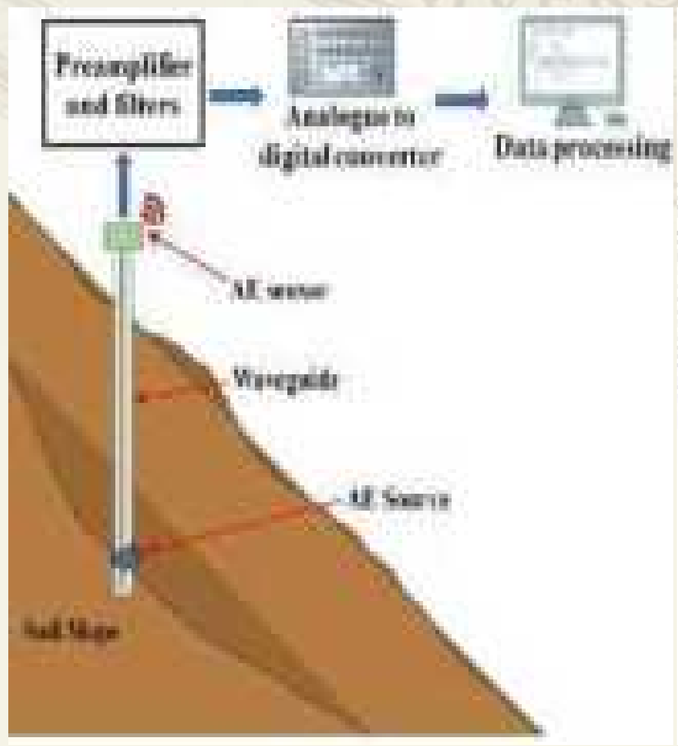


Fig. 2

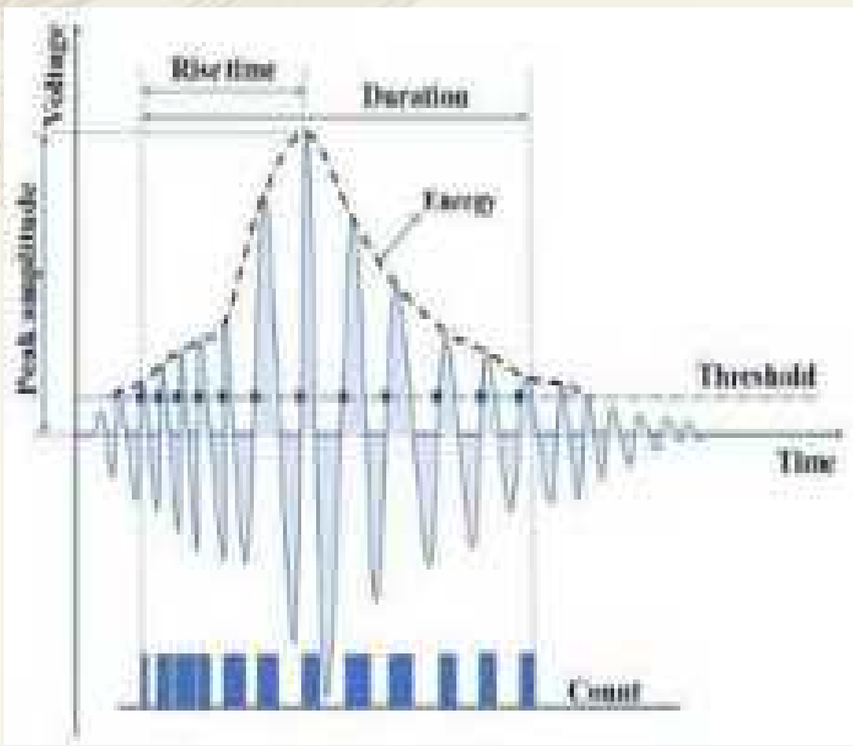


Fig. 3

Figure 1: Schematic diagram of AE sensor installed in a rock slope (Source: Google)
Figure 2: Flow diagram of the AE signal processing (Source: Google)
Figure 3: A typical AE signal - AE count and AE energy (Source: Google)

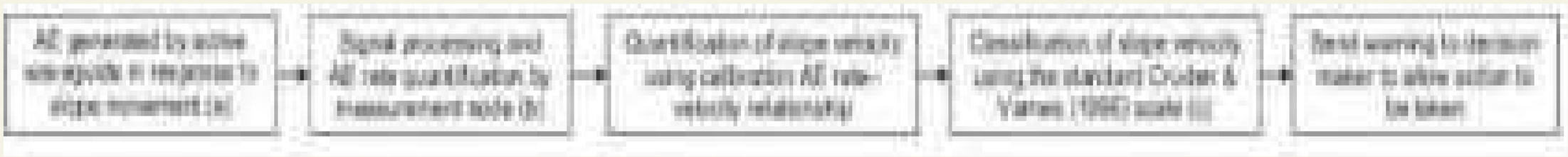


Figure 4: Flowchart of the AE slope stability warning system

Keywords- Acoustic Emissions, Slope stability, Machine Learning

Reference:

1. Heinrich, H. W., Petersen, D., & Roos, N. (1980). Industrial accident prevention: A safety management approach (5th ed.). New York: McGraw-Hill.

2. Hollnagel, E. (2014). Safety-I and Safety-II: The past and future of safety management. Farnham, UK: Ashgate Publishing.

3. International Labour Organization (ILO). (2021). Safety and health at the heart of the future of work: Building on 100 years of experience. Geneva: ILO.

4. International Organization for Standardization (ISO). (2018). ISO 45001:2018 Occupational health and safety management systems Requirements with guidance for use. Geneva: ISO.

5. Reason, J. (1997). Managing the risks of organizational accidents. Aldershot, UK: Ashgate Publishing.

SIMULATION STUDY OF THE **FEASIBILITY FOR CAPACITY**

ENHANCEMENT FOR THE EXISTING COPPER BENEFICIATION PLANT

ABHIJEET MANASINGH(1), AJIT KUMAR SWAIN(1) & CHINMAY KUMAR MAHANTA(2)
1- MINERAL PROCESSING DIVISION, CSIR NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR
2- CONCENTRATOR PLANT, MALANJKHAND COPPER PROJECT, HINDUSTAN COPPER LIMITED
EMAIL- manasingh.nml@csir.res.in

ABSTRACT

A copper beneficiation plant is operating at 2.5 MTPA, located at central India region. Its crushing unit reduces received -150 mm ore to 80% passing 12mm and grinding circuit grinds them to d40 passing 250 microns for direct flotation process to generate Cu concentrate. The plant is designed to operate with a single secondary crusher in open circuit along with three tertiary crushers in closed circuit to achieve desired throughput. There are four parallel grinding circuit of similar configuration. The grinding circuit consists of ball mill in closed circuit with hydro cyclone and hydro cyclone overflow feeds the flotation circuit having rougher-scavenger-cleaner-re-cleaner configuration. The ROM contains 0.9-1 % Cu is upgraded to 27% Cu at 92% recovery.

Process audit was carried out to benchmark the capacity of the crushing, grinding and flotation circuits for capacity enhancement to 3.0 MTPA through modeling and simulation analysis. To achieve the desired capacity of 3.0 MTPA production, the grinding and flotation circuits need to operate at 30% higher capacity and crushing at about 600 TPH (with 16 h/day operation), considering about 90% plant availability. USIMPAC software was used to develop a steady-state model, which was calibrated using the actual plant data from the sampling campaigns. Modelling and simulation analysis was carried out to evaluate the existing circuits for augmentation and feasibility of capacity enhancement. In simulation tests, various parameters combinations were applied to identify the bottlenecks and to increase the throughput.

Evaluation of current circuit performance was done in terms of reduction ratio for crusher and ball mill, screen efficiency, partition curves of screen and hydrocyclones, grade and water recovery in froth of flotation circuits using the mass balancing data. Then steady state model was developed for each equipment using the mass balancing and equipment data. Finally, simulation analysis was done to benchmark the circuit.

The results of the analysis showed that higher milling required an increase in ball load and crushing circuit was able to handle higher capacity production, provided the fine percent of the primary crusher product does not deteriorate. For flotation circuit, the current operation was at its limit with very high-water recirculation in the cleaner tails. For higher capacity, additional cells may be required in the present circuit, provided the water recovery in the rougher froth is controlled.

(**Keywords:** Modelling and simulation analysis, beneficiation plant, process audit, capacity augmentation, steady-state model, circuit performance evaluation)

STUDIES ON
SELCTIVE FLOCCULATION OF
IRON ORES FINES USING DIFFERENT FLOCCULANT

DR. KICHAKESWARI TUDU **[GCE, KEONJHAR]**
EMAIL- tudukichakeswaridnj@gmail.com

EXTENDED ABSTRACT

This study focuses on the beneficiation of low-grade geothitic iron ore fines using selective flocculation, an advanced separation technique particularly effective for ultrafine particles. The increasing depletion of high-grade iron ore reserves and the rising demand from metallurgical industries necessitate the efficient utilization of low-grade resources. Indian iron ores, although rich in iron, are often associated with high levels of alumina and silica, which adversely affect their direct use in iron and steel production. Therefore, upgrading these ores to improve iron content while reducing gangue minerals is essential. Selective flocculation has emerged as a promising beneficiation method, especially for treating finely disseminated mineral systems where conventional methods such as gravity and magnetic separation are less effective.

The present investigation evaluates the performance of different flocculants, namely starch amylopectin (AP, a natural polysaccharide), polyacrylic acid (PAA, a synthetic water-soluble polymer), and a graft copolymer (AP-g-PAA, which is AP modified with side chains of PAA), in enhancing the grade (concentration of iron in the recovered material) and recovery (percentage of total iron extracted) from low-grade ore fines. The experimental studies were conducted in a controlled environment using a slurry (a mixture of ore particles and water) containing 5% solids by weight. The pH (a measure of acidity or alkalinity) of the system was adjusted to 10 with dilute sodium hydroxide, as alkaline conditions are known to favour the selective adsorption (preferential attachment) of flocculants onto iron-bearing minerals. The slurry was thoroughly mixed to ensure uniform dispersion of particles and reagents, then settled under quiescent (still) conditions to observe flocculation behaviour (how particles clump together) and separation efficiency (how well iron is separated from other materials).

The results demonstrate that the nature and structure of the flocculant play a crucial role in determining the efficiency of the selective flocculation process. Among the tested reagents, the graft copolymer AP-g-PAA demonstrated superior performance, increasing the iron grade from 56.98% to 67.11% and achieving an impressive recovery of 95.00%. This enhanced performance can be attributed to the combined properties of starch and synthetic polymer chains, which improve selectivity and bridging between iron oxide particles while minimizing the entrainment of gangue minerals. In comparison, starch amylopectin alone resulted in a product grade of 64.23% Fe with a recovery of 88.11%, while polyacrylic acid yielded 63.15% Fe with a recovery of 82.22%. These findings indicate that although individual polymers are effective, their synergistic combination in graft copolymers significantly enhances beneficiation efficiency.

The influence of process parameters such as pulp density (the concentration of solids in the slurry), pH (a measure of how acidic or basic the solution is), and particle size on flocculation behaviour was also investigated. It was observed that lower pulp densities favour better settling rates and improved separation efficiency due to reduced particle-particle interference and enhanced floc formation. At a pulp density of 5%, both grade and recovery were higher than at 8% and 10%. The role of pH was found to be critical, as it influences the surface charge (electrical charge at the particle surface) of mineral particles and the ionization (conversion to electrically charged ions) of flocculant functional groups. Zeta potential (a measure of the magnitude of electrostatic repulsion or attraction between particles) measurements indicated that the system's isoelectric point (the pH at which particles have

no net electrical charge) is around pH 6.5, beyond which the surface charge becomes increasingly negative. At pH 10, optimal conditions for selective flocculation were achieved: electrostatic repulsion between gangue particles (unwanted minerals) prevented their aggregation, while iron particles flocculated selectively due to polymer adsorption (the attachment of polymer molecules to particle surfaces).

Particle size analysis further supported the effectiveness of the flocculation process. Larger aggregates of fine particles, called flocs, formed in the presence of substances known as flocculants—especially with the graft copolymer (a polymer backbone with branches of a different polymer attached). The average particle size measured increased from 12.093 micrometres (μm) without flocculants to 17.229 μm with AP-g-PAA (a graft copolymer of acrylamide and polyacrylic acid), indicating successful aggregation. This increase in floc size directly correlates with better settling rates and improved separation. It was also noted that ultrafine (very small) particles need higher amounts of flocculant for effective aggregation, highlighting the importance of optimising the amount of reagent for different particle sizes.

The study confirms that selective flocculation is highly dependent on particle size distribution, reagent type, and operating conditions. The optimal particle size for effective separation was found to be below 0.075 mm, where conventional methods typically fail. The use of tailored flocculants, particularly graft copolymers, significantly improves both grade and recovery, making the process economically viable for large-scale applications. The findings of this work align with previous studies, reinforcing the potential of selective flocculation as a key technology for the beneficiation of low-grade iron ores.

In conclusion, selective flocculation with advanced polymeric reagents offers an efficient route for upgrading low-grade iron ore fines. The graft copolymer AP-g-PAA performed best of the tested flocculants, improving both iron grade and recovery. Operational parameters such as pH, pulp density, and particle size strongly influence the process, so these must be carefully optimised. This study offers insights into the design and optimisation of selective flocculation systems and highlights their potential for the sustainable use of low-grade iron ore in the mining and metallurgical industries.

Keywords: Mining; Selective Flocculation; Iron Ore Beneficiation; Polymer Flocculants; Zeta Potential

References:

1. Huang, C. B., Zhang, L., Wang, Y.-H., & Lan, Y. (2008). Separation of alumina silicates and diaspore from diasporic bauxite by selective flocculation. Journal of Central South University of Technology.

2. Panda, L., Das, B., Rao, D. S., & Mishra, B. K. (2011). Selective flocculation of banded hematite quartzite (BHQ) ores. Institute of Minerals and Materials Technology, Council of Scientific and Industrial Research (CSIR), Bhubaneswar, India.

3. Roy, S., & Das, A. (2008). Characterisation and processing of low-grade iron ore slime from Jilling area of India. Mineral Processing and Extractive Metallurgy Review, 29, 213–231.

4. Roy, S., Das, A., & Mohanty, M. K. (2007). Feasibility of producing pellet-grade concentrate by beneficiation of iron ore slimes in India. Separation Science and Technology, 42, 3271–3287.

5. Sresty, G. C., & Somasundaran, P. (1980). Selective flocculation of a synthetic mineral mixture. International Journal of Mineral Processing.

FROM ROCK TO ALLOYS: **A CYCLE OF ALTERATION**

SUSHANTA KUMAR PRADHAN **[GCE, Keonjhar]**
EMAIL-sushantap9@gmail.com

ABSTRACT

Earth with a dynamic recycling system for land, water and air continues to evolve with time. Studies show that the earth formed about 4.5 billion years ago from gas and cosmic dust long before the emergence of human civilization. Over time, the bulk converted to molten mass. Heavier iron and nickel sank to the centre, creating the core, while lighter felsic and mafic rocks rose to the top to form earth's crust, the outermost solid part. It comprised with rocks formed from the cooling of molten magma (Igneous); rocks formed from accumulation of dust, sand and organic remains (Sedimentary) and rocks formed through intense heat and pressure (Metamorphic). The most abundant elements in the earth's crust are oxygen (O) and silicon (Si), aluminium (Al), iron (Fe), calcium (Ca), sodium (Na), potassium (K), and magnesium (Mg).

Ancient civilization used rocks for a variety of purposes, from creation of art to preparation of food. The common observation is that metallic elements are rarely found in their natural condition; instead, they combine with silicon, carbon, and oxygen to form minerals. Gradually, people began mining the purest form of rocks after realizing its significance and the metal was separated from ore with the use of heat. The iron pillar of Delhi built during Gupta empire is a great example of ancient use of metal. The world changed from there and the civilization passes through various phases of stone, bronze and iron to jump to the use of mechanised production in late 1800s. Additionally, things have altered in the twenty-first century due to sophisticated computing and digitalization technology. The industry came long to smart controlled blasting in mining and use of smart materials. Separation of impurities from metal to form pure metal has become simple task than ever. To increase the utilization of metals in various fields, alloys were produced with optimized property. In the present scenario of environmental challenges, used materials need to be reused or recycled. Recycling of such material requires efficient collection and processing mechanism. Most of the countries fighting against poverty cannot bear the cost for waste alloy processing and treating the materials as waste. In some cases, it is very difficult to separate pure metals from an alloy with multiple metals.

This raises the question: If we discard these metals or alloys, whether nature will recycle in future? My answer is yes as the cycle is not over yet. Gradually, the metals or alloys will be combined with elements like oxygen, carbon, silicon etc. to form new compounds as the rocks were formed. It's the law of nature which cannot be diverted and recycling system of earth will again be activated.

Keywords: Rock, Mineral, Alloy

INFLUENCING PARAMETERS OF THE RHEOLOGY & PIPE FLOW BEHAVIOUR OF FLY ASH SLURRY:

A REVIEW TOWARD ENVIRONMENTALLY SUSTAINABLE ASH HANDLING

UMAKANTA BEHERA(1) & DEBADUTTA DAS(2)
1- GCE, KEONJHAR
2-BJB AUTONOMOUS COLLEGE, BHUBANESWAR
EMAIL-umakantabehera_fmn@gcekjr.ac.in

ABSTRACT

Fly ash, a major by-product of coal-fired thermal power plants, poses critical environmental and management challenges due to its large volume of generation. Pipeline transport of fly ash–water slurry offers a cost-effective and eco-friendly solution for bulk disposal and utilization, but its success depends on understanding and optimizing slurry rheology. This review highlights the key factors influencing the flow behaviour of fly ash–water slurry, including particle size distribution, morphology, solid concentration, and surface chemistry. These parameters directly affect viscosity, yield stress, and flow stability, thereby controlling pumping energy and hydraulic efficiency. Blending fly ash with bottom ash and incorporating synthetic and natural surfactants has been shown to reduce viscosity, enhance dispersion, and improve long-distance transport. Studies on pressure drop and specific power consumption reveal strategies to balance energy demand with sustainable disposal practices. The review also underscores emerging approaches using plant-based surfactants and eco-friendly additives, offering promising pathways for greener, water-efficient, and reliable fly ash management.

Keywords: Fly ash slurry; Bio-surfactant; Slurry pipeline transport Rheology; Particle size distribution

THE FUTURE
OF ENGINEERING:

BYOMKESH MISHRA **[GCE, KEONJHAR]**
EMAIL- nipunmishra2003@gmail.com

ABSTRACT

Engineering has always been the backbone of human progress, transforming imagination into reality. From ancient structures to modern digital systems, engineers have continuously shaped the world we live in. As we step into a rapidly evolving technological era, the future of engineering promises innovation, sustainability, and a deeper connection between technology and human life.

The coming years will witness the seamless integration of advanced technologies such as Artificial Intelligence, Machine Learning, the Internet of Things, and Robotics into everyday engineering solutions. These technologies will enable the creation of intelligent systems capable of learning, adapting, and optimizing performance. Engineers will no longer work in isolation within a single discipline; instead, they will collaborate across fields to build smarter and more efficient systems.

Sustainability will stand at the core of future engineering. With growing environmental concerns, engineers will be responsible for designing solutions that are not only efficient but also eco-friendly. The development of renewable energy sources, green infrastructure, and sustainable technologies will play a vital role in ensuring a balance between development and environmental preservation.

Moreover, the concept of smart cities will redefine urban living. Engineers will design intelligent transportation systems, energy-efficient buildings, and digitally connected infrastructures that enhance the quality of life. Alongside this, human-centered design will gain importance, focusing on accessibility, inclusivity, and user experience to ensure that technology benefits all sections of society.

The engineering profession itself will undergo transformation. Automation may replace repetitive tasks, but it will also create new opportunities requiring creativity, critical thinking, and continuous learning. Future engineers will need to be adaptable, innovative, and ethically responsible, as their work will directly impact society and global challenges such as climate change, healthcare, and resource management.

In conclusion, the future of engineering is not just about technological advancement—it is about building a sustainable, intelligent, and inclusive world. Engineers will be the architects of this future, driving progress while ensuring that innovation serves humanity responsibly.

With

Best Compliments from

M/S M G Mohanty

Corporate Office

5A, Forest Park, Bhubaneswar-751009,
Odisha, India
Phone: +91 6742596400 / 410, Fax: +91 6742596390
Email: mgmohantyco@gmail.com

Mines Administrative

Branch Office: At/Po. Barbil-758035,
Odisha, India
Phone: +91 6767275318, 276319, Fax: 6767275770
Email: mgmohantybo@gmail.com

"Touching Life beyond business"

THE WORLD

MINING | SPONGE IRON | HOSPITALITY | CONSULTANCY | SOLAR ENERGY | RETAILS |

"GROWING HAND IN HAND WITH ODISHA"

The World Group of organisation is a Odisha based conglomerate which focuses on:

- Environmental Sustainability
- Social Accountability
- Socio Economic Development

By Adopting Best in Class Global Practice to empower people and build better lives.

REMINISCENCES

JOURNEY OF ENGINEERING EXCELLENCE

THE GOLDEN
BATCH OF 2001

A Timeless Reminiscence

PROF. DEVI PRASAD MISHRA **[IIT (ISM), DHANBAD]**
EMAIL- dpmishra@iitism.ac.in

Nestled amidst scenic beauty and serene natural surroundings such as Sana Ghagara waterfall and Bada Ghagara waterfall, Keonjhar, the mineral-rich district of Odisha, has always held a distinct charm. In this land of abundant mineral wealth stands the Odisha School of Mining Engineering (OSME), Keonjhar, now known as the Government College of Engineering (GCE), the heartbeat of countless engineering aspirants across the state.

The Degree Stream of OSME began its journey in 1995 with only three branches namely, Mining Engineering, Mechanical Engineering, and Electrical Engineering. With a modest total student strength of only 80, the institution embarked on what would become a glorious academic voyage. In its early years in 2001, the college graduated just 21 Mining Engineering students, who went on to serve the mining sector of the nation with dedication and pride.

The initial years were marked by struggle and resilience. Inadequate hostel facilities compelled students to stay in rented houses, managing self-cooking and daily chores alongside academic commitments. Yet, those hardships now feel like cherished memories. Breakfasts and lunches at the modest Kirtan Hotel serving hot rice, dal, potal tarkari, and alu bhaja on sal leaf plates at just ten rupees remain unforgettable flavors of our student life. In the final year, the allotment of newly constructed degree hostel marked the beginning of a more settled and peaceful phase, filled with memorable and eventful moments that defined our college days.

Beyond classrooms and practical sessions, life flourished through sports and camaraderie. Despite limited facilities, we passionately played cricket, volleyball, and table tennis. Often, we waited late into the night, sometimes until 2 a.m., just to get a turn at the lone TT board.

With only 21 students in Mining Engineering, even forming a cricket team of eleven players was a challenge when competing against the larger Mechanical and Electrical branches. Somehow, we managed, even including players who could barely hold a bat or ball. Our cricket team was fondly named as the “Lagaan Team,” inspired by sheer determination and fighting spirit as portrayed in the Bollywood blockbuster ‘Lagaan’. Despite our limitations, we had three or four exceptionally talented players who could bat and bowl remarkably well, giving tough competition to our opponents.

Unlike Mechanical and Electrical teams, which enjoyed enthusiastic cheering, especially from the girls, the Mining team often had no supporters. Yet, we let our performance speak for itself. In one memorable cricket match against Mechanical, when everyone was certain of their victory, we bowled them out for just 20 runs. As openers, we chased the target without losing a single wicket, transforming disbelief into triumph.

Similarly, in an electrifying tensed volleyball final match between Mining and Mechanical, the Mechanical team surged ahead unexpectedly with a 9–0 lead amid loud cheers from their supporters. Disappointment loomed among us. But with renewed determination, we regrouped. Taking charge at the center, I handled most of the returns. Gradually, the score leveled, and against all odds, the Mining team eventually clinched victory. The stunned silence that followed was unforgettable, as the once-confident supporters, especially girls, left the venue with heavy hearts.

With few marketplaces and no shopping malls, entertainment options were limited. Our greatest source of recreation was Tarini Chabi Ghar near the Old Town area. Watching movies there was not just a leisure, but a welcome escape from our rigorous academic routine.

Within the college, the annual fest was the most anticipated celebration of the year, a vibrant cultural extravaganza showcasing the diverse talents of students in singing, music, dance, fashion shows, and comedy dramas. The dedication, enthusiasm, preparation, and energy poured into every performance made the event truly spectacular. The performances were often breathtaking, captivating not only students but also attracting local residents who gathered in large numbers to witness and enjoy the programs. The fest became a bridge between the institution and the community, filling the campus with lights, laughter, applause, and unforgettable memories.

Those days were truly golden, filled with struggle, unity, resilience, and joy. They remain etched in our hearts as lifelong memories.

The 2001 batch stands among the finest graduating batches of this great institution since its inception. Today, its alumni excel in their respective fields, bringing glory and laurels to their alma mater. Yet, despite achievements and distances, the heart longs to return, to walk those familiar corridors once more, to relive those youthful days, and to breathe in the sacred soil of Keonjhar.

Some memories never fade; they only grow more precious with time.

MASTERING
THE MOVING TARGET:

SOMESH RANABIJULI, OJS

EMAIL- dpmishra@iitism.ac.in

To begin with, I'd like to share a brief anecdote. Last year, when this institution shared my Judicial Service results on its Facebook handle, a kind senior alumnus constructively commented with a pointed question: 'What is the role of an engineering college when an alumnus chooses a path not related to typical engineering field? Should the college endorse their results?' I chose not to reply then, but I believe this is the perfect moment & platform to answer to that query.

The greatest contribution of Govt. College of Engineering, Keonjhar to my life has been that it ingrained in me the discipline of 'Self-Study.' If I have been able to clear diverse exams like GATE, CEED, CLAT, Civil Services, Forest Service and Judicial Service, it is because of the foundation built here. Whether as the 2016 Batch Mechanical Engineering topper, or a research scholar at IIT Gandhinagar, or a gold medalist in Law from MS Law University - the constant factor among all this has always been the grit I developed at my alma mater GCE, Keonjhar. When I joined this institution way back in 2012, we faced many challenges from limited facilities to faculty. However, we chose to utilize what was within our reach. In that struggle, we mastered the art of self-learning. Undoubtedly, learning from scratch without 'spoon-feeding' takes more time, but the retention and depth of understanding are far more superior.

To simplify; Engineering is not just a technical degree - it is a foundational mindset and a structured way of approaching the world that unlocks endless opportunities. In an era defined by interdisciplinary challenges, the engineer's resilience and resourcefulness are no longer confined to labs or sites; instead, they serve as a powerful catalyst for effective public services.

As you stand at the threshold of your own careers, I want to leave you with two messages which I always preach & practice:

1. It is never too late to start again, and you are never too old to dream. I am a testament to this. My own path reflects this transition perfectly. While I was a research scholar at IITGN, I got the exposure to multidisciplinary learning which shifted my perspective toward the humanities. Despite the four years or 8 semesters of 'grilling' through the Mechanical Engineering degree and the rigors of the successfully clearing the GATE exam, I chose to leave that established track behind and pursue Law in humanities discipline. Furthermore, after serving the Government of Odisha in the administrative capacity for four years after clearing Odisha Civil Services Examination, I am proud to now serve within the Judiciary wing of the Govt. in the capacity of a Judge. Transformation is possible if you are willing to embrace the process.

2. Importance of figuring out the right path for you: I feel ... our generation or your generation per se; defines success through exceptions ... looking at toppers, shortcuts or celebrities ... they aspire to be like them. They want success to be exceptional and relationships too. And when that doesn't happen, they consider themselves as failures. The bottom line is ... if you work hard, you'll find success. The most imp. thing is - you just have to figure out the right path for you.

There is no bar and no end to learning and improvement. But a start has to be made. Dreams begin as hazy and random whims and it is upto us to bring them to shape and definition. To nurture them we have to nourish them with our souls. Nourishing our dreams with honesty and sincere efforts pave the way to attaining them; attaining our dreams fills us with the joy of pure self-empowerment. At the end, it is the possibility of a dream coming true that makes life so interesting. Dreams do not need a license so dream on!

In fine, I want to leave you with a reflection on the power of gratitude. There are many elite engineering institutions in Odisha that might have offered state-of-the-art facilities or vast research opportunities to me if I have studied there, but I am beyond certain or more that 100% sure that none could have matched the resilience and independence this college has forged in me. Wherever I am today, with all the rich, diverse perspectives I carry in my bag, it is entirely a testament to my time at GCE. I am deeply grateful for the foundation they provided.

I urge you all: carry a deep sense of gratitude and pride for being part of this college. I wish you all the best for all your endeavors. Sending my blessings and positivity for all of you. Strive hard and keep soaring.

Last but not the least, the hymn that I learnt at my alma mater, GCE Keonjhar, as a 17-year-old and still carry with me today:
“… then give to the world the best you have …
and the best will come back to you!”
Thank you.

FROM
MINES TO MINDSET

A Journey Shaped by Alma Mater

PRIYANSHU PAL, OAS
EMAIL- priyansh23.in@gmail.com

Silver Jubilee celebrations have a way of bringing back memories you did not know you had stored so carefully. As a Mining Engineering graduate from the 2018 batch, this feels less like writing an article and more like revisiting a part of life that quietly shaped everything that followed.

Back then, life revolved around classes, submissions, and the constant balance between academics and everything else that made college memorable. Getting placed at Vedanta Resources through campus was a proud moment and the first real validation of our efforts.

Stepping into the mining world after graduation was both exciting and humbling. The concepts we studied for exams suddenly became real decisions underground. The confidence to handle that transition, I now realise, was built during our college years.

What stays with me most are the experiences beyond the classroom. Study tours to mines, with early mornings and long journeys, gave us our first glimpse of real operations. Picnics to the waterfalls around Keonjhar brought endless laughter, crowded rides, and moments of pure freedom.

Some memories stand out even today. Representing our college at the tech fest of NIT Rourkela and sweeping almost all the prizes was a moment of immense pride. In another instance, I had the opportunity to represent our college at the Mineral Development and Awareness Quiz organized by SGAT, where we secured our first win in that quiz at a national level. These moments gave us the belief that we could compete with the best.

Campus life had its own charm. Fests, late night practices, chai breaks, and friendships that turned ordinary days into lasting memories. Our professors guided us with patience and discipline, while the staff ensured everything ran smoothly.My journey after college moved from mining to corporate consulting and eventually into civil services. Recently, I was fortunate to secure Rank 1 in the Odisha Civil Services. While the paths changed, the foundation remained the same.

This college gave me more than a degree. It gave me perspective, resilience, and memories that still bring a quiet smile.

To the students today, live these years fully. One day, you will look back and realise this is where it all began.

REFLECTION FROM
THE ALMA MATER

DOWN THE MEMORY LANE

LALIT NARAYAN MOHANTA **[PHILADELPHIA, USA]**
EMAIL- lalit.kjr@gmail.com

September 3,2002 was the day when I boarded the bus to Keonjhar Town to pursue my Bachelor of Engineering Course at OSME degree stream campus.It wasn't B.Tech yet.The campus at GCE was not in existence,then.A lot of water has flown down the river Baitarini in the last two decades and half.
My bus journey meandered through picturesque NH6 at Kanjipani and Judia ghat.There were saal ,jamun,acacia, macaranga trees that lined the highway.They were smeared with red dust laden with iron-ore content of the hills.

The degree stream course at erstwhile OSME was starting after a three year hiatus.There was a batch in college that was just a year senior to us.Other senior batches had passed out and we were slightly apprehensive.

I vividly remember alighting from the bus near Collectorate Square and travelling towards OSME ,where we were supposed to report after being allocated the preferences that we exercised in counselling session.I was slightly late and the principal along with a couple of staff members were conducting the orientation session.I occupied a front row , not because I was a studious type of person ,but because of the fact that back benches were high in demand.There was a tussle to sit in the back benches😉.

Over the next four years ,I have many fond memories.I have a great set of friends who I can bank on.Each of us had a nickname after being admitted to college.Nicknames were based on their physical appearance,native place ,daily habits etc.Many are quite gory to be mentioned here.But I will take the liberty to name a few.One of our friends had a dark complexion and was nicknamed as I.A.S.(Invisible After Sunset).Another friend was quite absent-minded and was in a monologue many-a-times.We nicknamed him scientist for his eccentric behavior.

Hostels were a great place to socialize and find each other's tribe.Prior to semester examinations, we pulled one-nighters and indulged in group study.In the middle of night some mischievous ones would play loud music from their soundboxes and voila whole hostel would sway together ,shake a leg for some time ,before finally settling down again to bury their heads among books.After exams were over picnics and excursions were planned.During vacations we used to go to V.T (Vocational Training) where we experienced an industry first hand.I went to a colliery in the hinterland of West Bengal .It taught us how to adjust and adapt in different situations.

My stint at my alma mater inculcated a desire to fight and win.It instilled a belief that the group is larger than an individual. My heart swells with pride when I see my friends and alumni making a mark despite all odds stacked against us.Our alumni are placed in diverse industries across the globe ranging from manufacturing and heavy engineering, software engineering, steel manufacturing, mineral processing ,electrical technology ,construction etc. We might be located in various places across the globe but the college campus remains our common ground—the place where it all started.

THE LIGHT FROM
D WING , ROOM 14

DEBI PRASANNA MISHRA **[JSPL]**

I still remember the day I first stepped into Government College of Engineering, Keonjhar—like everyone else, carrying dreams, nervousness, and that quiet fear of the unknown. The first year was a rush of new experiences—ragging that once felt intimidating but slowly became stories we now smile at, adjusting to mess life, and finding comfort in people who were strangers just days before.

From the second year, D Wing, Room No. 14 on the top floor became more than just a room—it became home. It held our laughter, our stress, our late-night talks, and those silent moments when everything felt uncertain yet strangely peaceful. Days passed in canteen, endless card games, sudden booze parties, and those unforgettable mass bunks that made us feel free in the middle of all the chaos.

Internals came and went without much fear—until the night before semester exams, when panic, last-minute reading, group studies, and sleepless nights became our reality. And then came the result tension… that heavy feeling we all understood, where marks somehow felt bigger than they should.

But the real memories lived outside the classroom. Roaming aimlessly through the streets of Keonjhar, under that pleasant weather that made everything feel lighter… stopping at Astik Bhai's chai stall near Mining Road for long "khatti" sessions that had no purpose yet meant everything. Riding around on my blue Activa, escaping again and again to Sanaghagara and Badaghagara waterfalls—those moments where time stood still and life felt simple.

There were days of unity—like the strike for the college road—when we stood together for something bigger than ourselves. There were hostel fights that once felt intense but later became stories we laughed about. Senior interactions and Leading for annual function "Utkarsh-2016" that shaped us in ways we didn't realize then, and vocational training and field trips that slowly prepared us for the world outside.
Now when I look back, it's not just memories—it's a feeling,everything feels so close yet so far.

Because in those four years, we didn't just earn a degree—we lived a life that everyone who has been here will see a part of themselves in.

And maybe that's what makes it so emotional… we all left, but a part of us never really did.

THE TRANSITION FROM **MINING ENGG. STUDENT TO INDUSTRY PROFESSIONAL**

PREETI MISHRA **[JSW]**
EMAIL- mamuni.mira18@gmail.com

My journey in Mining Engineering began at Government College of Engineering, Keonjhar—an institution that laid a strong technical foundation while shaping my confidence, discipline, and professional outlook. The enriching academic environment, combined with field visits and practical exposure, played a crucial role in preparing me for the mining industry.

Beyond academics, my college life was vibrant and fulfilling. I actively participated in cultural activities and sports , consistently excelled in ramp walk competitions, receiving awards from the first year to the final year. These achievements not only brought recognition but also helped me build confidence, elegance, and a strong stage presence.

After graduation, I began my professional journey with JSW Steel Limited in an iron ore mine, where I started by handling mining shifts, including night shifts. This experience provided me with practical exposure to real-time mining operations, safety practices, and team coordination in challenging field conditions.

Later, I worked as a Technical Assistant to the Agent (Mine Operation Head for Odisha Mining Division) JSW steel LTD , where I gained valuable experience in tax documentation, SAP systems, and operational reporting. This role enhanced my understanding of both technical and managerial aspects of mining operations.

A proud and memorable experience in college was getting the opportunity to anchor in the 60th Annual Metalliferous Mines Safety Week Competition at OMC Gandhamardan Iron Ore Mines. This platform allowed me to showcase my communication skills and boosted my confidence in public speaking.

A significant milestone in my journey has been my selection as a Mining Officer through OPSC, giving me the opportunity to contribute responsibly towards safe and sustainable mining practices.

Looking back, the knowledge, values, and experiences gained at Government College of Engineering, Keonjhar remain the strongest foundation of my journey. I express my heartfelt gratitude to all faculty members, mentors, and peers. On the occasion of the Silver Jubilee, I extend my best wishes to the institution for its continued success in shaping future professionals and contributing to the growth of the mining industry.

A DECADE OF **GROWTH, COMMITMENT & FULFILMENT**

My Journey at Government College of Engineering, Keonjhar

RAMESH CHANDRA KHAMARI **[GCE, KEONJHAR]**
EMAIL- rameshkhamari_fee@gcekjr.ac.in

I joined Government College of Engineering, Keonjhar on 10th August 2015, and over the years, I have had the privilege of witnessing a remarkable transformation of this institution—both in terms of infrastructure and academic development.

In the early days, the campus infrastructure was quite modest. There were only two academic buildings and a single boys' hostel. The internal roads were unpaved and muddy, connecting essential areas like the Girls' Hostel site and staff quarters. The road linking the college to the main city was also in a similar condition. The staff quarters were completed in 2016, marking the beginning of structured residential facilities on campus.

Gradually, the institution expanded and evolved. The Girls' Hostel was completed, allowing female students—who were earlier staying in the Diploma campus in the city—to shift to the main campus. Today, the campus proudly hosts four academic buildings, an additional boys' hostel for first-year students, and is on the verge of completing a new academic block along with a central library and cafeteria. The infrastructure development reflects the institution's continuous commitment to growth and excellence.

Alongside infrastructure, student strength has increased significantly over the years. While the intake has grown, maintaining and enhancing the quality of students remains an area of continuous focus. Encouragingly, placement opportunities have improved tremendously—from very modest beginnings to achieving commendable success in recent years.

As a faculty member, I have embraced various responsibilities with sincerity and dedication, always striving to balance my primary roles of teaching and research. I have consistently approached my students with a dual perspective—being approachable and supportive like a friend, while maintaining the discipline and rigor expected of a teacher. This balance has helped me build meaningful connections with students.

Over the years, I have seen numerous batches—from 2016 to 2025—graduate and move forward in their careers. It is immensely gratifying to see them succeed and occasionally reconnect with us. A teacher's true reward lies in the achievements of their students, and each success story fills me with pride and happiness.

During my tenure as Head of the Department of Electrical Engineering for one and a half years, I had the opportunity to contribute to the development of five laboratories, strengthening the department's academic and practical capabilities. I have always maintained punctuality and discipline in my teaching, ensuring that I reach classrooms on time and conduct classes and laboratory sessions regularly—something that I consider one of my core strengths.

Teaching was not my initial career aspiration, but over time, it has become a deeply fulfilling profession for me. The joy of interacting with students, guiding them, and contributing to their growth provides immense satisfaction. Despite the ups and downs that come with academic life, the commitment to give my best to students has always remained unwavering.

As we celebrate the Silver Jubilee of our esteemed institution, I feel proud to be a part of its journey. I sincerely hope and aspire that Government College of Engineering, Keonjhar continues to grow, achieve excellence, and earn recognition not only at the state and national levels but also globally.

एक कदम राष्ट्र की ऊर्जा आत्मनिर्भरता की ओर

GMDC
Gujarat Mineral Development Corporation Ltd.
(A Government of Gujarat Enterprise)
FUELING THE GROWTH

भारत के आर्थिक परिवर्तन के इस दौर में, जहां विकास की गति और स्थिरता पर विशेष ध्यान दिया जा रहा है, गुजरात मिनरल डेवलपमेंट कॉर्पोरेशन (जीएमडीसी) उल्लेखनीय प्रगति कर रहा है। पिछले छह दशकों से जीएमडीसी गुजरात के औद्योगिक क्षेत्र का एक महत्वपूर्ण स्तंभ बना हुआ है और अपने लिग्नाइट खनन संचालन के माध्यम से राज्य की ऊर्जा आवश्यकताओं को पूरा कर रहा है। इस वर्ष, जीएमडीसी ने अपनी तीसरी सर्वश्रेष्ठ वित्तीय उपलब्धि हासिल की है, जो संगठन को बदलते बाज़ार के साथ सामंजस्य बनाए रखने की क्षमता को दर्शाता है।

ऊर्जा के नए क्षितिज की ओर

जीएमडीसी का नाम हमेशा से ही गुजरात के कच्छ, भावनगर और दक्षिण गुजरात क्षेत्रों में लिग्नाइट खनन के लिए जाना जाता रहा है, जिसे 'ब्राउन गोल्ड' कहा जाता है। इस लिग्नाइट ने उद्योगों को ऊर्जा प्रदान की है और क्षेत्र की ऊर्जा सुरक्षा सुनिश्चित की है। अब, जीएमडीसी अपने लिग्नाइट संचालन को और विस्तार देने के लिए गुजरात में छह नए लिग्नाइट खदानों की शुरुआत करने की योजना बना रहा है, जिससे संगठन की उत्पादन क्षमता में महत्वपूर्ण वृद्धि होगी और क्षेत्रीय ऊर्जा स्थिरता में योगदान मिलेगा।

भौगोलिक सीमाओं से परे जाकर, जीएमडीसी ओडिशा में कोयला खनन के क्षेत्र में नए अधिग्रहण कर रहा है। यह विस्तरण गुजरात और समूचे भारतीय बाजार के लिए ऊर्जा भंडार को बढ़ाने की व्यापक रणनीति का हिस्सा है। जिसके तहत जीएमडीसी को बैतरणी वेस्ट क्षेत्र में भूमि अधिग्रहण के लिए प्रारंभिक मंजूरी मिली है।

इसके साथ ही, जीएमडीसी ने गुजरात उर्जा विकास निगम लिमिटेड (जीयूवीएनएल) के साथ 4400 मेगावाट थर्मल पावर प्लांट के लिए एक महत्वपूर्ण समझौता ज्ञापन (एमओयू) किया है, जिसमें नए अधिग्रहीत कोयला ब्लॉक का उपयोग किया जाएगा।

गुजरात की पावर ग्रिड को सुदृढ़ करना

गुजरात के कच्छ जिले में स्थित अक्रिमोटा थर्मल पावर स्टेशन (ATPS) गुजरात की ग्रिड को विश्वसनीय ऊर्जा प्रदान करता है। आधुनिक ऊर्जा की मांगों के अनुसार, जीएमडीसी (ATPS) की दक्षता और उत्पादन को बढ़ाने के लिए प्रतिबद्ध है। यह प्रयास न केवल ऊर्जा उत्पादन को बढ़ाएगा, बल्कि स्थानीय अर्थव्यवस्था को समर्थन देगा और क्षेत्रीय विकास को बढ़ावा देगा। इसके अतिरिक्त, जीएमडीसी अपने परिचालन रणनीति में नवीकरणीय ऊर्जा को एक महत्वपूर्ण घटक के रुप में अपना रहा है। कंपनी ने कच्छ, पोरबंदर, देवभूमि द्वारका, जामनगर, राजकोट और भावनगर में कुल 200.9 मेगावाट के पवन ऊर्जा क्षेत्रों में निवेश किया है। सौर ऊर्जा में, जीएमडीसी ने पानंधो में 5 मेगावाट सौर ऊर्जा सुविधा विकसित की है, जो स्थिर ऊर्जा स्रोतों की ओर एक महत्वपूर्ण कदम है।

इन सभी पहल से कंपनी, स्थिर ऊर्जा उत्पादन के प्रति हरित ऊर्जा भविष्य की दिशा में हमारी प्रतिबद्धता का संकेत मिलता है।

भविष्य के महत्वपूर्ण खनिजों में निवेश

जीएमडीसी भविष्य की तकनीकों के लिए आवश्यक महत्वपूर्ण खनिजों पर ध्यान केंद्रित कर रहा है। अंबाजी स्थित 'अंबाजी कॉपर प्रॉजेक्ट' 184 हेक्टेयर में फैला यह क्षेत्र दुनिया के सबसे बड़े कॉपर के भंडारों में से एक है, जिसका मूल्य लगभग 3 बिलियन अमेरिकी डॉलर है। यह परियोजना जीएमडीसी को वैश्विक कॉपर के बाज़ार में अग्रणी बनाती है, जो बढ़ते हुए इलेक्ट्रिक वाहन (ईवी) और नवीकरणीय ऊर्जा क्षेत्रों के लिए आवश्यक है।

इसके अलावा, संगठन ओबाडुंगर में रेयर अर्थ एलिमेंट्स (आरईई) के विकास के साथ भी अपनी क्षमताओं को बढ़ा रहा है। ये तत्व आधुनिक अनुप्रयोगों जैसे ईवी, पवन टर्बाइन और विभिन्न उच्च-तकनीक उपयोगों के लिए आवश्यक हैं।

जैसे भारत आर्थिक परिवर्तन आकार ले रहा है, जीएमडीसी न केवल राष्ट्र की विकास आकांक्षाओं के साथ तालमेल बनाए रख रहा है बल्कि अपनी ऊर्जा आत्मनिर्भरता को मजबूत करने के लिए सक्रिय रुप से काम कर रहा है।

M/s JAGAT JANANI SERVICES PVT LTD

EMPOWERING MINES, ENABLING GROWTH

PRECISION DRILLING

EFFICIENT EXCAVATION

MATERIAL HANDLING

SITE MANAGEMENT & SAFETY

MINE OFFICE | At- Jalahari, Po- Jajang, Joda ,keonjhar , Pin-758034
email-jjsplnambira@gmail.com

PERSONAL SPACE

JOURNEY OF ENGINEERING EXCELLENCE

ଶିକ୍ଷା
ସମାଜ ସଂସ୍କାରକ

ଡଃ ସୌମ୍ୟରଞ୍ଜୀନ ମଲ୍ଲିକ୍
EMAIL- mallicksoumyaranjan@gmail.com

ମହାତ୍ମା ଗାନ୍ଧୀ ଏକଦା କହିଥିଲେ, “ By Education I mean an all-round drafting out of the best in the child & man, body, mind & spirit". ଶିକ୍ଷାର ଏଇ ସଂଜ୍ଞାକୁ ସୂକ୍ଷ୍ମଭାବେ ଅନୁଶୀଳନ କଲେ ଆମେ ବୁଝିପାରିବା ଯେ, ଶିକ୍ଷାର ପରିସର ସୁଦୂର ପ୍ରସାରୀ । ଅନ୍ୟ କଥାରେ କହିଲେ, ଶିଶୁ ରୂପୀ ମାଟି ପିଣ୍ଡଳାକୁ ସଜଡ଼େ ଗଢ଼ି ସୁନ୍ଦର ମଣିଷ ମୂର୍ତ୍ତୀଟିଏ ନିର୍ମାଣ କରିବା, କେବଳ ଶିକ୍ଷକଙ୍କ ଭଳି ବିଶ୍ୱକର୍ମାଙ୍କ ଉପରେ ନିର୍ଭର କରେ । ସେ ହେଉଛନ୍ତି ଏକ ମଣିଷ ଗଢ଼ା ମେସିନ । ଛାତ୍ରଟିର ଶାରୀରିକ, ବୌଦ୍ଧିକ ଓ ଆବେଗିକ ବିକାଶ କରିବା, ତାକୁ ସଂସ୍କାରିତ, କରିବା ଶିକ୍ଷାର ମହତ ଉଦ୍ଦେଶ୍ୟ ଅଟେ, ଶିକ୍ଷା ବ୍ୟକ୍ତିତ୍ୱର ମାପକାଠି ଓ ମାନବର ଶ୍ରେଷ୍ଠ-ଭୂଷଣ, ଏହା ଶିକ୍ଷକ, ସମାଜ ଓ ଅଭିଭାବକ ମାନେ ଭୁଲିଯାଉଛନ୍ତି ବରଂ ଆଜିକାଲିର ଶିକ୍ଷାର୍ଥୀକୁ ରୋଜଗାର କ୍ଷମ କରାଇବା ପାଇଁ ସକଳେ ଚେଷ୍ଟିତ । ଆମ ପିଲାବେଳର ତଥାକଥିତ ଗୁରୁମାନେ ଗୌତମ, ସାନ୍ଦିପନୀ ଓ ଆୟାଦ ଧୌମ୍ୟଙ୍କ ପରି ଗୁରୁଥିଲେ, ସେତେବେଳେ ଶିକ୍ଷକମାନେ ପିଲାଟିର ପିତାମାତାଙ୍କୁ ଅବଶ୍ୟ ଭେଟୁଥିଲେ। ତାଙ୍କର ସାମାଜିକ-ପାରିବାରିକ ଓ ଆର୍ଥିକ ଅବସ୍ଥା-ବିଷୟରେ ପଚାରି ବୁଝୁଥିଲେ। ସେତେବେଳର ରାମକୃଷ୍ଣ ନନ୍ଦଙ୍କ “ଆହେ ଦୟାମୟ ବିଶ୍ୱ ବିହାରୀ” ଗୀତଟି ଏବେ ବି ବୋଲା ହେଉଛି। ମାତ୍ର ନା ଅଛି ତାର ତନ୍ମୟତା ନା ମନ୍ମୟତା? ପିଲାଟି ଉଚ୍ଚାରଣ କରୁଛି । “ସତ କହିବାକୁ କିଆଁଡରିବି, ସତ କହି ପଛେ ମଲେ ମରିବି,” ମାତ୍ର ତାହା କେବଳ ଉଚ୍ଚାରଣରେ ସୀମିତ ରହୁଛି, ଆଚରଣରେ ନୁହେଁ, ନିଜର ଅଳସୁଆମି ପାଇଁ ସ୍କୁଲକୁ ଆସି ନପାରି ନିଚ୍ଛକ ମିଛ କଥା ଗୁଡ଼ିଏ, ସଜେଇ କହିବାର ଅସଫଳ ପ୍ରଯତ୍ନ କରୁଛି । ପୁଣି ସର୍ବ ସମକ୍ଷରେ ଧରାପଡ଼ି ଲୋକହସା ହେଉଛି, କାରଣ ଗୁରୁ ହେଉଛନ୍ତି ଗରୀୟାନ୍, ତାଙ୍କ ପାଖରେ ମୂଲ୍ୟାୟନ ରୂପୀ କଷଟୀ ପଥର ରହିଛି, ବଣିଆ ସୁନା କଷିଲା ପରି ସେ କଷଟୀ ପଥରରେ କଷିଦେଇ ପିଲାଟିର ଆଚାର, ବ୍ୟବହାର ଓ ଚରିତ୍ର ବଖାକୁ କଷି ନେଉଛନ୍ତି ।

ସେତେବେଳେ ଶିକ୍ଷକମାନେ ପରସ୍ପରକୁ ଭେଟିଲେ ନିଜ ବିଦ୍ୟାଳୟର ଉତ୍କର୍ଷ ବିଷୟରେ ଆଲୋଚନା କରୁଥିଲେ। ଶିକ୍ଷିତ ଭଦ୍ର ଓ ସଂସ୍କୃତି ସଂପନ୍ନ ମଣିଷଟିଏ ଗଢ଼ିବା ପାଇଁ ପ୍ରୟାସ କରୁଥିଲେ। ଆମ ସ୍କୁଲର ଅମୁକ ପିଲା ଛାତ୍ରବୃତ୍ତି ପାଇଲା। ସମୁକ ପିଲା ଦେଶାତ୍ମବୋଧକ ଗୀତରେ ପ୍ରଥମ ହୋଇଛି । ତମୁକ ପିଲା ଭାଷଣ ଦେବାରେ ବାଜିମାରିଛି ବା କ୍ରୀଡ଼ାରେ ସଫଳ ହୋଇଛି ଇତ୍ୟାଦି। ବର୍ତ୍ତମାନ ପାଶ୍ଚାତ୍ୟ ଶିକ୍ଷାପ୍ରଣାଳୀର ଅନୁକରଣ ଜୋରସୋର୍‌ରେ ଚାଲିଛି । ଶିକ୍ଷକମାନେ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା ଉପରେ ଗୁରୁତ୍ବାରୋପ କରୁଛନ୍ତି, ଶିକ୍ଷାଦାନ ଛଡ଼ା ନିର୍ବାଚନ, ଜନଗଣନା, ବିପିଏଲ ତାଲିକା ପ୍ରସ୍ତୁତି ଆଦି ଶିକ୍ଷା ବହିର୍ଭୂତ କାର୍ଯ୍ୟଭାରରେ ନଇଁ ପଡୁଛନ୍ତି ସେମାନେ, ଶିକ୍ଷାୟତନରେ ରାଜନୈତି ନୈତିକ ପ୍ରଭାବ ରହୁଥିବାରୁ ଏହା ଶିକ୍ଷକଙ୍କୁ ମାନସିକ ଚାପ ଦେଉଛି । ସଂସ୍କାର ବିଷୟରେ ଚିନ୍ତାକରିବେ କେତେ ବେଳେ ?

ଆମ ପିଲାବେଳେ ଅଭିଭାବକ ଓ ଛାତ୍ରଛାତ୍ରୀମ ମାନେ ଗୁରୁଙ୍କୁ ପ୍ରକୃତ ଈଶ୍ୱର ଜ୍ଞାନ କହୁଥିଲେ। ଆଜିକାଲି ଦଣ୍ଡମୁକ୍ତ ଶିକ୍ଷା ପ୍ରଚଳନ ହେବାରୁ କେହି ବି ଶିକ୍ଷକଙ୍କୁ ଖାତିର କରୁନାହାଁନ୍ତି, ଏହିସବୁ କାରଣରୁ ଶିକ୍ଷା ନିକେତନର ପବିତ୍ରତା କଳୁଷିତ ହେଉଛି । ପାଶ୍ଚାତ୍ୟ ଗବେଷକଙ୍କ ମତରେ "Education is a lifelong process beginning at cradle & ends at grave,” ଅର୍ଥାତ୍ ଶିକ୍ଷା ଏକ ଜୀବନବ୍ୟାପୀ ପ୍ରକ୍ରିୟା ଯାହା ଜନ୍ମଠାରୁ ମୃତ୍ୟୁପର୍ଯ୍ୟନ୍ତ ଚାଲିଥାଏ । ସାଂପ୍ରତିକ ଶିକ୍ଷାବ୍ୟବସ୍ଥା ବ୍ୟବସାୟିକ ହୋଇଥିବାରୁ କିଶୋରଟି ବୈଷୟିକ ତାଲିମ ପ୍ରାପ୍ତ ପରେ ଚାକିରୀ ପାଇଯାଉଛି । ସେ ତାର ଶିକ୍ଷା ସଂପୂର୍ଣ ହୋଇଗଲା ବୋଲି ଭାବୁଛି । ସ୍ଥଳ ବିଶେଷରେ ଯୁବକଟି ବିଦେଶରେ ରହି ବିଦେଶିନୀଙ୍କ ପ୍ରେମରେ ପଡ଼ିଯାଉଛି । ନିଜର ଜମିବାଡ଼ି ବିକି, ଅନେକ କଷ୍ଟ ସହି ତାକୁ ମଣିଷ କରିଥିବା ବାପ ମାଙ୍କ କଥା ଭୁଲିଯାଉଛି । ଏହାଠାରୁ ବଳି ବଡ଼କଥା ଆଉ କଣ ହୋଇପାରେ? କୁଆଡ଼େ ଗଲାସେ ସଂସ୍କାର ଓ ସଂସ୍କୃତି ? ଶିକ୍ଷାର ଦର୍ଶନ ଆତ୍ମକୈନ୍ଦ୍ରିକ ନୁହେଁ, ବରଂ ବିଶ୍ୱ କୈନ୍ଦ୍ରିକ ହେବା ଦରକାର। ଯୁବକ-ଯୁବତୀମାନେ କେବଳ ନିଜ କଥା ନ ଭାବି ଦେଶ ଓ ଦଶର କଥା ଚିନ୍ତା କରନ୍ତୁ । ଛାତ୍ରଛାତ୍ରୀମାନେ ଆତ୍ମ ବିଶ୍ଳେଷଣ କରନ୍ତୁ ଯେ, ସେମାନେ ସମାଜ ପାଇଁ କଣ କରିଛନ୍ତି ? ଭବିଷ୍ୟତରେ ସମାଜ-ସଂସ୍କାର ପାଇଁ ଆଉ କଣ କରିବେ, ଯାହାଦ୍ୱାରା ସମାଜ ତାଙ୍କୁ ମନେରଖିବ । ଋକ୍ ବେଦରେ ଅଛି "Education is the realization of Self,” ଅର୍ଥାତ୍ ଶିକ୍ଷା ଆତ୍ମ ପ୍ରତିଶ୍ରୁତି ବା ଆତ୍ମ ଅବବୋଧ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ । ବରିଷ୍ଠ ଛାତ୍ରଟିଏ ଭାବିବା ଉଚିତ ଯେ, ମୁଁ ଯାହା କରୁଛି ଠିକ୍ କରୁଛି ତ ?

ଆମ ସମାଜରେ ଏପରି କିଛି ଲୋକ ଅଛନ୍ତି ଯେଉଁମାନେ ବିନାମୂଲ୍ୟରେ ଶିକ୍ଷାଦାନ କରନ୍ତି । କେହି କେହି ପଡ଼ା ଗାଁ, ସାହି, ବସ୍ତି ବା ଦୁର୍ଗମ ଅଞ୍ଚଳକୁ ଯାଇ ଶିକ୍ଷା ଉପଲବ୍ଧ କରାନ୍ତି । ଶିକ୍ଷାର ମହତ ଉଦ୍ଦେଶ୍ୟ ଓ ଲକ୍ଷ୍ୟ ବିଷୟକୁ ସେମାନଙ୍କୁ ବୁଝାନ୍ତି ଓ ସଫଳ ମଧ୍ୟ ହୁଅନ୍ତି । ଆଉ କେହି ବେକାର ଯୁବଗୋଷ୍ଠୀଙ୍କୁ ବିନା ପାରିଶ୍ରମିକରେ କ୍ରୀଡ଼ା, ବ୍ୟାୟାମ, ଅଗ୍ନି ନିର୍ବାପନ ଓ ରଣକୌଶଳ ଶିକ୍ଷା ଦିଅନ୍ତି ଦେଶର ଗୌରବ ଅକ୍ଷୁଣ୍ଣ ରଖିବା ପାଇଁ ସେମାନଙ୍କୁ ପ୍ରଚୋଦିତ କରାନ୍ତି । କେନ୍ଦ୍ର ସରକାର ମଧ୍ୟ ସେଇମାନଙ୍କୁ ଚୟନ କରି ପଦ୍ମଶ୍ରୀ ଓ ପଦ୍ମବିଭୂଷଣ ପରି ପୁରସ୍କାର ପ୍ରୋତ୍ସାହନ ପ୍ରଦାନ କରୁଛନ୍ତି । କାରଣ "Education without culture is incomplete & culture without education is in-sufficient", ଛାତ୍ର, ଛାତ୍ରର ଧର୍ମପାଳନ କରିବ, ପୁତ୍ର ପୁତ୍ରର ଧର୍ମ ଓ କନ୍ୟା କନ୍ୟାର ଧର୍ମ ପାଳନ କରିବ, ବଧୁ ବଧୁର ଧର୍ମ ପାଳନକରିବ, ଏହାହିଁତ ଶିକ୍ଷାର ପ୍ରକୃତ ଲକ୍ଷ୍ୟ। ଏହାହିଁ ତ ଶିକ୍ଷାର ମୌଳିକ ସଂସ୍କାର ପିତାମାତା ଓ ଗୁରୁଜନଙ୍କୁ ଭକ୍ତିକରିବା, ସମାଜରେ ଅବହେଳିତ, ଲାଞ୍ଛିତ ଓ ଧର୍ଷିତ ମଣିଷମାନଙ୍କ ପ୍ରତି ସମବେଦନା ଜ୍ଞାପନ କରିବା ଏହାହିଁ ତ ବାସ୍ତବ ଶିକ୍ଷାର ପ୍ରତିରୂପ । ଖାଲି “ ମୁଁ ଆଉ ମୋ ପରିବାର” କଥା ବୁଝି ଆଉ ସବୁ କଥା ପ୍ରତି ବିମୁଖ ହେବା କେବେ ଶିକ୍ଷାର ଉଦ୍ଦେଶ୍ୟ ନୁହେଁ । ଆମେ କେତେଦିନ ପାଇଁ ଏ ଧରାଧାମକୁ ଆସିଛୁ । ରାଧାନାଥ ରାୟଙ୍କ ଭାଷାରେ, “ ଅଢ଼େଇ ଦିନକୁ ମର୍ତ୍ତ୍ୟର କୁଣିଆ, ଏଥିପାଇଁ କିମ୍ପା ନ ଅଣ୍ଟେ ଦୁନିଆଁ”, କୁନ୍ତଳା କୁମାରୀ କହିଲେ ।

"ଏହିତ ଜଗତ ମାୟାରେ ମାନବ ମାୟା କି ମନମୋହନ,
ମୋହର ମୋହର ବୋଲି ମୁଁ ମରୁଛି ମୋର ନୁହେଁ ମୋ ଜୀବନ ।"

ସହୃଦୟ ପାଠକେ! ଆମେ ଦିନେ ଏ ମର ସଂସାରକୁ ତ୍ୟାଗ କରିବା, ନଶ୍ୱର ଶରୀର ମାଟିରେ ମିଶିଯିବ, ମାତ୍ର ଆମର ସୁକର୍ମ ଓ ଯଶ ଚିରଦିନ ରହିଯିବ ଚିର ଭାସ୍ୱର ହୋଇ, ସ୍ୱାଧୀନତାର ୭୬ ବର୍ଷ ପୂରିଗଲାଣି । ବାପୁଜୀଙ୍କ ଏଇ ମହାବାକ୍ୟ " ଅସ୍ପୃଶ୍ୟତା ଏକ ସାମାଜିକ ବ୍ୟାଧି," ଏ କଥାକୁ ଆମେ ଖାଲି କହିବା ନା କାର୍ଯ୍ୟରେ ପରିଣତ କରିବା ? ଆମ ଭିତରେ ଥିଲା ବାଲା ଓ ନଥିଲା ବାଲାଙ୍କ ଭିତରେ କିଏ ସଂଯୋଗ ସ୍ଥାପନ କରିବ? କିଏ ଶାନ୍ତି ମୈତ୍ରୀ ଓ ପ୍ରୀତିର ବାହକ ହୋଇ ସମାଜରେ ସଂସ୍କାର ଆଣିବ ? ଏ ଆର୍ଯ୍ୟଭୂମି ଭାରତ ବର୍ଷରେ ଲର୍ଡ ବେଣ୍ଟିକଙ୍କ ସମୟରୁ କୁସଂସ୍କାର ରୂପୀ ସତୀଦାହ ପ୍ରଥା ଉଠିଯାଇଛି। ସ୍ୱାମୀ ଦୟାନନ୍ଦଙ୍କ ସମୟରୁ ନାରୀଶିକ୍ଷାର ପ୍ରଚାର ଓ ପ୍ରସାର ଘଟିଛି । ଗାନ୍ଧିଜୀ କହୁଥିଲେ " If you Educate a man you educate a personality, but if you educate a woman you educate the whole family", ଅର୍ଥାତ୍ "ମା ହେଲେ ପାଠୋଇ, ଦେଶଯିବ ଆଗେଇ", ରାଜା ରାମ ମୋହନ ରାୟଙ୍କ ପରି ସମାଜ ସଂସ୍କାରକଙ୍କୁ ଲୋକେ ଏବେବି ମନେରଖିଛନ୍ତି । ସେ ବାଲ୍ୟ ବିବାହ ପ୍ରଥାକୁ ବନ୍ଦ କରାଇଥିଲେ। ବିଧବା ବିଭାଘର ପ୍ରଚଳନ କରାଇଥିଲେ। ସମାଜରେ ଏବେବି କୁସଂସ୍କାର ଭରି ରହିଛି । ତାକୁ ଦୂର କରିବା ପାଇଁ ଆମ ମାନଙ୍କର ଅବଶ୍ୟ କର୍ତ୍ତବ୍ୟ ରହିଛି । ଚେଙ୍ଗ ଦେବା, ଘୃଣ୍ୟ ନରବଳି ଦେବା, ନାକ, କାନକାଟି ଫୋଡ଼ି ବିକୃତ କରିବା ପରି ଅନ୍ଧବିଶ୍ୱାସ ଓ ଗୁଣିଗାରେଡ଼ି ପରି ସମ୍ବେଦନଶୀଳ ଅନ୍ଧବିଶ୍ୱାସକୁ ସଂପୂର୍ଣ ମୂଳ ପୋଛ କରିବା ପାଇଁ ଶିକ୍ଷିତ ଯୁବ ସମାଜ ଆଗେଇ ଆସିବା ଉଚିତ । ବର୍ତ୍ତମାନ ହିଁ ଏହାର ପ୍ରକୃଷ୍ଟ ସମୟ ଆସିଛି ।

ସେଦିନ ଆଉ ନାହିଁ, ଯେଉଁଦିନ ପିଲାମାନେ ବସି ଗୁରୁ ଗୁରୁଜନଙ୍କ ପାଖରୁ ନୀତିବାଣୀ ଶୁଣୁଥିଲେ, ଆଙ୍ଗୁଠିଗଣି ମିଶାଣ ଫେଡ଼ାଣ କରି ମାନସାଙ୍କର ଉତ୍ତର ଦେଉଥିଲେ ଏବେ ପ୍ରଶ୍ନ ପଚାରିଲେ, ପିଲାଟି ମୋବାଇଲ ଧରି ଏକ ମିନିଟ୍ ମଧ୍ୟରେ ଉତ୍ତର କହି ଦେଉଛି । ଇତିମଧ୍ୟରେ ଆମ ଦେଶର ଶିକ୍ଷିତଙ୍କ ହାର ୭୮ ଶତକଡ଼ା ହୋଇଯାଇଛି । ଏହା ନିଶ୍ଚିତ ଭାବରେ ଏକ ଆହ୍ଲାଦିତ ହେଲାଭଳି ସମ୍ବାଦ, ତେବେ ଶିକ୍ଷାକୁ ସମାଜ ସଂସ୍କାରକ ଭାବେ ପରିଗଣିତ କରିବା ପାଇଁ ଆଗେ କୁଶିକ୍ଷା ଓ କୁସଂସ୍କାରର ମୂଳପୋଛ ହେବା ଉଚିତ, ଏଥିପାଇଁ ଶିକ୍ଷକ, ଛାତ୍ରଛାତ୍ରୀ, ଯୁବସମାଜ ଓ ସର୍ବୋପରି ଅଭିଭାବକଙ୍କ ଭୂମିକା ଅପରିହାର୍ଯ୍ୟ, ଏହା ଆମପାଇଁ ଜ୍ୟେୟ ହେଉ ଏବଂ ଏକ ଆହ୍ୱାନ ହେଉ । ଆସନ୍ତୁ, ଦେଶ ଜନନୀର ସେ ଆହ୍ୱାନକୁ ସାକାର କରିବା ପାଇଁ ସମସ୍ତେ ହାତକୁ ହାତ ମିଶାଇବା, ଅଣ୍ଟାଭିଡ଼ିବା ଓ ସଫଳ ପ୍ରୟାସ କରିବା, ତେବେ ଏହା ଅଚିରେ ସଫଳ ହେବ। କାରଣ, କାହାରି ଆନ୍ତରିକ ଉଦ୍ୟମ କେବେହେଲେ ବ୍ୟର୍ଥ ଯାଏ ନାହିଁ । ଜୟହିନ୍ଦ୍ ଖାଲି ଉଚ୍ଚାରଣରେ ନୁହେଁ ଆଚରଣରେ କରି ଦେଖାଇଲେ ଏହା ଏକ ଯୁଗାଭାସର ଧ୍ୱନି ସମ୍ମିଳିତ ଭାବରେ ପରିଗଣିତ ହେବ । ଆପ୍ତ ବାକ୍ୟ କହନ୍ତି,

ତ୍ରୟୀ ସାଂଖ୍ୟ ଯୋଗ୍ୟ ପଶୁପତି ମତଂ ବୈଷ୍ଣବ ମିତି
ପ୍ରଭିନ୍ନ ପ୍ରସ୍ଥାନେ ପରମିଦଂ ମଦଃ ପଥ୍ୟମିତି ଚ
ରୁଚିନାଂ ବୈଚିତ୍ର ଦୃଜୁ କୁଟିଳ ନାନାପଥ ଜୁଷା।
ନୃଣାମେକୋ ଗମ୍ୟ ସ୍ତ୍ୱମସି ପୟସୀ ମଣ୍ଡବ ଇ ବଂ ୭ (ଶିବ ମହିମ୍ନ ସ୍ତୋତ୍ର)

"ଏ ଦେଶ ଆର୍ଯ୍ୟଭୂମି ଥିଲା ଓ ଆର୍ଯ୍ୟ ଭୂମି ରହିବ, ନାନା ବୈଚିତ୍ର୍ୟତା ଭିତରେ ବି ଆମେ ସମସ୍ତେ ଭାରତୀୟ, "କୁନ୍ତଳା କୁମାରୀଙ୍କ ଭାଷାରେ,

"ଉଦ୍ଧରିବେ ପୁଣି ଭାରତର ଭୂମି ଦୁର୍ଗାଦଶ ପ୍ରହରଣେ,
ମନ୍ଦିର ମନ୍ଦିରେ ପୂଜିବେ ଯୁଗଳ ମୂର୍ତ୍ତୀ ଲକ୍ଷ୍ମୀ ନାରାୟଣେ,
ଈଶ୍ୱର ପାର୍ବତୀ ମିଶି ବେନି ଅଙ୍ଗେ । ଶୋଭିବେ ଜାହ୍ନବୀ ବ୍ରହ୍ମପୁତ୍ର ସଙ୍ଗେ।
ଆଉ ଥରେ ଆର୍ଯ୍ୟଧାରା ହୋଇବ ଅଖିଳ, ଅବନୀ ବନ୍ଦିତ ନନ୍ଦନର ଝରାଫୁଲ ।

INDIA'S NEUTRAL STANCE IN THE MIDDLE EAST WAR

BHAKTISHREE NAYAK **[GCE, KEONJHAR]**
EMAIL-b_nayak@gcekjr.ac.in

India the land of beauty, the land of diversity, the softest lap for all the religions has always prioritised peace over war, greed and nonviolence. After getting independence from 800 years of foreign intruders and rulers in 1947, India stayed neutral without joining US team or Soviet Union team during the Cold War. it co-establishing the Non-Aligned Movement (NAM) in 1961. This allowed India to advocate for peace without taking sides, such as mediating in the crises in Korea and Congo. Although India engaged in conflict with Pakistan in 1947, 1965, and 1971, India always tried for peace negotiation. It restored seized territory following the 1971 through the Simla Agreement and prioritized talks between two nations for peace, instead of getting revenge. India leads in UN peacekeeping efforts, deploying more than 290,000 personnel to over 50 missions since 1948. Soldiers operated in challenging areas such as Somalia, Lebanon, and Congo, constructing schools and assisting communities while maintaining ceasefires. Currently, over 5,000 Indians are assigned in educating others. Currently the nation encouraged and participated discussions between Russia and Ukraine during 2022-24, promoting dialogue. It advocated for Africa's G20 representation and promotes South-South connections for unity. In disputes such as Israel-Palestine, it demands solutions of two states and brotherhood. India's multi-alignment currently balances the influences of the US, Russia, and China without hostility. It promotes conversation, politeness and more over "BASUDHAIBA KUTUMBAKAM" policy demonstrating that peace is its fundamental strength.

India avoids taking sides in the conflict in the Middle East. While protecting its own necessities, such as oil and jobs for its citizens, it promotes peace negotiations. This careful strategy aids in the difficult conflict that began in late February 2026 between the US, Israel, and Iran. Previous Relationships with the Region shows India has in the past handled Middle Eastern nations strategically. It initially opposed the idea of Israel in the 1940s and supported Palestine at the UN. This was standing with longstanding allies like the Arab countries and the Soviet Union. After India developed full relations with Israel in 1992, everything changed. They now exchange weapons, technology, and farming expertise. However, India continues to support Israel and Palestine's two-state solution. India condemned Hamas attacks during conflicts such as the Israel-Hamas conflict in 2023, but also supplied food and medical supplies to Gaza. It demanded peace and the rules of war. With this "no sides" strategy, India is able to interact with Saudi Arabia, Iran, Israel, and the United Arab Emirates.

The conflict began on February 28, 2026. The US and Israel bombed Iran in response to attacks from groups supported by Iran. Iran retaliated by shutting down the Strait of Hormuz, a geopolitically important maritime route for oil. They even assassinated a senior US base leader and attacked vessels. Iran's supreme leader, Ayatollah Ali Khamenei, was eliminated in an attack. This worsened the situation. Oil prices soared, causing difficulties for buyers such as India. Leaders in India emphasize "dialogue over conflict." Prime Minister Narendra Modi urged for tranquillity and an end to further attacks on one another. They refrained from directly blaming the US or Israel, which disappointed some people domestically. India participated in a UN vote alongside more than 130 nations opposing Iran's maritime assaults. This indicates a slight inclination towards the West, though it's not fully committed. No soldiers or arms from India were sent to the conflict. This protects previous agreements. Israel provides India with drones and missiles. Iran supports a port named Chabahar to access Afghanistan without traversing Pakistan. Gulf nations provide inexpensive oil and employment opportunities. Oil is important for nation building in this decade. India sources more than fifty percent of its oil from the Gulf. Once the sea route closed, prices increased by 30%. This leads to higher prices for petrol and food in our home country.

Approximately 9 million Indians reside and are employed there. They remit $100 billion annually. Fear of war drives them away, prompting many to leave quickly. India deployed aircraft to return them safely. Trade is also significant, amounting to $200 billion annually with the region. India markets pharmaceuticals, gemstones, and cuisine. Conflict halts vessels, causing finances to decelerate. Employment opportunities in construction, transportation, and healthcare support families in India. Losing that would harm impoverished regions. Modi visited Israel prior to the war and expressed their unity. However, he also maintains a close relationship with Iran for trade pathways. Foreign Minister S. Jaishankar states that India has "numerous options." This indicates no complete selection of teams. They are communicating with Saudi Arabia and the UAE regarding oil agreements. Despite Pakistan stepping in as a mediator with Egypt, India remains calm. India provides aid drops to Gaza. It states that Israel can retaliate but must adhere to certain principles. This portrays India as fair, potentially even a peace facilitator in the future.

Collaborations such as I2U2 (India, Israel, US, UAE) and the newly proposed IMEEC road project may connect India to Europe, bypassing routes through China. Articles such as The Diplomat claim that supporting US-Israel prevents harmful actions from Iran. Many people are more concerned about gas prices and employment updates than about distant conflicts. Discussions on television and social media blend frustration over soaring prices with pride in India's clever strategy. Lack of oil causes India's factories to slow down. Food costs rise as transportation expenses increase for trucks. The government seeks oil from Russia and the US to address shortages. Employees returning home require new employment. Kerala and UP experience it the hardest, facing depleted financial inflows. India accelerates renewable energy initiatives – solar and wind – to reduce long-term oil dependence. However, war accelerates that process now. Recently, Saudi Arabia and Iran reconciled, which is beneficial for India. UAE provides funding for roadways and technology hubs. China exploits the chaos to market weapons and establish bases. Pakistan portrays itself as a major aid provider, which annoys India. Russia offers discounted oil while aligning with Iran, challenging longstanding relations with India. India aims to take charge of discussions, similar to its efforts in Ukraine. Increased influence at the UN might also be beneficial. Should the conflict escalate; India may incur greater financial losses. However, remaining distant maintains options available.

In conclusion it can be interpreted that India walks a smart, balanced path in the Middle East war. It calls for talks and peace without taking sides between US-Israel and Iran. Prime Minister Modi has understood that a single partisanship statement will create chaos in our own country and will put India in grave danger. Neutrality shows India's peace-loving nature, keeping options open for future mediation and growth.

PROFESSIONAL JOURNEY & REFLECTIONS ON THE

EVOLUTION OF ELECTRICAL ENGINEERING

RAMESH CHANDRA KHAMARI **[GCE, KEONJHAR]**
EMAIL- rameshkhamari_fee@gcekjr.ac.in

It is a matter of immense pride and privilege to be associated with this esteemed institution, which is celebrating its Silver Jubilee—a significant milestone marking 25 years of excellence in technical education.

I joined this institute on 10th August 2015 as an Assistant Professor in the Department of Electrical Engineering. Over the past years, my journey here has been both enriching and transformative. The institute has provided a vibrant academic environment, encouraging not only teaching excellence but also research, innovation, and professional growth.

During this period, I have witnessed remarkable changes in the field of Electrical Engineering. The discipline has evolved from conventional power systems and machines to more advanced, interdisciplinary domains. The emergence of smart grids, renewable energy integration, microgrid systems, and intelligent control strategies has significantly reshaped the landscape of power and energy systems. Technologies such as real-time simulation, advanced control algorithms, artificial intelligence, and communication-enabled power networks are now playing a crucial role in addressing modern challenges like energy sustainability, reliability, and cyber resilience.

In particular, the growing importance of networked microgrids, energy storage systems, and adaptive control techniques reflects the shift towards decentralized and intelligent energy management. These advancements have also influenced teaching methodologies, where practical exposure through tools like simulation platforms and hardware-in-the-loop systems has become essential for bridging the gap between theory and real-world applications.

As a faculty member, I have continuously strived to align my teaching and research with these emerging trends, ensuring that students are well-equipped to meet industry demands and contribute meaningfully to society. The support and collaboration from colleagues and the enthusiasm of students have been key motivating factors in this journey.

On this special occasion of the Silver Jubilee, I extend my heartfelt gratitude to the institution for providing a platform to grow professionally and contribute academically. I look forward to continuing this journey and contributing towards the institute’s vision of excellence in the years to come.

ଶୂନ୍ୟତା
ନୂଆ ପ୍ରାରମ୍ଭ

ସିତାଂଶୁ କୁମାର ଦାସ [GCE, KEONJHAR]
EMAIL- sitansudas_fce@gcekjr.ac.in

ଶୁନରୁ ସୃଷ୍ଟି ଶୂନ୍ୟତା। ଆଉ ଶୂନ୍ୟତା ହିଁ ଜୀବନର ବେଦ। ଶୂନ୍ୟତା ଭିତରୁ ହିଁ ପ୍ରକୃତ ସତ୍ୟ ଫୁଟି ଉଠେ। ଶୂନ୍ୟତା ହିଁ ଜୀବନ ଓ ଜୀବନ ହିଁ ଶୂନ୍ୟତା। ମଝିରେ ଯାହା କିଛି ଘଟିଯାଏ ସେ ସବୁ ହେଉଛି ମାୟା। ସେଥିପାଇଁ ସଂସାରଟା ଯେପରି ସବୁଠାରୁ ବଡ଼ମାନଙ୍କର ସଂସାର ପରି ଦିଶିବ, ସେଥିପାଇଁ ମଣିଷ କେତେ କୁସ୍ତି କସରତ କରେ। ମଣିଷ ପ୍ରତ୍ୟେକ ଦିନ ମରୁଛି ଅଥଚ ସେ ଯେମିତି ଅମର ରହିବ, ସେଭଳି ମନପୋଷଣ କରେ। କାମନାର ବନାଶରେ ଦୁଃଖର ବନାଶ ବାରମ୍ବାର ପଢିଥିବା ମଣିଷ କାମନା କରେ। ଅତୀତ ଆଉ ଫେରବ ନାହ ବୋଲ ବହରୁ ଘୋଷଥିବା ଜୀବନ ବାରମ୍ବାର ଅତୀତକୁ ଝୁରି ହେଉଥାଏ। ଧୂଳି ଓ ପବନ ସାଙ୍ଗେ ମିଳେଇ ଯାଇଥିବା ଜୀବନକୁ ମନେ ପକାଉଥାଏ ସମ୍ପର୍କ। ଏକ ଶାନ୍ତ କମନୀୟ ସନ୍ଧ୍ୟାରେ ଏକାନ୍ତରେ ବସି ସେଇ ସମ୍ପର୍କର ପୁରୁଣା ପୃଷ୍ଠାକୁ ଲେଉଟେଉଥିଲେ ପ୍ରାଚୀ।

ଟିଭି ସ୍କ୍ରିନ୍‌ରେ ଆଲୋକ ଝଲମଲ କରୁଥିଲା। ସଙ୍ଗୀତ, ତାଳି, ଉତ୍ସାହ…

“ମିସ୍ ୱର୍ଲ୍ଡ ହେଉଛନ୍ତି… ଆନ୍ଭି!”
ପ୍ରାଚୀ ଶାନ୍ତ ହୋଇଗଲେ। ତାଙ୍କ ଆଖିରେ ଲୁହ ଭରିଗଲା। ପ୍ରତୀକ ହାଲୁକାରେ ତାଙ୍କ ହାତ ଧରି କହିଲେ, “ଆମ ଝିଅ… ଦେଖ!”

ପ୍ରାଚୀ ଓ ପ୍ରତୀକଙ୍କ ଜୀବନର ସବୁଠୁ ସୁନ୍ଦର ଉପହାର ଥିଲା ତାଙ୍କ ଝିଅ—ଆନ୍ଭି। ଆନ୍ଭି ଯେତେବେଳେ ଜନ୍ମ ନେଲା, ସେହି ଦିନରୁ ଘରଟି ହସରେ ଭରିଗଲା। ପ୍ରାଚୀ ତାକୁ ଆଲିଙ୍ଗନ କରି କହିଥିଲେ, “ତୁମେ ଆମ ସ୍ୱପ୍ନ,” ଆଉ ପ୍ରତୀକ ମନେମନେ ଭାବିଥିଲେ— ଆମ ଝିଅ ନିଶ୍ଚୟ କିଛି ବଡ଼ କରିବ। ପ୍ରାଚୀଙ୍କ ଆଖିରୁ ଖୁସିର ଲୁହ ଦୁଇ ଟୋପା ଗାଲ ଦେଇ ବହି ଆସୁଥିଲା…ପ୍ରତୀକ ପଚାରିଲେ, “କାହିଁକି କାନ୍ଦୁଛ?”

କଲେଜ୍ ଦିନଗୁଡ଼ିକରେ ପ୍ରାଚୀ ଥିଲେ ସମସ୍ତଙ୍କର ପ୍ରିୟ। ପେଣ୍ଟିଂ, ରଙ୍ଗୋଲି, ରନ୍ଧଣ, ନୃତ୍ୟ, ରାମ୍ପ୍ ୱାକ୍—କିଛି ମଧ୍ୟ ତାଙ୍କ ପାଇଁ କଷ୍ଟକର ନଥିଲା। ସେ କମ୍ପ୍ୟୁଟର ସାଇନ୍ସର ଛାତ୍ରୀ ଥିଲେ, ମେଧାବୀ ଓ ସୃଜନଶୀଳା । ସମୟ ଗଡ଼ିଚାଲି ଥିଲା। ପରେ ୱିପ୍ରୋରେ ଚାକିରି। ସବୁ କିଛି ସେହିଭଳି ଚାଲୁଥିଲା ଯେପରି ସେ ଯୋଜନା କରିଥିଲେ।

ୱିପ୍ରୋରେ କାମ, କମ୍ପ୍ୟୁଟର ସ୍କ୍ରିନ୍, ଡେଡ୍‌ଲାଇନ୍…

ତାପରେ ତାଙ୍କ ଜୀବନରେ ଆସିଲେ ପ୍ରତୀକ….

ପ୍ରଥମେ ଏକ ସରଳ କଥାବାର୍ତ୍ତା, ପରେ ବନ୍ଧୁତ୍ୱ, ଆଉ ଧୀରେ ଧୀରେ ସେହି ବନ୍ଧୁତ୍ୱ ଏକ ଦୃଢ଼ ସମ୍ପର୍କରେ ପରିଣତ ହେଲା। ବିବାହ ପରେ ପ୍ରାଚୀ ଏକ ନୂଆ ନିଷ୍ପତ୍ତି ନେଲେ—ସେ ନିଜେ ଚାକିରି ଛାଡ଼ି ପରିବାରକୁ ସମୟ ଦେବେ।

ପ୍ରତୀକ ସବୁବେଳେ ତାଙ୍କ ପାଖରେ ଥିଲେ—ସମ୍ମାନ, ସମର୍ଥନ ଓ ପ୍ରେମ ସହିତ। ସେ କେବେ ପ୍ରାଚୀଙ୍କ ସ୍ୱପ୍ନକୁ ଅଟକାଇନଥିଲେ, ବରଂ ସବୁବେଳେ କହୁଥିଲେ—“ତୁମେ ଯାହା ଚାହଁ, ସେହା କର।”

ପ୍ରାଚୀ ହସି କହିଥିଲେ—“ମୁଁ ଏହି ଜୀବନକୁ ଚାହେଁ।”ସେ ଚୟନ କରିଥିଲେ—ପରିବାର, ସମ୍ପର୍କ।

ଆନ୍ଭି ର ଜନ୍ମ ପରେ ପ୍ରତେକଟି ଛୋଟ ଛୋଟ କଥାରେ ପ୍ରାଚୀ ନିଜର ପ୍ରତିଛବି ଆନ୍ଭି ଭିତରେ ଦେଖୁଥିଲେ… ଏବେବି ତାଙ୍କର ମନେ ପଡ଼ିଯାଏ ପ୍ରଥମ ଥର ଆନ୍ଭି ପାଦରେ ଯେବେ ସେ ଘୁଙ୍ଗୁର ଲାଗିଥିବା ପାଉଁଜି ପିନ୍ଧାଇଦେଇଥିଲେ ଆଉ ସେ କେମିତି ନିଜ କୁନି ପାଦରେ ନାଚି ନାଚି ଘରଟା ସାରା ବୁଲୁଥିଲା.. କେମିତି ଚେୟାରକୁ ଟାଣି ଆଣି ତା ଉପରେ ଚଢ଼ି ମିରର କୁ ଦେଖି ଘଣ୍ଟା ଘଣ୍ଟା ଚାହିଁ ରହୁଥିଲା, ଫୁଲେଇ ହୋଇଥିଲା… ହୋଇନଥାନ୍ତାଭି କେମତ, ସେ ତ ଅବକଳ ପ୍ରାଚୀଙ୍କ ଭଳ…

ଜୀବନର ପ୍ରତିଟି ସୋପାନରେ କଷ୍ଟ ସମୟକୁ ଶୂନ୍ୟତା ନ ଭାବି ପ୍ରାରମ୍ଭ ଭାବିଥିବା ବ୍ୟକ୍ତି ହଉଛନ୍ତି ପ୍ରାଚୀ। ଏହା ସମସ୍ତଙ୍କ ଜୀବନର ମୂଳମନ୍ତ୍ର ହେବା ଦରକାର।

POEMS & STORIES

JOURNEY OF ENGINEERING EXCELLENCE

ଯୁଦ୍ଧର ଛାୟା ଓ
ଶାନ୍ତିର ଆହ୍ୱାନ

ସଞ୍ଜିତ କୁମାର ବାରିକ [GCE, KEONJHAR]
EMAIL- sanjit_barik@gcekjr.ac.in

ଯୁଦ୍ଧର ଛାୟା ଆଜି ଦିଗନ୍ତେ ଘେରିଛି,
ମଣିଷର ହସ ମନେ ଭୟରେ ଲୁଚିଛି।
ଆକାଶେ ଗୁଳିର ଶବ୍ଦ ଗୁଞ୍ଜିଯାଉଛି,
ଶାନ୍ତିର ପକ୍ଷୀ ଦୂରେ ଉଡ଼ ପଳାଉଛି।

ଶିଶୁର ଆଖିରେ ସ୍ୱପ୍ନ ଭାଙ୍ଗିଯାଉଛି,
ମାଆର ହୃଦୟ ନିରବେ କାନ୍ଦୁଛି।
ଘର ଓ ଗାଁ ଧୂଆଁରେ ଘେରିଯାଉଛି,
ମଣିଷତା କେଉଁଠି ହରାଇଯାଉଛି।

ସେନାର ପଦଚାରଣ ଶୁଣି ଧରିତ୍ରୀ କାମ୍ପେ,
ନିର୍ଦ୍ଦୋଷ ଜୀବନ ଭୟରେ ନିରବେ କାନ୍ଦେ।
ଶାନ୍ତିର ସ୍ୱପ୍ନ ଆଜି ଧୂଳିରେ ମିଶିଯାଉଛି,
ପ୍ରେମର ମୂଲ୍ୟ କାହିଁକି ହ୍ରାସ ପାଉଛି?

ଅନ୍ଧକାରେ ଆଜି ଆଲୋକ ଖୋଜୁଛି ପୃଥିବୀ,
ମଣିଷ ମନେ ଆଶା ତଥାପି ମରିନାହିଁ କେବେ।
ରକ୍ତର ଧାରା ମାଟିକୁ ଲାଲ କରଦେଉଛି,
ଦୟାର ସ୍ରୋତ କେଉଁଠି ହରାଇଯାଉଛି।

ଯୁଦ୍ଧ କେବଳ ନାଶ ଓ ବିନାଶ ଆଣେ,
କାହାରି ଜିତ ନୁହେଁ, ସବୁଠି ହାର ରହେ।
ସମୟ ଆସିଛି ଶାନ୍ତିକୁ ଆହ୍ୱାନ କରିବାର,
ପ୍ରେମର ପଥେ ଆଗକୁ ବଢ଼ିବାର।

ଧ୍ୱଂସର ଛାୟା ମଧ୍ୟରେ ଆଶା ଜୀବନ୍ତ ରହେ,
ସକାଳର ସୂର୍ଯ୍ୟ ନୂଆ ଆଲୋକ ଆଣିଦେଇଥାଏ।
ମଣିଷ ହୃଦୟରେ ପ୍ରେମ ଅବଶ୍ୟ ବଞ୍ଚିଥାଏ,
ସମୟ ସହ ଘାଉ ଧୀରେ ଧୀରେ ଭରିଯାଏ।

ଘୃଣାର ଅଗ୍ନି କେବେ ଶାନ୍ତି ଦେଇନାହିଁ,
ପ୍ରେମର ପଥେ ଚାଲିଲେ ଦୁଃଖ ରହନାହିଁ।
ଆସ ଆମେ ସମସ୍ତେ ଭାଇଚାରା ଗଢ଼ିବା,
ଏକ ନୂଆ ପୃଥିବୀକୁ ସହିତେ ଗଢ଼ିବା।।

ଆସ ଆମେ ଏକ ସ୍ୱରେ ପ୍ରାର୍ଥନା କରିବା,
ଯୁଦ୍ଧ ଛାଡ଼ି ଶାନ୍ତିର ପଥେ ଚାଲିବା।।

THE OSME
CHRONICLES

SARBESHWAR GIRI **[MCL]**

S tanding tall amidst the pillars of coal and hills of iron,

A legacy of technical brilliance clearly shown.

R igorous planning before the cricket match by people who never played,

B eneath the college cycle stands, the fight plans were made.

E xpressing love for the love of others was aways from the heart,

S triving the night before exams, was the only way out.

H onoring the teachers, the staffs and batch of 2009,

W here discipline and grit start to mingle with every sip of wine.

A iming for the masti, when birthday night arrives,

R ising for the naked bumps ,with the wet floor dives.

G athered together for the fights for a new campus,

I nside the dark bars is the topic we never try to discuss.

R ecalling each fight with the counterparts who had the campus in their name,

I nspiration was never filled less for the sake of our fame.

W atching the smoke at the junction of Astik Bhais bricks,

I magining the whole world in the fist with the love for single discs.

T ours and outings with other branches was a dream come true for us,

H olding the secrets within, as mining branch at that time had no option for girls
.

L oving and losing as college days flew,

O ver the years, we are distant yet true.

V ividly smiling through tears for the past,

E ngraved in our hearts, our bond will always last.

ଛାୟା

ପୁରୁଷୋତ୍ତମ ମିଶ୍ର [OPS]

ସମୟର ରଥ ଦ୍ରୁତ ଗତିରେ ଚାଲୁଥାଏ ଆଗକୁ । କୋମଳ ଅମ୍ଲାନର ଜୀବନରେ ସତରଟି ବସନ୍ତ ଆସି ନିଜ ନିଜର ମଳୟ ପବନରେ ତା କୋମଳ ମନକୁ ଶକ୍ତ କରିଦେଇଥାଏ । ସ୍ପୁୱାର୍ଟ୍ କଲେଜରୁ ଯୁକ୍ତ ଦୁଇ ପଢି ସାରି ସେ ଯୋଗ ଦିଏ କେଂଧୁଝର ସରକାରୀ ଯାନ୍ତ୍ରିକ ମହାବିଦ୍ୟାଳୟରେ । ପିଲାଳିଆ ଚେହେରା, ପତଳା ଶରୀର, ମଜାଳିଆ ମିଜାଜ୍ ତାକୁ ଅନ୍ୟ ମାନଙ୍କ ମଧ୍ୟରେ ଖୁବ କମ ସମୟରେ ଜନପ୍ରିୟ କରେଇଦିଏ । ସମସ୍ତ ସହପାଠୀ ତାକୁ 'ଅମୁ' ଡାକି ସମ୍ବୋଧନ କରନ୍ତି । ପାହାଡ ଜଙ୍ଗଲ ଘେରା କେଂଧୁଝରକୁ ସେ ସମ୍ପୂର୍ଣ୍ଣ ନିଜର ଭାବିନିଏ । ପଢାପଢି ରୁ ସାମାନ୍ୟ ଟିକେ ବିରତି ମିଳିଗଲେ ସେ ଦୋଉଡିଯାଏ କଲେଜର ପଛରେ ଥିବା ଅଙ୍କା ବଙ୍କା ଝର୍ ଝର୍ ପାହାଡି କନ୍ୟା ପାଖକୁ, ଝରଣା ପାଖକୁ । ମନଭରି ଗାଧୋଇବାକୁ ।

ଇତିମଧ୍ୟରେ ତାର ବନ୍ଧୁତା ହୁଏ ସହପାଠୀ ସାଗର ସହ । ଖୁବ କମ ସମୟ ଭିତରେ ସେମାନେ ଅନ୍ତରଙ୍ଗ ବନ୍ଧୁ ହେଇଯାନ୍ତି । ଦୁହେଁ ଛାତ୍ରାବାସରେ ଗୋଟାଏ କକ୍ଷରେ ରୁହନ୍ତି । କୁଆଡେ ବୁଲିବାକୁ ଯିବାକଥା ହେଉ କିମ୍ବା ଖେଳ କୁଦ ରେ ଭାଗ ନେବା କଥା ହେଉ ସବୁ ବେଳେ ଦୁଇଜଣ ଜାକ ଛାଇ ପରି ସାଥିହୋଇ ଚାଲନ୍ତି । ଛାତ୍ରାବାସରେ କେବେ ଖାଦ୍ୟ ଭଲ ନଲାଗିଲେ ସେମାନେ ଚାଲିଯାନ୍ତି 'ପ୍ରିୟା ଢ଼ାବା'କୁ ରାତ୍ରିଭୋଜନ ପାଇଁ । ଦୁଇ ଜଣଙ୍କ ଏପରି ବନ୍ଧୁତା ଅନ୍ୟ ସହପାଠୀ ମାନଙ୍କୁ ଈର୍ଷାନ୍ୱିତ କରାଇଦିଏ । ଏହିପରି ଅନ୍ତରଙ୍ଗତା ଓ ଚପଳାମୀ ଭିତରେ ଦୁହିଁଙ୍କର ଦୁଇ ବର୍ଷ କଟିଯାଏ କେନ୍ଦୁଝର ରେ ।

ଅମ୍ଲାନର ଜୀବନକୁ ପୁର୍ଣିମାର ଜହ୍ନ ପରି ଆଗମନ କରେ ଅଲିଭା । ଅଲିଭାର ଘର ଥିଲା ଭଦ୍ରକ ଜିଲ୍ଲାରେ, ଯାହା ସାଗର ର ମାମୁଁ ଘର ଖୁବ ନିକଟରେ ଅବସ୍ଥିତ । ତଥାପି କାହିଁକି କେଜାଣି ଅଲିଭାର ଆଗମନ ଦୂରେଇଦିଏ ସାଗରକୁ ଅମ୍ଲାନ ଠାରୁ ଦୂରକୁ ବହୁ ଦୂରକୁ ।
ଦୁଇ ଜଣ ଆଉ ଆଗ ଭଳି ମିଶୁଥିବାର ଦେଖାଯାନ୍ତି ନାହିଁ । ଏବେ ଅମ୍ଲାନ ବାହାରିଯାଏ ସାନଘାଗରାର ଜଳରାଶିରେ ସ୍ନାନ କରିବାକୁ ଅଲିଭା ସହ ଆଉ ଅନ୍ୟ ପଟରେ ସାଗର ରହିଯାଏ ଛାତ୍ରାବାସର ଚାରି କାନ୍ଥ ମଧ୍ୟରେ ଏକଦମ ଏକୁଟିଆ । ଦୁଇଜଣ ସାଙ୍ଗ ହୋଇ ଖେଳିବାକୁ ଯିବାର ବି ଦେଖାଯାଏନାହିଁ ଆଉ ପୂର୍ବଭଳି । ଅନ୍ୟ ସହପାଠୀ ମାନେ ଏପ୍ରକାର ଦୃଶ୍ୟ ମାନ ଦେଖି ବହୁତ ଆନନ୍ଦିତ ହେଉଥିଲେ ଏବଂ ଉପହାସ ଛଳରେ କହୁଥିଲେ," ରଜନୀରେ ଛାୟାର ସ୍ଥାନ ନାହିଁ "।

ସାଗର ଏବେ ସବୁବେଳେ ଗୁମସୁମ୍ ରହେ । କଣ ଗୋଟେ ଥିଲା ତାର କହିବାକୁ , ଅନ୍ୟ ମାନଙ୍କୁ ନୁହେଁ ଅମ୍ଲାନକୁ କିନ୍ତୁ କହିନାହିଁ ସେ କେବେ । ସେ ଜାଣି ପାରୁନଥିଲା ରାତ୍ର କାହା ଜୀବନରେ ଆସିଥିଲା, ତା ନିଜ ଜୀବନରେ ନାଁ ତାର ସବୁଠାରୁ ପ୍ରିୟ ଅମୁ ଜୀବନରେ । ଅମ୍ଲାନ ନିଜର ପ୍ରିୟତମା ସହ ଥିଲେ ମଧ୍ୟ ପୂର୍ବଭଳି ଆନନ୍ଦ ଅନୁଭବ କରେନାହିଁ । ସେ ସବୁବେଳେ ଖୋଜୁଥାଏ ହଜିଯାଇଥିବା ତାର ପ୍ରିୟ ବନ୍ଧୁ ସାଗର ସହ କଟେଇଥିବା ପୁରୁଣା ଦିନର ଅଭୁଲା କାହାଣୀ ମାନଙ୍କୁ । ଅଲିଭା ସହ ଥିଲାବେଳେ ସେ ସବୁବେଳେ ଅନ୍ୟମନସ୍କ ଦେଖାଯାଏ, ଅଲିଭା ବି ସେହି ଅନ୍ୟମନସ୍କତା ର କାରଣ ପଚାରିଛି ତାକୁ ଅନେକଥର କିନ୍ତୁ ଉତ୍ତର ନଥିଲା ଅମ୍ଲାନ ପାଖରେ । ଯାହାଥିଲା ଗୋଟେ ଅଭିବକ୍ତ ପ୍ରଶ୍ନ ଏବଂ ଉତ୍ତର କେବଳ ଦେଇପାରିଥାନ୍ତା ଜଣେ ଯିଏ ତା ଠାରୁ ବହୁତ ଦୂରକୁ ଚାଲିଯାଇଥିଲା । ସେହି ତ ଥିଲା ତାର ଛାଇ,ତାର ହୃଦୟର ଗୋଟେ ଥାକ, ବନ୍ଧୁ, ରୁମ୍ ମେଟ୍ ସାଗର । କେବଳ ଆଉ କେବଳ ସାଗର ।

କେହି କେହି କୁହନ୍ତି, "ଅଲିଭାକୁ ସାଗର ମନେ ମନେ ଭଲପାଉଥିଲା ସେଥିପାଇଁ ଅମ୍ଲାନ ସହ ବନ୍ଧୁତା ଭାଙ୍ଗିଦେଲା" । ଆଉ କେହି କେହି କୁହନ୍ତି, "ଅଲିଭାର ଚରିତ୍ର ଭଲ ନଥିଲା ସେ ସାଗର ସହ ଥିବା ବେଳେ ଅମ୍ଲାନର ଦୃଷ୍ଟିରେ ଆସିଲା ଏବଂ ତାଙ୍କ ବନ୍ଧୁତା ଭାଙ୍ଗିଗଲା" । ଆଉ କେତେକ କୁହନ୍ତି," ସାଗର ଅମ୍ଲାନ ଠାରୁ କିଛି ଟଙ୍କା ଧାର ନେଇ ପରିଶୋଧ ନକରିପାରିବା ତାଙ୍କ ବିଚ୍ଛେଦର ପ୍ରକୃତ କାରଣ " । ଏପରି ଅନେକ ପ୍ରଶ୍ନ ସହ ଅବାସ୍ତବ ଉତ୍ତର ମାନ ଘୁରିବୁଲନ୍ତି କଲେଜ କ୍ୟାମ୍ପସର ପବନ ରେ ।

ଚାଁହୁଚାଁହୁ କଲେଜରେ ସେମାନଙ୍କ ଶେଷ ବସନ୍ତ ଆସି ନିଜର ଆଗମନର ବାର୍ତା ପହଞ୍ଚାଇଦିଏ ଆମ୍ବ ବଉଳର ପେଛା ସହ । ସେମାନଙ୍କୁ ସବୁଦିନ ପାଇଁ ଅଲଗା ହେବାକୁ ହେବ । ଜୁନିଅର୍ ମାନେ ବି ବିଦାୟ ଉତ୍ସବ ପାଳନ କରି ଭବିଷ୍ୟତ ସୁଗମ ହେବାର ବାର୍ତା ସହ ବିଦାୟ ଦେଇଦିଅନ୍ତି । ଅମ୍ଲାନକୁ କିନ୍ତୁ ଲାଗୁଥିଲା ଯେପରି ତାକୁ କେନ୍ଦୁଝର ନିହାତି ଭାବେ ପର କରିଦେଉଛି । ସେ ମନେ ପକାଇପାରୁଥିଲା ବର୍ଷାଭିଜା ଏକ ସକାଳରେ ସେ କିପରି ଆସିଥିଲା ଏଠାକୁ ବାପାଙ୍କ ସହ, ଆହୁରି ମନେ ପକାଉଥିଲା ତାର ଛାଇ ସ୍ୱରୂପ ପ୍ରିୟ ବନ୍ଧୁ ସାଗର କୁ । ସେ ଧାଇଁଲା ତାର ରୁମ୍ କୁ ମନରେ କୋହମିଶା ଦମ୍ଭ ସହ । ଆଜି ସେ ଖୋଜିପାଇବ ଅନେକ ଦିନରୁ ଚାପିରଖିଥିବା ଅସମାହିତ ପ୍ରଶ୍ନର ସମାଧାନ । ହଷ୍ଟେଲରେ ପହଞ୍ଚି ସେ ଦେଖିଲା ତାର ଛାଇ ଚାଲିଯାଉଛି ହଷ୍ଟେଲ ଛାଡ଼ି, ସବୁଦିନ ପାଇଁ ତାକୁ ଓ ତାଙ୍କ ରୁମ୍ କୁ ପର କରି । ଆଖିରୁ ଗଡିପଡୁଥିବା ଲୁହକୁ ଗୋଟେ ହାତରେ ପୋଛି ସେ ସାଗର ଯାଉଥିବା ରିକ୍ସା କୁ ପିଛା କଲା ଖାଲି ପାଦରେ । ଗଡିଯାଇଥିବା ସମୟର ଚକ ପରି ସେ ରିକ୍ସାର ବଡ଼ ବଡ଼ ତିନିଟା ଚକ କୁ ବି ଅଟକାଇବାରେ ବିଫଳ ହେଲା । କିନ୍ତୁ ମନକୁ ବୁଝେଇଦେଇ କହିଲା, "ହଁ ଆଜି ଯାଉ, ମୁଁ ତ ଜାଣିଛି ନା ସାଗରର ଘର ଠିକଣା । ପହଞ୍ଚିଯିବି ଯେ ଦିନେ " ।

ୟା ମଧ୍ୟରେ ଦୀର୍ଘ ପଦର ବର୍ଷ ସମୟ ଅତିକ୍ରାନ୍ତ କରିଯାଏ । ଅମ୍ଲାନ ସାଗରର ଠିକଣା ହଜେଇଦେଇଛି କେବେଠାରୁ, ଦେଖିନି ତାକୁ ଅନେକ ବର୍ଷରୁ । ଖବର ଆସିଲା ବନ୍ଧୁମିଳନ କାର୍ଯ୍ୟକ୍ରମ ହେଉଛି କେନ୍ଦୁଝର ସରକାରୀ ମହାବିଦ୍ୟାଳୟରେ । ନିଜର ପତ୍ନୀ ସୋନାଲି ସହ ସେ ବାହାରିଲା କେଂଧୁଝର । କୈଶୋର ଓ ଆଦ୍ୟଯୌବନ ର ଘଟଣା ବହୁଳ ଦିନଗୁଡ଼ିକର ଅନେକ ସ୍ମୃତି ଓ ଗୁଡ଼ାଏ ଆବୁରୁ ଜାବୁରୁ ଅସମାହିତ ପ୍ରଶ୍ନ ଯେତେ ସବୁ ତା ମୁଣ୍ଡ ଚାରିପଟେ ସଦା ସର୍ବଦା ଘୁରିବୁଲୁଥିଲା ସେ ସବୁର ଉତ୍ତର ପାଇବାର ଇଚ୍ଛା ଅନେକ ଆଗରୁ ଉଭେଇଯାଇଥିଲା ତା ମନରୁ ପିଲାବେଳେ ତା କୋମଳ ଶରୀରକୁ ଆସିଥିବା ଛୋଟ ଛୋଟ କ୍ଷତଚିହ୍ନ ଚମଡ଼ା ଛାଡ଼ି ମିଳେଇଗଲା ପରି ।

ଗେଟ୍ ଟୁଗେଦର୍ କୁ ଅମ୍ଲାନର ଅତୀତର ଅନ୍ତରଙ୍ଗ ବନ୍ଧୁ ସାଗର ବି ଆସିଥିଲା, କିନ୍ତୁ ଏକୁଟିଆ । ଦୁଇଜଣ ଦୁହିଁଙ୍କୁ ଦେଖିଲେ ଓ ପୂର୍ବ ଘଟଣା କୁ ଭୁଲି ଯାଇ ପୁଣି ଥରେ ଛାଇଦୁଇଟି ଏକାଠି ହୋଇ ଏକ ଓ ଅଭିନ୍ନ ବିରାଟ ଏକ ଛାଇ ରେ ପରିଣତ ହୋଇଗଲେ । ଅମ୍ଲାନ ପୁରୁଣା ପ୍ରଶ୍ନ ପଚାରିବା ପୂର୍ବରୁ ପଚାରିଦେଲା," ବାହା ହୋଇନୁକିରେ ସାଗର?" । ସାଗର ର ଉତ୍ତର ତାକୁ ଦୁଇଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଏକାବେଳେ ଦେଇଦେଲା । ଯେଉଁ ପ୍ରଶ୍ନ ଦୁଇଟି ଛାଇକୁ ପୃଥକ କରିଦେଇଥିଲା ବର୍ଷବର୍ଷ ପାଇଁ ତାହାର ଉତ୍ତରର ମହତ୍ୱ ନଥିଲା ସେଦିନ ଆଉ ପୂର୍ବ ପରି । ଯେଉଁ ଅଲିଭା କାରଣ ଥିଲା ଦୁଇ ବନ୍ଧୁଙ୍କ ବିଚ୍ଛେଦର ସେ ଥିଲା ଖୁସି ନିଜର ସ୍ୱାମୀ ସହ ଅନ୍ୟ କୋଉଠି । ପୁଣି ଥରେ ବାହାରିଲେ ଅମ୍ଲାନ ଏବଂ ସାଗର ସାନଘାଗରାକୁ ନିଜର ହଜିଲା ଦିନର ଅଦୃଶ୍ୟ ହେଇଯାଇଥିବା ସ୍ମୃତିକୁ ସାଉଁଟିବାକୁ ଏଥର କିନ୍ତୁ ଅଲଗା ହୋଇ ନୁହେଁ ଏକାଠି ହୋଇ ସବୁଦିନ ପାଇଁ । ସାନଘାଗରା ରୁ ଫେରି ସେମାନେ ପୁଣି ଥରେ ଗଲେ କଲେଜ ଜୀବନର ହସଲୁହ ଭଜା ଅତୀତର ସ୍ମୃତ କୁ ଚାର କାନ୍ଥ ମଧ୍ୟରେ ଅଦୃଶ୍ୟ ଭାବରେ ସାଇତ ରଖିଥିବା କକ୍ଷଟରୁ ସାଉଟ ଆଣିବାକୁ ।

ବଳଦେବଜୀଉ ଛାତ୍ରାବାସର ରୁମ୍ ନମ୍ବର ବି-୧୨ ନିଜର ରଙ୍ଗ କୁ ପରିବର୍ତନ କରି ନୂଆ ରଙ୍ଗରେ ରଙ୍ଗେଇ ହେବା ସହ ନିଜର ନାମକୁ ମଧ୍ୟ ପରିବର୍ତନ କରିଦେଇ ରୁମ୍ ନମ୍ବର୍-୨୧୨ ହୋଇଯାଇଛି । କିନ୍ତୁ କେବଳ ଗୋଟିଏ ମାତ୍ର ପରିବର୍ତ୍ତନ ହୋଇନି ସେଠି, ଆଉ ସେଇଟି ହେଲା -ଦୁଇଟି ଅଜଣା କିଶୋରଙ୍କର କୈଶୋର ପାର କରି ଏକାଠି ଯୌବନ ପ୍ରାପ୍ତି ହେବାର ଅଭୁଲା କାହାଣୀ ସୃଷ୍ଟିର ଦୃଶ୍ୟ । ଆଜି ବି ତାହା ବଦଳିନାହିଁ । କୁଳୁକୁଳୁ ଝରଣା ପରି ଅନବରତ ପ୍ରବାହିତ ହେଉଛି । ଦୁଇଟି ଅପରିଚିତ ଯୁବକରୁ ଦୁଇଟି ଏକାନ୍ତ ଅନ୍ତରଙ୍ଗ ବନ୍ଧୁ ପାଲଟିଯାଇଥିବାର ଅତୀବ ସୁନ୍ଦର ରୂପାନ୍ତରଣ ଓ ଅମ୍ଳୀୟତା ର ଛିଟା ସେହି ଛୋଟିଆ କୋଠରୀ ଭିତରେ ରହିଯାଇଛି ସେହିପରି ଅପରିବର୍ତ୍ତିତ ହୋଇ । ରହିଥିବ ବୋଧେ ଚୀରଦିନ ।
ଦୁଇବନ୍ଧୁ ଅମ୍ଲାନ ଓ ସାଗର ନିଜର କଲେଜ ଜୀବନର କାହାଣୀ ଗଢୁଛନ୍ତି ସେହି ରୁମ୍ ରେ ,ଗଢୁଥିବେ ଅସୀମ ସମୟ ପାଇଁ, ତାଙ୍କ ପରେ କକ୍ଷ କୁ ନିଜର କରିବାକୁ ଥିବା ଆଉ କେହି ଅମ୍ଲାନ ଏବଂ ସାଗର ମାନଙ୍କ ପାଇଁ ।

ସେହି କଲେଜ୍ ପୁଣି ଥରେ ବିଦାୟ ଦେଉଥିଲା ନିଜଠାରୁ ପୂର୍ବରୁ କଟି ଛିଣ୍ଡି ଦୂରକୁ ଛିଟକି ପଳେଇଯାଇଥିବା ପିଲାମାନଙ୍କୁ । ଆଉ ଅପେକ୍ଷାରେ ଥିଲା ଆସିବାକୁ ଥିବା ନୂତନ ଉତ୍ତରାଧିକାରୀ ମାନଙ୍କୁ । ନୂଆ -ପୁରୁଣା ର ଏହି ଖେଳ ଓ କଳରବ ଭିତରେ ବି କଲେଜ୍ ଥିଲା ମୌନ । ଅନେକ କାହାଣୀର ସମାହାର ତା କାନ୍ଥ, ବାଡ଼, ଛାତ,ପାଚେରୀ ଓ ଖେଳ ପଡ଼ିଆ ପୁରୁଣା ପିଲାମାନଙ୍କ ଛାତି ଭିତରୁ କୋହ କୁ ଛାଣି ଆଣି ସେମାନଙ୍କ ଆଖି କୋଣରେ ବିନ୍ଦୁ ବିନ୍ଦୁ ଜଳ ଭରି ଦେଉଥିଲେ ।

ଅତୀତର ଛାତ୍ର ଆଜି ଅତୀତର କାହାଣୀକୁ ଛାତିରେ ଚାପି ଧରି ଫେରିଯାଉଥିଲେ କିନ୍ତୁ କଲେଜ ପଛରେ ଥିବା ବୃଦ୍ଧ ପାହାଡଟି ସେହିଭଳି ଅଣ୍ଟା ସିଧା କରି ଛିଡା ହୋଇଥିଲା ଶୁଣିବାକୁ ଆହୁରି ଅନେକ କାହାଣୀ ପ୍ରେମର, ପ୍ରତାରଣାର ଓ ଅମ୍ଲାନ -ସାଗରଙ୍କ ପରି ନିଚ୍ଛକ ବନ୍ଧୁତ୍ୱ ର ।

କଲେଜ୍ ର କାହାଣୀ ଓ ପାହାଡର ଛାଇ ପରସ୍ପର ସହ ମିଳିତ ହେଉଥିଲେ କି ନାହିଁ ଜଣାନାହିଁ କିନ୍ତୁ ଦୁଇଟି ବନ୍ଧୁ ପୁଣି ଥରେ ନିଜ ଛାୟା କୁ ନୂଆକରି ପାଇ ଆନନ୍ଦରେ ବିଭୋର ହୋଇ କଲେଜ୍ ଗେଟ୍ ଆଗରୁ ଛାଇ ଲେଉଟିବା ବେଳକୁ ଅପସରି ଯାଉଥିଲେ ଧୀରେ ଧୀରେ ।

imfa

Expanding Horizons, Strengthening Ties

India's emergence as the global powerhouse of growth drives us. IMFA is committed to 'Make in India' and supplies value-added ferro chrome to leading stainless steel producers across the world. We are increasing our ore-raising and bolstering our smelting capacity to actively support and meet the nation's expanding requirements, which are driven by the country's focus on infrastructure development.

We stand prepared to propel India and build it's tomorrow, today.

LEADING

Fully integrated producer of ferro chrome with backward integration into power and mining

ONLY UNDERGROUND CHROMITE MINE

Proudly operating India's only underground chromite mine alongside extensive open cast mines

284,000 MT
Ferro Alloy Production Capacity

190 MVA
Furnace Capacity

204.55 MW
Captive Power Generation Capacity

1.2 million tonnes
Underground Mining Capacity

100,000 MT
Upcoming Ferro Alloy Production Capacity

110 MW
Upcoming Hybrid Renewable Energy Capacity

BALDA IRON ORE BLOCK

M/s SERAJUDDIN & Co.

Mines Office
Balda, Keonjhar, Odisha

Responsible Mining | Sustainable Growth

Registered Office
Kolkata, West Bengal

Our Legacy

- Established in 1944 (Pre – Independence Era)
- Started with Manganese Mining at Guruda
- Expanded into Chrome Ore (Nuasahi)
- Strong presence in Iron Ore, Manganese, Chrome
- Balda Iron Lease since 1962
- Key contributor to Domestic & International Markets
  Govt. Revenue (Royalty & Rent)

Operational Strength

- Lease retained through E-Auction (for 50 Years)
  Valid till 2070
- MDPA Agreement with State Govt.

Key Project Highlights

Area in Ha.	335.594
Mining Plan	10.632 MTPA
EC Capacity	15.15 MTPA

Central Processing Unit

CENTRAL PROCESSING UNIT
1500 TPH | 26,000 MT/DAY

Sustainability & Monitoring

Community Development

M/s Serajuddin & Co.

Committed to Responsible Mining & Nation Building

Bringing SMILE to the Rural Life...

SNM

SNM GROUP

Weigh Bridge Road, Barbil, Dist: Keonjhar-758035, Odisha
Website: www.snmgroups.com

COLLECTION

JOURNEY OF ENGINEERING EXCELLENCE

THE CLOCK IS TICKING & IT'S NOT
WAITING FOR YOUR DEGREE

ANIKET KUMAR **[APMOSYS]**
EMAIL- theanikumar@gmail.com

As we celebrate 25 years of GCE Keonjhar, we aren't just looking at a timeline; we are looking at a legacy. From the early days of OSME to the sprawling labs of Jamunalia, this institution has been the bedrock for thousands. "Gyanam Anantam" is etched in our identity.
But as you step outside those college gates, you aren't entering a "field"—you're stepping into a speed trap.

Here is the cold, hard contrast that no one puts on the brochure: A college syllabus is a static document. It is designed to be stable, safe, and slow. But the market? The market is kinetic. In 2026, the average "half-life" of a software framework is no longer years—it is measured in months.

We are living in a bizarre irony: We spend 1,460 days chasing a "stack" that might be deprecated before we even throw our graduation caps. Let's be brutally honest with ourselves. That degree in your hand? It's a magnificent badge of persistence. It proves you can survive the grind, clear the back-papers, and navigate the system. But don't confuse persistence with readiness.

The world doesn't care how many semesters you sat through; it cares how fast you can adapt when the "industry standard" you learned in third year becomes the "legacy junk" of your first job.
The foundation is here in Keonjhar. But the building? That's being built at 100mph, and it started yesterday.

YOUR DEGREE IS A COMPILER. THE MARKET IS A CRASHED SERVER.

To understand the gap between Jamunalia and the real world, we have to talk in the only language that matters: The Code.

Think of your four years at GCE Keonjhar as the "Syntax" phase. This is the safe, controlled "Localhost" of your life. In the lab, the rules are clear. You learn the loops, the logic, and the theory. If you make a mistake, the compiler throws a red line and tells you exactly what's wrong. It's a clean environment where the problem is defined, and the solution is hidden somewhere in a textbook. You are learning the grammar of engineering.

But the moment you step into a high-stakes startup or a global tech firm, you hit The Context.
In the industry, no one gives you a gold medal for code that is "syntactically correct." You can write the most beautiful, bug-free C++ or Java, but if it doesn't solve a business problem, it's worthless. * The Syntax is knowing how to build a login page.

- **The Context** is knowing how to keep that website alive when a million people click "Buy" at the exact same second.

The industry provides the variables that no classroom can simulate: unpredictable user behavior, scaling nightmares, and the brutal "why" behind the "how." In college, you are rewarded for following the manual. In the market, you are rewarded for building the bridge that wasn't in the manual.
College teaches you how to write the code; the world teaches you why the code matters.
If you spend four years only perfecting your syntax while ignoring the context of how businesses actually run, you aren't an engineer—you're just a very expensive calculator.

UNLEARN THE FEAR. EMBRACE THE CRASH.

If you want to survive the next decade, you have to perform a "factory reset" on your brain. You have to unlearn the most dangerous habit you've picked up in the last four years: The Fear of Being Wrong.

In the lecture halls of GCE Keonjhar, failure has a very specific face. It's a red mark on a script. It's a lower GPA. It's the nightmare of a "back paper." For 1,460 days, you are conditioned to avoid failure at all costs. You are taught that a mistake is a dead end.

But in the high-stakes world of startups and global engineering, failure isn't a dead end—it's a Data Point.

In the industry, "Fail Fast" isn't just a trendy cliché; it's a survival strategy. Every bug that breaks your code, every server that crashes under load, and every project that gets rejected by a client is actually a lesson in disguise. These aren't "red marks" on your life; they are the feedback loops that tell you how to build something better.

Here is the truth: **To succeed in the market, you must trade the "Perfectionist Student" mindset for the "Iterative Builder"** mindset.

The Perfectionist Student waits until everything is "100% correct" before showing it to the world—and by then, the opportunity has already vanished. The Iterative Builder launches, fails, fixes, and repeats. One is chasing a grade; the other is chasing a solution.

Stop treating your career like a semester exam where you only get one shot. Start treating it like a system you are constantly debugging. The more "Data Points" of failure you collect, the faster you'll find the version of yourself that actually works.

STOP WAITING FOR THE PERMISSION SLIP.

If you want to understand why some engineers thrive while others just "survive," look at their relationship with the syllabus. Most students spend four years as Consumers. They wait for the lab manual. They wait for the deadline. They wait for someone to tell them what to build and how to build it.

But the "Architects"—the ones who actually build the future—don't wait for a syllabus.

At GCE Keonjhar, the path is paved for you. You follow the curriculum, you attend the lectures, and you tick the boxes. But in the real world, the "pavement" ends the moment you walk out of the gate.

- The Consumer is a student who asks, "Will this be on the exam?" If it's not in the notes, they don't learn it. If there's no credit attached, they don't build it.

- The Architect is an engineer who identifies a gap in the market, a bug in a system, or a problem in their community and builds a bridge without being asked.

- This is the "Freelance/Startup Edge." The people who survive this shifting economy are the ones who stop asking "Is this required?" and start asking "Will this scale in production?" They stop waiting for a lab instructor to give them a problem and start looking for problems that haven't been solved yet.

An Architect doesn't need a deadline to be productive. They don't need a professor to tell them that AI is the future. They see the "bug" in the world and they write the "patch."
The market doesn't pay you for how well you follow instructions. It pays you for how well you can build a solution when there are no instructions left.

HONOR THE FOUNDATION. BUILD THE SKYSCRAPER

As we stand here at the 25-year milestone of Government College of Engineering, Keonjhar, it’s time for a moment of quiet reflection before the storm of the real world hits.
Think of your B.Tech degree as the "Cover Page" of your professional book. It is a proud, gold-embossed badge of your foundation. It’s what gets you into the interview room; it’s the proof that you have the discipline to stick with a challenge for four long years. You should wear that badge with pride.

But remember: Nobody reads a book just for its cover.

The chapters that follow—the ones that recruiters actually read, the ones that clients actually pay for—are written in the "ink" of your self-taught skills. They are written in the late nights spent debugging a side project, the certifications you earned while others were sleeping, and your dogged ability to adapt when the syllabus finally ends.

As our alma mater celebrates its Silver Jubilee, let us celebrate the solid ground it gave us. But let us never mistake the foundation for the whole building. GCE Keonjhar gave you the dirt and the bricks; it is up to you to decide how high the skyscraper goes.

The gates of Jamunalia are opening. The "Static" is behind you. The "Kinetic" is waiting.

I’m not here to give a graduation speech; I’m here to start a movement of Builders. If you’re a student at GCE Keonjhar right now: What is the ONE skill you are betting your entire career on that isn't in your syllabus? If you’re an alumnus reading this: Be brutally honest. What is the one thing you wish you had "unlearned" the day you walked out of the Jamunalia gates?

LET’S CUT THE NOISE. LET’S BUILD THE FUTURE

"In college, the problem is defined and the solution is hidden. In the real world, the problem is hidden and the solution is undefined.“

"The most important skill you graduate with isn't Java or Python—it’s the ability to learn what hasn't been invented yet."

THE DAY EFFORTS
LOST ITS VOICE

SITANSU KUMAR DAS **[GCE, KEONJHAR]**

EMAIL- sitansudas_fce@gcekjr.ac.in

Once upon a time, in a vast and ever-busy forest, there lived a gentle yet determined horse named Arin. He was not the loudest, nor the most visible, but he carried more than his share of the forest's burden without ever complaining. While others sought attention, Arin believed in silent effort - doing what was right, even when no one was watching.

The forest was once guided by an old and wise tiger. Strong yet thoughtful, the tiger saw what others often missed. He would often say to Arin, "Strength is not in noise, but in the weight you carry with honesty." Those words stayed with Arin, becoming his quiet source of pride.

Time, however, does not stand still. The old guide stepped aside, and a new leader emerged - a powerful and commanding lion. His presence alone defined authority. His words carried weight, and his decisions shaped the direction of the forest.

In the beginning, the lion too noticed Arin. "Your efforts are visible," he would say. For Arin, those few words were enough. He continued, day after day, giving his best - not for reward, but because it was who he was.

Seasons changed, and with them came an opportunity - a role of greater responsibility, a chance not just to carry the load, but to guide others. Many in the forest quietly felt that if anyone deserved it, it was Arin. With hope in his heart, Arin approached the lion. "I have given my strength to this forest," he said softly. "If you find me worthy, I seek your support." The lion listened, calm and composed. "Your work is valuable," he replied. "But decisions are bound by rules, by systems, by limits beyond individuals. I must remain within them."

The words were firm. The decision was final.

Arin walked away - not in anger, not in protest - but with a heaviness he had never felt before. For the first time, his silent efforts echoed back to him unanswered. Days passed. The forest continued as always. The lion led with authority and structure. Arin worked as he always had - steady, silently, unseen.

But something had changed.

Late one evening, by the quiet edge of a river, Arin stood still. The water reflected not just his face, but the years he had given, the faith he had carried, and the silence he had lived with. And in that moment, he understood something deeper than disappointment:

The forest notices effort.

It even praises it.

But when it comes to standing beside you when it matters most… it may choose distance over courage From that day on, Arin did not stop working. But his heart no longer waited for acknowledgment. He carried himself not with expectation, but with quiet clarity.

PERI INFRASTRUCTURE PVT. LTD

PERI-STEM / PERI-SAVER Range

(Stemming Plug/ Locking Plug/ Stemming Cap)
PERI-SAVER Bottom Saver Plug Range

With best compliments & wishes from

Peri Infrastructure Pvt. Ltd.

**FOR IMPROVED BLAST PERFORMANCE, FLY ROCK CONTROL,
SAVINGS IN SECONDARY BREAKAGE AND DOWN STREAM COSTS.
USE THE PLUGS WITH THE PATENTED GEAR DESIGN!**

Email: periinfrastructure@gmail.com
Contact No: 8830687251, 7276097529, 70733 06669
CINNo.: U45200PN2011PTC141155

GANPATI

AUTHORIZED DISTRIBUTOR

SANDVIK

ESAB

L&T Construction Equipment

Your One Stop Solution

Our Key Offerings

SANDVIK DRILL MACHINES

KOMATSU EXCAVATOR & CONSTRUCTION EQUIPMENT

SANDVIK CRUSHERS & SCREENS

SANDVIK ROCK TOOLS

Your trusted partner for world-class mining, construction and Welding products in Jharkhand. We bring globally renowned brands to your doorstep with Sales, Service & Spares.

Mr. Aman Sharma

+91 8809990777

office@associatesganpati.com

Bhaga Road, Jharia, Dhanbad,Jharkhand - 828111

ଗୌରବମୟ ୨୫ ବର୍ଷର ଯାତ୍ରା

ପ୍ରଦୋଷ କୁମାର ଦାସ, ବରିଷ୍ଠ ସହାୟକ **[GCE, KEONJHAR]**

ସମୟର ସ୍ରୋତ ଅବିରତ ଭାବରେ ବହିଚାଲିଛି, ଏବଂ ତାହାର ସାକ୍ଷୀ ହେଉଛି ଆମ ସରକାରୀ ଯାନ୍ତ୍ରିକ ମହାବିଦ୍ୟାଳୟର ଏହି ଗୌରବମୟ ଯାତ୍ରା । ଆଜି ଯେତେବେଳେ ଆମେ ରୌପ୍ୟ ଜୟନ୍ତୀ ପାଳନର ସୁବର୍ଣ୍ଣ ସନ୍ଧିକ୍ଷଣରେ ଦଣ୍ଡାୟମାନ, ସେତେବେଳେ ପଛକୁ ମନେ ପକାଇଲେ ମନରେ ଜାଗ୍ରତ ହୁଏ ଅନେକ ସ୍ମୃତି, ସଂଘର୍ଷ ଓ ସଫଳତାର ଅଦ୍ଭୁତ କାହାଣୀ ।

୧୯୯୫ ମସିହାରେ ଓଡିଶା ସରକାରଙ୍କ ଅଧୀନରେ ପ୍ରତିଷ୍ଠିତ ଏହି ସଂସ୍ଥା ଉତ୍ତର ଓଡିଶାର ଏକ ପ୍ରମୁଖ ସରକାରୀ ଇଞ୍ଜିନିୟରିଂ କଲେଜ ଭାବେ ପରିଚିତ । ପ୍ରଥମେ ମାଇନିଂ ଇଞ୍ଜିନିୟରିଂ ସହ ଆରମ୍ଭ ହୋଇ, ପରେ ବିଭିନ୍ନ ବ୍ରାଞ୍ଚର ସମ୍ମିଳନରେ ଏହା ଶିକ୍ଷାର ଏକ ଶକ୍ତିଶାଳୀ କେନ୍ଦ୍ରରେ ପରିଣତ ହୋଇଛି |

କେତେକ ସମୟ ପାଇଁ ଭର୍ତ୍ତି ପ୍ରକ୍ରିୟା ବନ୍ଦ ହୋଇଥିଲେ ମଧ୍ୟ, ଛାତ୍ରଛାତ୍ରୀଙ୍କ ଅଦମ୍ୟ ପ୍ରୟାସ, ବର୍ତମାନ ର ଆଦରଣୀୟ ମୁଖ୍ୟମନ୍ତ୍ରୀ ଶ୍ରୀଯୁକ୍ତ ମୋହନ ଚରଣ ମାଝୀ, ସାଂସଦ ଶ୍ରୀଯୁକ୍ତ ଅନନ୍ତ ନାୟକ ଓ ଜନପ୍ରତିନିଧି ତଥା କେନ୍ଦୁଝର ସିଟିଜେନ୍ ଫୋରମ୍ ର ସହଯୋଗରେ ୨୦୦୧ ମସିହାରେ ପୁନର୍ବାର ଏହାର ନୂତନ ଆରମ୍ଭ ହୋଇଥିଲା ଯାହା ଏହି ସଂସ୍ଥାର ସଂଘର୍ଷ ଓ ସଫଳତାର ଏକ ଉଜ୍ଜ୍ୱଳ ଉଦାହରଣ |

୨୦୦୬ ମସିହାରେ ଏହା ବିଜୁ ପଟ୍ଟନାୟକ ୟୁନିଭର୍ସିଟି ଅଫ୍ ଟେକ୍ନୋଲୋଜିର ଏକ ସଂଘଟକ କଲେଜ ଭାବେ ଘୋଷିତ ହେବା ସହିତ ଏହାର ଗୌରବ ଆହୁରି ବଢ଼ିଥିଲା ପରେ ୨୦୧୧ ମସିହାରେ ଏହାକୁ ପୁନର୍ବାର ସମ୍ପୂର୍ଣ୍ଣ ସରକାରୀ ପ୍ରାବିକ ସଂସ୍ଥା ଭାବେ ଘୋଷଣା କରାଯାଇଥିଲା ଏବଂ ୨୦୧୨ ମସିହାରେ ଏହାର ନାମ ସରକାରୀ ଯାନ୍ତ୍ରୀକ ମହାବିଦ୍ୟାଳୟ, କେନ୍ଦୁଝର ରୂପେ ପରିବର୍ତ୍ତନ ହୋଇଥିଲା ।

ଆଜି ଏହି ସଂସ୍ଥା ତାହାର ସ୍ଥାୟୀ କ୍ୟାମ୍ପସ ଜାମୁନାଳିଆ ରୁ ଉଚ୍ଚମାନର ପ୍ରାବିକ ଶିକ୍ଷା ପ୍ରଦାନ କରୁଥିବା ସହିତ ଏହି ଅଞ୍ଚଳର ଉନ୍ନତିରେ ଅମୂଲ୍ୟ ଅବଦାନ ରଖୁଛି।

ଏହି ମହାବିଦ୍ୟାଳୟର ଆରମ୍ଭ ଦିନଗୁଡିକରେ ସୁବିଧା ସମ୍ପୂର୍ଣ୍ଣ ଭାବରେ ଅଭାବ ଥିଲା । ସେତେବେଳେ ନ ଥିଲା ଆଧୁନିକ ପରିକଳ୍ପନା, ନ ଥିଲା ପର୍ଯ୍ୟାପ୍ତ ଢାଞ୍ଚାଗତ ସୁବିଧା । କିନ୍ତୁ ଥିଲା ଏକ ଦୃଢ଼ ସଙ୍କଳ୍ପ, ଥିଲା ଉନ୍ନତିର ଆଶା ଏବଂ ଥିଲା ଏକ ଦଳ ନିଷ୍ଠାବାନ୍ ବ୍ୟକ୍ତିଙ୍କର ଅଦମ୍ୟ ପ୍ରୟାସ |

ସେହି ଦିନରେ ଶିକ୍ଷକ, କର୍ମଚାରୀ ଓ ଛାତ୍ରଛାତ୍ରୀମାନେ ଏକ ପରିବାରର ଭଳି ମିଶିକରି କାମ କରୁଥିଲେ । ପ୍ରତ୍ୟେକ ଚ୍ୟାଲେଞ୍ଜକୁ ସାମ୍ନା କରି ଆମେ ଆଗକୁ ବଢ଼ିଥିଲୁ । କ୍ରମେ କ୍ରମେ ଏହି ପ୍ରତିଷ୍ଠାନ ତାହାର ନିଜସ୍ୱ ପରିଚୟ ଗଢ଼ି ନେଲା । ଆଜି ଏହା ରାଜ୍ୟର ଏକ ପ୍ରମୁଖ ଯାନ୍ତ୍ରିକ ଶିକ୍ଷା କେନ୍ଦ୍ର ଭାବେ ପରିଚିତ, ଯାହା ହଜାର ହଜାର ଛାତ୍ରଛାତ୍ରୀଙ୍କ ଭବିଷ୍ୟତ ଗଢ଼ିବାରେ ମୂଳ ଭୂମିକା ନେଇଛି । ଆଜି, ଏହି ସଂସ୍ଥାନର ପୁରାତନ ଛାତ୍ରଛାତ୍ରୀମାନେ ବିଶ୍ୱର ବିଭିନ୍ନ କୋଣରେ ନିଜ ପ୍ରତିଭା ଓ କୌଶଳର ଛାପ ରଖୁଛନ୍ତି। ସେମାନେ ଏହି ସଂସ୍ଥାନର ସତ୍ୟ ସମ୍ପଦ ଓ ଗର୍ବର ପ୍ରତୀକ ।

ଏହି ଦୀର୍ଘ ଯାତ୍ରାରେ ଅନେକ ମହାନ ବ୍ୟକ୍ତିତ୍ୱଙ୍କର ଅମୂଲ୍ୟ ଅବଦାନ ରହିଛି | ଫୋରମ୍ ର ପୂର୍ବତନ ସଭାପତି ସ୍ୱର୍ଗତ ଭାଗିରଥି ମହାନ୍ତ, ସ୍ୱର୍ଗତ କିରଣ ଶଙ୍କର ସାହୁ, ସମସ୍ତ ସିଟି ଜେନ ଫୋରମ୍ ର ସଦସ୍ୟ ବୃନ୍ଦ, OSME ର ସମସ୍ତ ଶିକ୍ଷକ ଏବଂ କର୍ମଚାରୀ ବୃନ୍ଦ, ପୂର୍ବତନ ଅଧ୍ୟକ୍ଷମାନେ, ଶିକ୍ଷକବୃନ୍ଦ, ପ୍ରଶାସନିକ କର୍ମଚାରୀ ଓ ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀ ସମସ୍ତଙ୍କ ପ୍ରୟାସର ଫଳ ହେଉଛି ଏହି ଗୌରବମୟ ସଫଳତା । ସ୍ଥାନୀୟ ଜନସାଧାରଣ, ବିଭିନ୍ନ ରାଜନୈତିକ ଦଳ ର କର୍ମୀ, ଲୋକ ପ୍ରତିନିଧ, ସାମ୍ବାଦିକ, ପ୍ରଶାସନ ଏବଂ ସରକାରୀ ସଂସ୍ଥାମାନଙ୍କର ନିରନ୍ତର ସହଯୋଗ ମଧ୍ୟ ଏହି ଉନ୍ନତିର ମୂଳ ଭିତ୍ତି ରୂପେ କାମ କରିଛି। ଫୋରମ୍ ର ଜଣେ ସଦସ୍ୟ ରୂପେ ଏବଂ ଏହି ପ୍ରତିଷ୍ଠାନ ର କର୍ମଚାରୀ ଭାବରେ ମହାବିଦ୍ୟାଳୟ ଓ ଫୋରମ୍ ମଧ୍ୟରେ ସମନ୍ୱୟ ସ୍ଥାପନ କରି ମହାବିଦ୍ୟାଳୟ କୁ ପୁନସ୍ଥାପିତ କରିବା ରେ କ୍ଷୁଦ୍ର ଭୂମିକା ନିର୍ବାହ କରିଥିବାରୁ ମୁଁ ମଧ୍ୟ ନିଜକୁ ଧନ୍ୟ ମନେ କରେ ।

ଏହି ପବିତ୍ର ଅବସରରେ ମୁଁ ସମସ୍ତଙ୍କୁ ହୃଦୟରୁ ଧନ୍ୟବାଦ ଜଣାଉଛି ସେମାନଙ୍କୁ ଯେଉଁମାନେ ଏହି ପ୍ରତିଷ୍ଠାନର ଉନ୍ନତି ପାଇଁ ନିଜର ସମୟ, ପରିଶ୍ରମ ଓ ଜ୍ଞାନ ଅର୍ପଣ କରିଛନ୍ତି ବିଶେଷ କରି ସେହି ନିରବ ସେବକମାନେ, ଯେଉଁମାନେ ପ୍ରଶଂସାର ଆଲୋକରେ ଆସିନଥିଲେ, କିନ୍ତୁ ନିଜ ନିଷ୍ଠା ଓ କର୍ମଯୋଗ ଦ୍ୱାରା ଏହି ସଂସ୍ଥାକୁ ଦୃଢ଼ ଭିତ୍ତି ଦେଇଛନ୍ତି।

ରୌପ୍ୟ ଜୟନ୍ତୀ କେବଳ ଗତ ଦିନମାନଙ୍କର ସ୍ମୃତି ଚାରଣ ନୁହେଁ, ଏହା ଆଗାମୀ ଦିନମାନଙ୍କ ପାଇଁ ଏକ ନୂତନ ସଙ୍କଳ୍ପ |

ଶେଷରେ, ଏହି ମହାନ ଅବସରରେ ସମସ୍ତଙ୍କୁ ଅନେକ ଅଭିନନ୍ଦନ ଓ ଶୁଭେଚ୍ଛା | ଆସନ୍ତୁ, ଆମେ ସମସ୍ତେ ଏକତ୍ର ହୋଇ ଏହି ସଂସ୍ଥାନକୁ ଆହୁରି ଉଚ୍ଚ ସିଢ଼ିରେ ପହଞ୍ଚାଇବାକୁ ସଂକଳ୍ପବଦ୍ଧ ହେବା।

Incumbency Chart **of Principals**

GCE, Keonjhar

Sl. No.	Name	From	To
1	Er. P.C. Das	19.09.1995	11.05.1998
2	Er. A. K. Ganguly	12.05.1998	31.03.2003
3	Er. T.P.G.K. Acharya	31.03.2003	11.03.2004
4	Er. R.K. James	11.03.2004	16.12.2006
5	Shri S.S. Mishra	17.12.2006	16.05.2007
6	Er. G. C. Patro	17.05.2007	17.04.2008
7	Shri S.S. Mishra	18.04.2008	03.10.2008
8	Prof. (Dr) B.B. Maharathi	04.10.2008	04.10.2010
9	Prof. (Dr) J. L. Dwari	04.10.2010	10.03.2011
10	Prof. (Dr) B. L. Agarwal	11.03.2011	08.11.2011
11	Prof. (Dr) Sribatsa Behera	09.11.2011	02.03.2015
12	Prof. (Dr) Trolochan Sahu	02.03.2015	04.10.2024
13	Prof. (Dr) Saroj kumar Sarangi	04.10.2024	Continuing

Executive **Committee**

GCE Keonjhar Alumni Association

Sl. No.	Name	Designation	Batch	Branch
1	Shri Ajit Kumar Patra	President	2000	Mining
2	Shri Priya Ranjan Rout	Vice President	2009	Mining
3	Dr. Hemalata Jena	Vice President	2007	Mechanical
4	Dr. Umakanta Behera	Secretary	2010	Mining
5	Shri Amit Das Mohapatra	Jt. Secretary	2009	Electrical
6	Shri Pankaj Agarwal	Jt. Secretary	2009	Mining
7	Shri Sagar Nanda	Jt. Secretary	2010	Mechanical
8	Dr. Soumya Ranjan Mallick	Treasurer	2008	Mining
9	Dr. Devi Prasad Mishra	Member	2001	Mining
10	Shri Rajib Bal	Member	2005	Mining
11	Shri Lalit Narayan Mohanta	Member	2006	Mining
12	Shri Saraswata Nanda	Member	2006	Mining
13	Shri Lalitendu Mohanta	Member	2009	Mining
14	Shri Rakesh Pradhan	Member	2011	Mining
15	Dr. Santosh Kumar Behera	Member	2012	Mining
16	Shri Jyotrimaya Sahoo	Member	2013	Mineral
17	Shri Deepak Das	Member	2013	Mining
18	Shri Ashish Kumar Nayak	Member	2014	Electrical
19	Shri Keshabananda Gharei	Member	2014	Mining
20	Shri Sabyasachee Pradhan	Member	2015	Mining
21	Shri Ambit Mohanty	Member	2015	Electrical
22	Shri Rohan Barik	Member	2016	Mining
23	Shri Chinmaya Mohapatra	Member	2016	Mineral
24	Shri Tanmaya Pattnaik	Member	2016	Mining
25	Shri Satyabrata Jena	Member	2017	Metallurgy
26	Shri Shaswat Kumar Das	Member	2020	Civil

Steering **Committee**

Silver Jubilee Celebration

Sl. No.	Name	Designation
1	Prof. Saroj Kumar Sarangi	Chairman
2	Dr. Soumya Ranjan Mallick	Convenor
3	Dr. Sangram Keshori Mohapatra	Member
4	Dr. Mukesh Bathre	Member
5	Dr. Dayanidhi Jena	Member
6	Dr. Umakanta Behera	Member
7	Mr. Alok Patel	Member
8	Mr. Rakesh Ranjan Shukla	Member
9	Mr. Adiraj Behera	Member
10	Mr. Sushanta Kumar Pradhan	Member
11	Mr. Sudhansu Meher	Member
12	Mr. Sitansu Kumar Das	Member
13	Shri Ajit Kumar Patra	Member
14	Shri Rakesh Pradhan	Member
15	Shri Rohan Barik	Member

Souvenir
Committee

Silver Jubilee Celebration

Sl. No.	Name	Designation
1	Prof. Saroj Kumar Sarangi	Chairman
2	Dr. Soumya Ranjan Mallick	Editor
3	Shri Rakesh Pradhan	Member
4	Shri Rohan Barik	Member
5	Shri Lalit Narayan Mahanta	Member
6	Shri Chinmaya Mahapatra	Member
7	Dr. Bijay Mihir Kunar	Member
8	Dr. Ashish Dash	Member
9	Dr. Santosh Kumar Behera	Member
10	Shri Amit Das Mohapatra	Member
11	Shri Madan Mohan Sahu	Member

ARCHIVES

ARCHIVES

ARCHIVES












ARCHIVES

GOLD SPONSORS

THRIVENI

GVPR ENGINEERS LIMITED

SILVER SPONSORS

JINDAL STEEL

हिन्दुस्तान कॉपर लिमिटेड HCL

S R RUNGTA GROUP

BAIDYANATH BHARAT LLP

KAPILESWARA MINING AND MINERALS PRIVATE LIMITED

BRONZE SPONSORS

GMDC
FUELING THE GROWTH

MCL

Raikela Iron Ore Mines

Vishnu
ENTERPRISES

BHOLA MOHINI MINERALS
PRIVATE LIMITED

S P ISPAT PRIVATE LIMITED

OTHERS

imfa

SERAJUDDIN
Responsible Mining

SNM

PERI INFRASTRUCTURE PVT. LTD

GANPATI

SJSPL

FIVEFOLD

Arss Private Limited

Jamshedpur Sakchi Bazar

Utkarsh Samiti

M G MOHANTY

KCP Iron Pvt Ltd

Penguin Trading-Agencies Pvt.Ltd

Shree Shyam Techindia Pvt. Ltd.


JOURNEY OF ENGINEERING EXCELLENCE
25TH
1995-2020
GYANAM ANANTAM
GOVERNMENT COLLEGE OF ENGINEERING, KEONJHAR
ANNIVERSARY

Journey Of Engineering Excellence

www.gcekjr.ac.in

Old Town, Jamunalia, Odisha - 758002