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GOVERNMENT ENGINEERING COLLEGE

GANDHINAGAR

॥ कर्ममयं ज्ञानं एवं ज्ञानमयं कर्म ॥

STUDENTS' SOCIETY OF METALLURGY ENGINEERING GANDHINAGAR

SSMEG

ESTD-2012

Regd.No. GUJ/2051/Gandhinagar

NEWSLETTER

METALLURGY DEPARTMENT

(NBA ACCREDITED 2025-28)

JANUARY 2026 to JUNE 2026



METALLURGY

राष्ट्रीय प्रत्यायन बोर्ड
चौथा तल, ईस्ट टावर, एन. बी. सी. सी. प्लेस, भीष्म पितामह मार्ग, प्रगति विहार, लोधी रोड, नई दिल्ली -110003
NATIONAL BOARD OF ACCREDITATION
4th Floor, East Tower, NBCC Place, Bhisham Pitamah Marg, Pragati Vihar, Lodhi Road, New Delhi 110003

File No. 20-78-2013-NBA **Date 05-06-2025**

To

The Principal
Government Engineering College,
Gandhinagar Nr. G.E.B. Cross Road,
Sector - 28, Gandhinagar –Gujarat- 382028

Subject: Further accreditation status on the basis of Compliance Report of the program in Tier-II applied by Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028.

Sir,

This is regarding Compliance Report submitted by **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028** for the UG Metallurgy program which was accredited by National Board of Accreditation (NBA) in Tier-II for academic years 2022-23 to 2024-25 i.e. upto 30/06/2025.

2. An Expert Team conducted data verification of the program on **13th April,2025**. The report submitted by the Expert Team was considered by the concerned Committees constituted for the purpose in NBA. The Competent Authority in NBA has approved the following accreditation status to the program as given in the table below:

Sl. No.	Name of the Program(s) (UG)	Basis of Evaluation	Accreditation Status	Period of validity	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1.	Metallurgy	Tier-II June 2015 Document	Accredited	Academic Years 2025-2026 to 2027-2028 i.e. upto 30-06-2028	Accreditation status granted is valid for the period indicated in Col.5 or till the program has the approval of the Competent Authority, whichever is earlier

3. It may be noted that only students who graduate during the validity period of accreditation, will be deemed to have graduated with an NBA accredited degree.

4. The program has been granted accreditation for further 3 years. **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028** should submit fresh online application through eNBA portal not before five months from the expiry of validity of accreditation mentioned above.

Contd./_

Tel: +91 11 2436 0620-22, 2436 0654; Telefax: +91 11 4308 4903
Website: https://www.nbaind.org |Email:membersecretary@nbaind.org

5. The accreditation status awarded to the program as indicated in the above table does not imply that the accreditation has been granted to **Government Engineering College, Gandhinagar Nr. G.E.B. Cross Road, Sector - 28, Gandhinagar –Gujarat- 382028** as a whole. **As such the Institution should nowhere along with its name including on its letter head etc. write that it is accredited by NBA because it is program accreditation and not Institution accreditation. If such an instance comes to NBA's notice, this will be viewed seriously.** Complete name of the program(s) accredited, level of program(s) and the period of validity of accreditation, as well as the Academic Year from which the accreditation is effective should be mentioned unambiguously whenever and wherever it is required to indicate the status of accreditation by NBA.

6. The accreditation status of the above program is subject to change on periodic review, if needed by the NBA. It is desired that the relevant information in respect of accredited program as indicated in the table in paragraph 2, appears on the website and information bulletin of the Institute.

7. The accreditation status awarded to the program as indicated in table in paragraph 2 above is subject to maintenance of the current standards during the period of accreditation. If there are any changes in the status (major changes of faculty strength, organizational structure etc.), the same are required to be communicated to the NBA, with an appropriate explanatory note.

8. A copy of the Report of the Visiting Team in respect of the above program is enclosed.

Yours faithfully,

(Dr. Anil Kumar Nassa)
Member Secretary

GOVERNMENT ENGINEERING COLLEGE
SEC-28. GANDHINAGAR

ABOUT THE INSTITUTE

Established in 2004, Government Engineering College, Gandhinagar (GEC-Gn) takes pride in its highly motivated students. Our students are life-long assets that help this institute to continuously evolve and work towards its Vision. Approved by AICTE. The College is administrated by Directorate of Technical Education, Gujarat State, Gandhinagar. GEC-Gn is affiliated with Gujarat Technological University. GEC-Gn offers its students a wide range of courses like Metallurgy, Biomedical, Computer, Electronics & Communication, Instrumentation & Control, Information Technology, Mechanical, Electrical, Civil, Robotics and Automation.

VISION OF THE INSTITUTE

To be a premier engineering institution, imparting quality education for innovative solutions relevant to society and environment.

MISSION OF THE INSTITUTE

- To develop human potential to its fullest extent so that intellectual and innovative engineers can emerge in a wide range of professions.
- To advance knowledge and educate students in engineering and other areas of scholarship that will best serve the nation and the world in future.
- To produce quality engineers, entrepreneurs and leaders to meet the present and future needs of society as well as environment.

METALLURGY

ABOUT THE DEPARTMENT

The Metallurgy Department since its inception in 2008 is a backbone of GEC-Gandhinagar's events, research activities and initiatives. It is a unique initiative of Government of Gujarat in the present science and technology education and research scenario of India. At present, the department offers a four year undergraduate course in engineering. Faculty members are good blend of industrial/ academic research experienced, studied from national and state reputed institutes. Department has signed various MOUs with IIF-Ahmedabad, TDC Alloys, GTU-ITR, ISNT-Ahmedabad and Aditya High Vacuum Pvt. Ltd.

Currently, the focus of department activities are multi-directional with an emphasis on both research and education. Our collaborations with FCIPT, CFER, INDUS University, PDEU, IIM–Baroda Chapter, IIF- Ahmedabad Chapter, ASM International - Gujarat Chapter, IE–Gujarat Section, etc. Students are encouraged and supported to actively participate in various curricular and non-curricular activities at different level.

VISION OF THE DEPARTMENT

Developing excellence in Metallurgy Engineering education through research, development innovation and team work for the benefit of society and environment.

MISSION OF THE DEPARTMENT

- To prepare competent metallurgy engineers who can apply metallurgical fundamentals to control and manage different metallurgical and materials processing operations to produce quality metals products in industries.
- To deliver information about current trends in the field of metallurgy and materials to the students.
- To encourage students to work on innovative projects related to metallurgy engineering for managing defects free, economical, energy efficient products, processes or devices to best serve the nation to fulfil the socio-economic, techno-commercial and environmental needs.

LIST OF FACULTY MEMBERS WITH QUALIFICATION

Sr. No.	Name of Faculty	Qualification	Designation
1	Dr. I. B. Dave	Ph.D (Met. & Mat. Engg.)	Professor & Head
2	Dr. D. G. Sharma	Ph.D (Metallurgy)	Associate Professor
3	Dr. H. H. Jadav	Ph.D (Metallurgy)	Associate Professor
4	Prof. S. I. Patel	ME (Met. & Mat. Engg.)	Assistant Professor
5	Dr. P. K. Nanavati	Ph.D (Met. & Mat. Engg.)	Assistant Professor
6	Dr. D. V. Mahant	Ph.D (Met. & Mat. Engg.)	Assistant Professor
7	Dr. H. H. Thakar	Ph.D (Metallurgy)	Assistant Professor
8	Prof. R. C. Ghanghas	ME (Met. & Mat. Engg.)	Assistant Professor

INDEX

SR. No.	CONTENT	PAGE No
1	ACHIEVEMENTS OF THE FACULTIES	6
3	GLIMPSES OF EXPERT LECTURES	9
4	GLIMPSES OF WEBINAR SERIES	10
5	GLIMPSES OF "ALUMINI MEET"	11
6	DEPARTMENTAL ACTIVITY	12
7	STUDENT ACHIEVEMENTS	18
8	TECHNICAL/INDUSTRIAL VISIT	19
9	REASEARCH ACTIVITIES	22
10	TRAINING/ACTIVITY ATTENDED BY FACULTY MEMBERS	23
11	CERTIFICATES EARNED BY STUDENTS	25
12	MEDIA COVERAGE	26
13	TECHNORIDE	28
14	ART GALLERY	31

ACHIVEMENTS OF THE FACULTIES



Dr. I. B. Dave has published two research papers in reputed international journal. (Details are given in research activities)

Successfully supervised PhD candidate Dr. Urvesh Vala for his research in "Study of electrochemical corrosion behavior of thermal spray coatings (TSC) using Al, Zn and Zn-Al alloy wires for refinery applications" under GTU.

Successfully mentored NBA activities at GEC Modasa

Successfully completed 12 weeks NPTEL MOOC Course on "Artificial Intelligence (AI) for Management" with 85 % silver elite certification during Jan-Apr 2025.

Dr. D. G. Sharma has published research papers in reputed international journals and one conference presentation in a conference. (Details are given in research activities)

Successfully completed 12 weeks NPTEL MOOC Course on "Artificial Intelligence (AI) for Management" with 84 % silver elite certification during Jan-Apr 2025.



Arranged several expert lectures for current students of Metallurgy Department.

Arranged technical visits for current students of Metallurgy Department.

Coordinated Blood Donation Camp and Thalassemia Test Camp 2026 held in February 2026 at GEC Gandhinagar as Gymkhana Activity Head.

Worked as food committee coordinator for Placement Fair-2026 at GEC Gandhinagar in March 2026.

Coordinated Sports Week 2026 held during 23-25 March 2026 at GEC Gandhinagar as Gymkhana Activity Head.

Received a certificate from Hon. Commissioner, Commissionerate of Technical Education Government of Gujarat for contributions as an AI Content Developer for the subject 'ADVANCED MATERIALS', during the State level AI-Assisted Content Creation Initiative.

Contributed in Gandhinagar Jila Panchayat Election -2026 as Assistant Zonal Officer and Assistant Counting Supervisor.

ACHIVEMENTS OF THE FACULTIES



Dr. H. H. Jadav has published one research paper in reputed international journal and one conference presentation in a conference. (Details are given in research activities)

Successfully completed 12 weeks NPTEL MOOC Course on "Artificial Intelligence (AI) for Management" with 84 % silver elite certification during Jan-Apr 2025.

Coordinated Student's Poster Presentation at NDT EXPO 2026 organized by ISNT, Ahmedabad Chapter during 1-2 March 2026.

Worked as Jury Member for Hack The Spring'26, hackathon event Think.X on 21st February 2026.

Dr. H. H. Jadav has arranged several expert lectures for current students of Metallurgy Department.

Arranged technical visits for current students of Metallurgy Department.

Contributed in Gandhinagar Jila Panchayat Election -2026 as Assistant Zonal Officer.



Prof. S. I. Patel successfully completed 12 weeks NPTEL MOOC Course on "Artificial Intelligence (AI) for Management" with 78 % during Jan-Apr 2025

Successfully completed Sector Officer Duty for Special Intensive Revision 2.0.



Dr. P. K. Nanavati successfully completed 12 weeks NPTEL MOOC Course on "Artificial Intelligence (AI) for Management" with 72 % during Jan-Apr 2025.

Arranged several expert lectures for current students of Metallurgy Department in collaboration with IIW India-Ahmedabad..

Successfully coordinated Poster Presentation Competition 2026 on 02/05/2026.

Contributed as supervisor of Census 2027 at collector office Gandhinagar durig May-June 2026.

ACHIVEMENTS OF THE FACULTIES



Dr. D. V. Mahant has published one research paper in a reputed journal and presented a research paper at a conference. (Details are given in research activities)

Contributed for organizing webinar series on Metallurgy & Material Science 2026 during 04/05/2026 to 06/05/2026.

Successfully completed Sector Officer Duty for Special Intensive Revision 2.0.

Arranged several expert lectures for current students of Metallurgy Department.

Arranged technical visits for current students of Metallurgy Department.

Dr. H. H. Thakar worked as Division editor and reviewer for ASM handbook, Applications division, Renewable Materials, Volume 27.

Appointed as DPC member of Mr. Nisarg Dave for his PhD in Metallurgy Engineering under GTU.

Awarded with a certificate for his highly esteemed contribution in "Planning, implementation and organizing mega placement camps in all districts of Gujarat" organized by placement cell, department of education, government of Gujarat during the year 2025 – 2026.



Received special appreciation from National Innovation Foundation-India (DST) for reviewing grassroots innovative ideas under "Inspire - Manak Awards 2025-26".

Contributed for organizing a special placement and internship drives of Jindal Saw Ltd. And Maruti Suzuki Ltd. at GP Ahmedabad, organized by DTE during January 2026.

Organized webinar series on Metallurgy & Material Science 2026 during 04/05/2026 to 06/05/2026.

Successfully coordinated Poster Presentation Competition 2026 on 02/05/2026.

Contributed for organizing institute Alumni meet-2026 on 04/04/2026.

Contributed in Gandhinagar Jila Panchayat Election -2026 as Zonal Officer.

Performed observer duties for winter 2025 GTU examination.

Contributed as core committee member in planning and organization of Census 2027 at collector office Gandhinagar durig May-June 2026.

GLIMPSES OF EXPERT LECTURE

Sr. no	Date	Expert Details	Topic	Coordinators
1	24/02/2026	**Mr. Ketan Talati**, Director–Foundry Operations at K. Tech Engineers, Ahmedabad	**Requirement and Importance of Gating System and Methoding for Casting.**	**Dr. D. V. Mahant**
2	01/04/2026	**Dr. Venkat Ramani** CEO/Proprietor, Aditya High Vacuum Private Ltd., Ahmedabad **Mr. Yatani Raval** Proprietor, UltraTech NDT, Ahmedabad	**Expert Lecture Series on Non Destructive Testing**	**Dr. D. V. Mahant** **Dr. H. H. Jadav**
3	21/04/2026	**Dr. Mrunalkumar Chaudhari** Assistant Professor (Metallurgy), Mechanical Engineering Department, LD College of Engineering, Ahmedabad.	**Construction of Various Phase Diagrams and Application of Lever Rule in Fe–Fe_3C Phase Diagram**	**Dr. D. G. Sharma** **Dr. D. V. Mahant**
4	02/05/2026	**Dr. V.J.Badheka ,** Professor, Sot, PDEU, President, IIW-India, Ahmedabad Branch	**Advances in Welding Technologies**	**Dr. P. K. Nanavati**
5	02/05/2026	**Mr. Jignesh Patel ,** Hon. Secretary, IIW-India Ahmedabad Branch	**Career Opportunities in Welding Sectors**	**Dr. P. K. Nanavati**







GLIMPSES OF "WEBINAR SERIES"

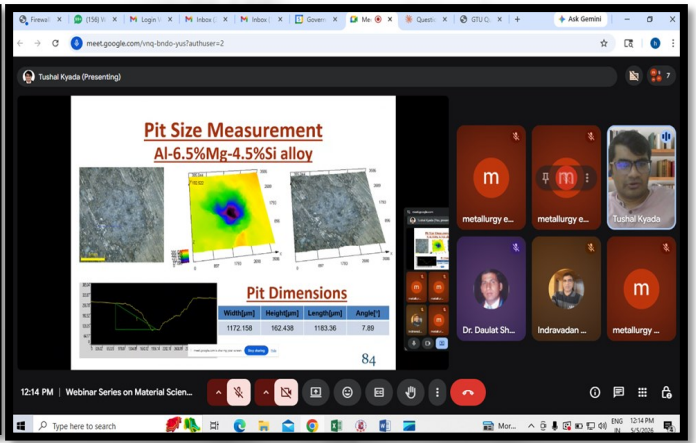
Sr. No.	Date	Expert Details	Topic
1	**04/05/2026** 11:00 AM on-wards	**Mr. Kedar Badheka** Assistant Professor, Mechanical Eng. Dept , GTU-ITR, Mehsana	**"Friction surfacing: A Modern Alternative to Conventional Cladding"**
2	**05/05/2026** 11:00 AM on-wards	**Mr. Tushal Kyada** Lecturer, Metallurgy dept. S & S S Ghandhy Polytechnic, Surat	**"Alloy development for sacrificial anode applications"**
3	**06/05/2026** 11:00 AM on-wards	**Mr. Urvesh Vala** Head, Materials Engineering, Larsen & Toubro.	**"Advancements in thermal spray coatings for various refinery applications"**

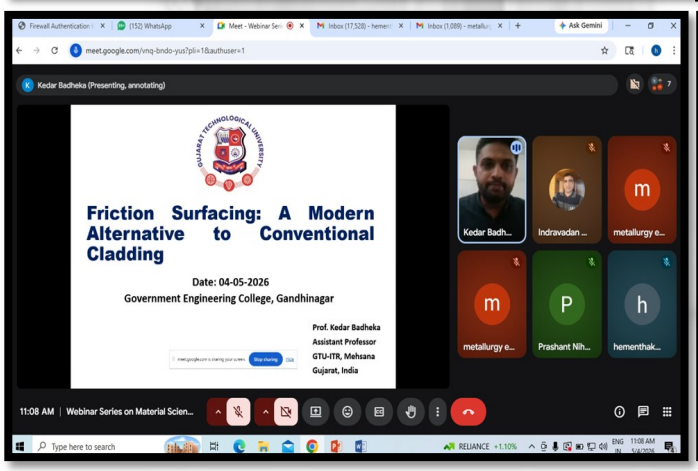
Under the guidance of Dr. S. P. Dave, (Principal, GEC Gandhinagar), Metallurgy department, GEC Gandhinagar has organized one week webinar series on "Metallurgy and Material Science 2025,Women's Week Special" in association with alumni association Students Society of Metallurgy Engineers Gandhinagar during 04/05/2026 to 06/05/2026, 11:00 AM onwards.

This event was organized by Dr. H. H. Thakar and Dr. D V Mahant. Motive of this event was to give exposure to students and make them familiarize with various advancement and research in metallurgy by giving online expert lectures.

The webinar series was inaugurated on 04/05/2026 at 11:00 AM by Dr. I. B. Dave, HOD Metallurgy Dept. GEC Gandhinagar. More than 40 students attended the lectures collectively both online and offline . Online practical session and expert lectures were given on various topics of metallurgy during this event.







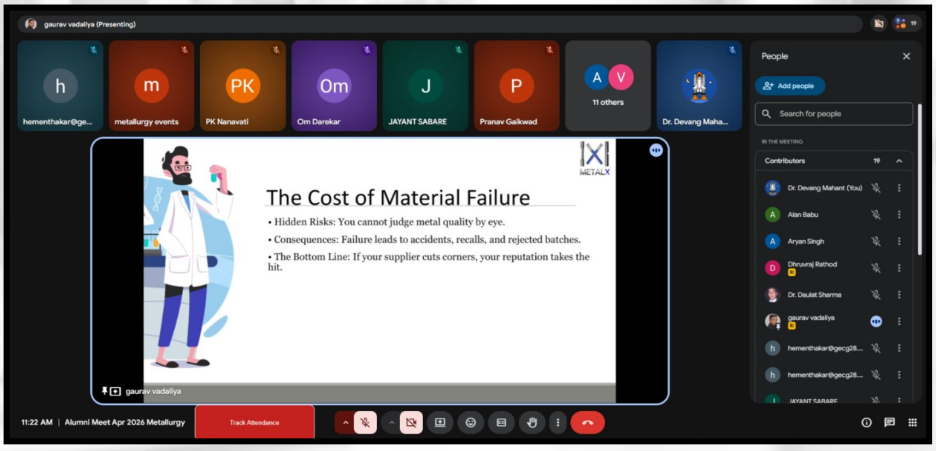


GLIMPSES OF "ALUMNI MEET 2026"

Sr. No.	Date	Name of Expert	Topic	Coordinators
1	04/04/2026	**Mr. Gaurav Vadaliya** Co-founder of MetalX Testing Facilities, Rajkot.	**The Science Behind Your Safety**	**Dr. H. H. Thakar**

The Department of Metallurgy Engineering organized an Alumni Expert Talk for all current and pass-out students on 4th April. The alumni speaker was Mr. Gaurav Vadaliya, the Co-founder of MetalX Testing Facilities, Rajkot. The students of semesters 6 and 4 attended the session through offline and online modes. He delivered an insightful lecture on testing of materials and scope in the industry,he also shared his journey from his early days as a college student to establishing the company with his friends, he inspired the students to a great extinct along with sharing his technical knowledge. The session was s successfully coordinated by Dr. H. H. Thakar.





DEPARTMENTAL ACTIVITES

1. Inauguration of BSL-4 Bio Containment

Date: 13/01/2026

Location: Animal Vaccine Institute, Gandhinagar

On 13th January 2026, the Inauguration of the BSL-4 Bio Containment facility was held at the Animal Vaccine Institute, Gandhinagar. The event highlighted advancements in high-level bio-safety infrastructure and research capabilities.



2. Blood Donation Camp

Date: 04/02/2026

Location: GEC Gandhinagar

A Blood Donation Camp was organized at GEC Gandhinagar on the 4th of feburary 2026. Students and faculty actively participated, contributing towards a noble social cause and promoting awareness about voluntary blood donation.





3. Youth Immersion at Vidhansabha

Date: 05/02/2026

Location: Vidhansabha, Gandhinagar, Gujarat

On 5th February 2026, students participated in the Youth Immersion program at the Gujarat Vidhansabha. The activity provided insights into legislative processes and governance. One student from each department of the government engineering college was selected to participate in the programme. This gave an opportunity for student s of Gujarat to interact with students of Assam and discuss about their government, culture and facilities.





4. Drive Fire Safety Training

Date: 27/02/2026

Location: Opposite Building no 03, GECG, sector 28

On 27th February 2026, a Fire Safety Training session was conducted at Government Engineering College, Gandhinagar. The program focused on equipping participants with essential knowledge of fire prevention, effective emergency response, and key safety practices to handle fire-related situations confidently.





5. Gujarat Semi-Connect Conference

Date: 01/03/2026

Location: Mahatma Mandir Auditorium, Gandhinagar

On 1st March 2026, the Gujarat Semi-Connect Conference was held at Mahatma Mandir Auditorium, focusing on recent developments in the semiconductor industry and emerging technological innovations. The event was attended by 6 Semester 4 students along with faculty member Prof. S. I. Patel, providing valuable exposure to industry trends and advancements.



6. NDT EXPO Poster Presentation

Date: 02/03/2026

Location: Club 07, Ahmedabad

On 2nd March 2026, students participated in the NDT EXPO Poster Presentation at Club 07, Ahmedabad. The students semester 6 and 4 formed groups of four to present a topic as a poster at the event. The event showcased research and applications in Non-Destructive Testing. This event gave valuable insights into the innovations and various details about NDT to the very curious students.





7. India AI Impact Summit

Date: 09/03/2026

Location: Block no. 8, GEC Gandhinagar

On 9th March 2026, an online session titled "India AI Impact Summit 2026: Learnings and Road for Tech Education" was conducted from 02:00 PM to 05:00 PM. The programme witnessed active participation from 68 students from semester 2, 4, and 6 along with 5 faculty members, offering valuable insights into the evolving role of artificial intelligence in shaping the future of technical education and innovation.



8. Poster Presentation Competition

Date: 01/05/2026

Location: Block no. 8, GEC Gandhinagar

A Poster presentation competition was held on the 1st of may at the department of metallurgy engineering, block no 08, GECG. The students from semesters 8, 6 and 4 participated in this event very enthusiastically. The poster were judged a jury consisting of the professors of the department itself, they are Prof. S. I. Patel, Dr. D. V. Mahant and Dr. H. H. Jadav. Event was organized by Dr. P K Nanavati and Dr. H H Thakar.





9. Visits to PDEU and IIT Gandhinagar

Date: 12/06/2026 and 15/06/2026

Location: Pandit Deendayal Energy University (PDEU), Gandhinagar
Indian Institute of Technology (IIT), Gandhinagar

Dr. D. G. Sharma visited PDEU Gandhinagar on 12.06.2026 and IIT Gandhinagar on 15.06.2026 to explore opportunities for future collaboration in student training, internships, projects, expert talks, workshops, and other academic activities. Fruitful discussions were held with Dr. Vishvesh Badheka, PDEU Gandhinagar, and Dr. Amit Arora, IIT Gandhinagar, both of whom expressed a positive response towards strengthening academic and research collaborations with the Department of Metallurgy, GEC Gandhinagar.



10. DPC Meeting at Metallurgy Department GECG

Date: 18/06/2026

Location: Block number 8, GEC, Gandhinagar, Gujarat

On 18th June 2026, a Doctoral Progress Committee (DPC) meeting for GTU Ph.D. scholars was conducted at the Department of Metallurgy, Government Engineering College, Gandhinagar. Distinguished academicians and research experts, namely Dr. Jyoti Menghani (SVNIT, Surat), Dr. V. B. Patel (LDCE, Ahmedabad), Dr. Vishvesh Badheka (PDEU, Gandhinagar), and Dr. Sekar Saladi (SVIT, Vasad), visited the department as members of the committee.



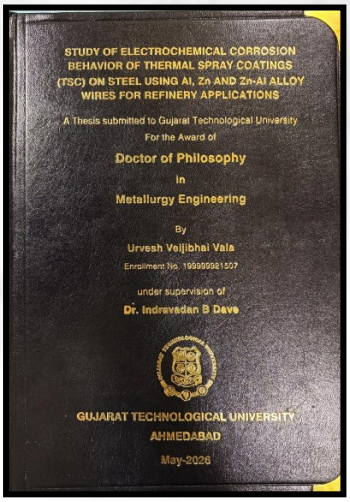


11. Visit at MKT Iron

Date: 26/02/2026

Location: J K Industrial Zone, Rajkot

On 26th February 2026, Dr. I. B. Dave, the HOD of the department has visited the MKT Iron at J K Industrial Zone, Rajkot.



12. Dr. I. B. Dave Supervises Successful Ph.D. Thesis Submission

Date: 14/05/2026

Under the expert guidance of Dr. I. B. Dave, Urvesh Veljibhai Vala successfully submitted his Doctor of Philosophy (Ph.D.) thesis titled “Study of Electrochemical Corrosion Behaviour of Thermal Spray Coatings (TSC) on Steel using Al, Zn, and Zn-Al Alloy Wires for Refinery Applications” to Gujarat Technological University, Ahmedabad in May 2026.

13. Two Day conference on Bharatiya Gyan Parampara: Scientific Technical Development in Engineering Domain from Ancient to 21st Century

Date: 05/06/2026 and 06/06/2026

Location: GTU Campus, Chandhkeda, Ahmedabad, Gujarat

Dr. I. B. Dave the HOD of the metallurgy department at GECG, participated in the two days conference on "Bharatiya Gyan Parampara: Scientific Technical Development in Engineering Domain from Ancient to 21st Century" organized by Gujarat Technological University (GTU) and Shiksha Sanskriti Utthan Nyas on the 5th and 6th of june 2026 at the GTU Chandkheda Campus. The conference highlighted India's rich scientific and technological heritage and its relevance to modern engineering practices.



STUDENT ACHIEVEMENTS

1. Vedant Tushar Chaudhary (240133121020) has successfully completed the NPTEL certification course "Principles of Casting Technology" conducted by NPTEL in association with Indian Institute of Technology Roorkee, securing an overall score of 72%, and 78% in "Corrosion/Environment Degradation/Surface Engineering" under NPTEL with Indian Institute of Technology Madras during Jul – Dec 2025.

2. Sairaj Kishore Aglave (240133121001) has successfully completed the NPTEL online certification course Principles of Casting Technology, conducted by NPTEL in association with Indian Institute of Technology Roorkee. Securing an overall score of 60% and scored 75% in "Corrosion/Environment Degradation/Surface Engineering" under NPTEL with Indian Institute of Technology Madras during Jul – Dec 2025.

3. Sunny Samadhan Kasbe (240133121016) has successfully completed the NPTEL certification course Principles of Casting Technology conducted by NPTEL in association with Indian Institute of Technology Roorkee, securing an overall score of 61% and then scored 75% in "Corrosion/Environment Degradation/Surface Engineering" under NPTEL with Indian Institute of Technology Madras during Jul – Dec 2025.

4. Anish Pandurang Bhujbal (240133121002) a student third year student has successfully completed the NPTEL certification course on "Corrosion/Environment Degradation/ Surface Engineering" conducted by NPTEL in association with Indian Institute of Technology Madras. Securing an overall score of 63% Jul – Dec 2025.

5. Om Salunke (240133121008) from third year has successfully completed the NPTEL certification course on "Corrosion/Environment Degradation/Surface Engineering" conducted by NPTEL in association with Indian Institute of Technology Madras. Securing an overall score of 76% Jul – Dec 2025.

6. Pratiksinh Chavda (240130121004), a student of second year has successfully completed the NPTEL certification course on "Introduction to Material Science and Engineering" conducted by NPTEL in association with Indian Institute of Technology Madras. Securing an overall score of 53% Jan – Apr 2026.

TECHNICAL/ INDUSTRIAL VISIT

1. Visit at GTU-ITR, Mehsana

Location: GTU Innovation and Technology Research (ITR), Mehsana, Gujarat

Date and Time: 24/03/2026, 10:30 AM Onwards

The Department of Metallurgy organized an industrial visit for Semester 6 students to the GTU-AIA Foundry Skill Development Centre at GTU-ITR, Mehsana, on 24th March at the A total of 17 students participated in the visit, which commenced at 10:30 AM. During the session, students gained valuable practical exposure to sand testing procedures and the manufacturing processes involved in producing grinding media balls used in ball mills. They observed various process parameters, testing techniques, and equipment employed in foundry operations, enabling them to understand industrial foundry practices firsthand. Following the practical session, an interactive theory session was conducted wherein experts discussed different engineering materials, the organizational structure and process flow of AIA Engineering Ltd., various heat treatment procedures, and other key aspects of foundry production. The GTU-AIA Foundry Skill Development Centre, established through the collaboration of Gujarat Technological University (GTU) and AIA Engineering Ltd. At GTU-ITR, Mehsana, provided an excellent platform for bridging the gap between classroom learning and industrial applications. The visit was coordinated under the guidance of the Head of the Department, Dr. I. B. Dave.





TECHNICAL/ INDUSTRIAL VISIT

2. Industrial visit at Hertz Testing and Training Centre

Location: Hertz Testing and Training Centre, Vatva GIDC, Ahmedabad, Gujarat

Date and Time: 02/04/2026

A technical visit and demonstration session on Non-Destructive Testing (NDT) was organized for Semester 4 and Semester 6 students enrolled in the Minor Degree in NDT program on 2nd April 2026 at Hertz Testing and Training Centre, Ahmedabad. The session commenced at 10:30 AM and continued until 3:00 PM, providing students with comprehensive theoretical and practical exposure to various NDT techniques. The program was conducted by Mr. Yatin Raval, who explained the principles, applications, and industrial significance of different testing methods. Students actively participated in hands-on demonstrations and practical exercises involving Magnetic Particle Testing (MPT), Liquid Penetrant Testing (LPT), and Eddy Current Testing (ECT). A detailed theory session on Radiographic Testing (RT) was also conducted, followed by a live demonstration of the radiographic testing equipment and its operation. Students further visited the shield vault used for radiographic inspection and the film development process, enabling them to understand the complete radiography process from exposure to film processing. The visit provided valuable insight into industrial inspection practices, testing equipment, safety protocols, and quality assurance procedures, thereby enhancing the students' practical understanding of defect detection techniques used in engineering industries. The session was coordinated by Dr. D. V. Mahant and Dr. H. H. Jadav



TECHNICAL/ INDUSTRIAL VISIT

3. Visit to VGEC

Location: Chandkheda, Ahmedabad, Gujarat

Date and Time: 04/04/2026, 10:30 AM Onwards

An expert session on "Heat Transfer and Measurement" was organized on 4th April 2026 at Vishwakarma Government Engineering College (VGEC), Chandkheda, for the students of the Department of Metallurgy. The session provided valuable insights into the fundamental principles of heat transfer and the techniques used for temperature measurement in engineering applications. The expert discussed the various modes of heat transfer, including conduction, convection, and radiation, along with their significance in industrial processes. Students were introduced to different temperature measurement instruments, their working principles, calibration procedures, and practical applications in manufacturing and process industries. The session also highlighted the importance of accurate thermal measurements in process control, quality assurance, energy efficiency, and materials engineering. Through interactive discussions and real-world examples, students gained a better understanding of thermal systems and measurement techniques used in industrial environments. The session was coordinated by Dr. H. H. Jadav and Prof. S. I. Patel from the Department of Metallurgy.







RESEARCH ACTIVITIES

Research Paper Counter (Jan 2019 onwards)	Previously published	Addition	Total
	67	9	76

Sr.	Title of the paper	Authors	Publication/ Conference
1	Influence of boron carbide on bonding performance of an aluminum alloy clad onto a knurled mild steel substrate: role of friction surfacing	Ankit Kumar Shah, Daulat Kumar Sharma , Krunal Mehta & Vishvesh Badheka	Materials and Manufacturing Processes (Scopus)
2	Investigation on Wear Characteristics of Oxide-Added Cast 7075 Aluminum Alloy	Devang Mahant, Daulat Kumar Sharma, Harshadkumar Jadav, Rahul Pandey, Vandana Rao	Key Engineering Materials (Scopus)
3	Manufacturing of Hybrid Surface Composites Cu/(B4C + MoS2) Via Friction Stir Processing	Nirmal Patel, Daulat Kumar Sharma, Krunal Mehta, Vishvesh J. Badheka	ASME Journal Of Tribology (Scopus)
4	Evaluating the influence of silicon on phase formation, hardness and corrosion in Al–6.5% Mg alloy	Tushal Kalubhai Kyada, Indravadan B. Dave, Sonam M. Patel, Kunal Trivedi & Vandana J. Rao	Welding International (Scopus)
5	Depassivation of aluminum by magnesium addition and mechanical working	Vidhi Mistry, Indravadan B. Dave, Chandrakant Sonawane, Choon Kit Chan, Deekshant Varsheny & Saurav Dixit	Discover Materials (Scopus)
6	Role of knurled surface topography of IS2062 steel in influencing the mechanical integrity and microstructural evolution of friction surfaced AA6061 coatings	Kedar Badheka, Daulat Kumar Sharma & Vishvesh Badheka	Surface Engineering Journal (Scopus)
7	Hybrid reinforced friction surfaced aluminum alloy 6208-T6 claddings on knurled mild steel 1018: role of boron carbide and molybdenum disulphide in bonding performance	Ankit Kumar Shah, Daulat Kumar Sharma, Kunal Mehta & Vishvesh Badheka	Materials and Manufacturing Processes (Scopus)
8	Influence of rod-end profile on flash formation, microstructure and interfacial strength in Aluminum-Steel friction surfacing	Kedar Badheka, Daulat Kumar Sharma & Vishvesh Badheka	Welding International (Scopus)
9	Fused deposition modelling as amethod of pattern rapid prototypin for investment casting: Review	Daulat Kumar Sharma, Devang Mahant, Harshadkumar Jadav	Conference proceedings on Advancing foundry excellence: Quality productivity and sustainability strategies

TRAINING/ACTIVITY ATTENDED BY FACULTY

Name of faculty	Title of Training/Activity	Duration	Organizer
Dr. I. B. Dave	Successfully completed the NPTEL course on “Artificial Intellegence (AI) for Management” with a score of 85%	Jan - Apr 2026	NPTEL
	Successfully taken a pledge for "Nasha Mukt Bharat, Khushhaal Bharat"	24/04/2026	Department of social justice & empowerment, Government of India
	Participated in two day conference on "Bharatiya Gyan Parampara: Scientific Technical Development in Engineering Domain from Ancient to 21st Century"	05/06/2026 & 06/06/2026	Gujarat Technological University (GTU) and Shiksha Sanskriti Utthan Nyas
	Attended a session on "Scopus Essentials: From Literature Review to Research Impact"	23/06/2026	Elsevier Researcher Academy on campus at GTU
Dr. D. G. Sharma	Successfully completed the NPTEL course on “Artificial Intellegence (AI) for Management” with a score of 84%	Jan - Apr 2026	NPTEL
	Certificate of Appreciation Commissionerate of Technical Education for contributions as an AI Content Developer for the subject ‘ADVANCED MATERIALS’	Jan - Apr 2026	Education Department, Government of Gujarat
	Successfully taken a pledge for "Nasha Mukt Bharat, Khushhaal Bharat"	24/04/2026	Department of social justice & empowerment, Government of India
Dr. H. H. Jadav	Successfully completed the NPTEL course on “Artificial Intellegence (AI) for Management” with a score of 84%	Jan - Apr 2026	NPTEL
	Attended the 1st annual conference and exhibition on non destructive testing and supporting technologies (NDT 2026) as a delegate	01/03/2026 & 02/03/2026	Indian Society for Non Destructive Testing (ISNT) Ahmedabad Chapter
	Successfully taken a pledge for "Nasha Mukt Bharat, Khushhaal Bharat"	24/04/2026	Department of social justice & empowerment, Government of India

TRAINING/ACTIVITY ATTENDED BY FACULTY

Prof. S. I. Patel	Successfully completed the NPTEL course on “Artificial Intellegence (AI) for Management” with a score of 78%	Jan - Apr 2026	NPTEL
Dr. P. K. Nanavati	Successfully completed the NPTEL course on “Artificial Intellegence (AI) for Management” with a score of 72%	Jan - Apr 2026	NPTEL
Dr. D. V. Mahant	Presented a paper on "Fused deposition modelling as a method of pattern rapid prototyping for investment casting: Review" at the national seminar on advancing foundry excellence: quality, productivity, and sustainability strategies	16/04/2026	IIF Northern Region and Jaipur Chapter
	Successfully taken a pledge for "nasha Mukt Bharat, Khushhaal Bharat"	24/04/2026	Department of social justice & empowerment, Government of India
Dr. H. H. Thakar	Successfully attended a webinar on ‘Bhartiya Gnan Parampara Girnar’	18/02/2026.	Knowledge Consortium of Gujarat, Education Department, Government of Gujarat
	Successfully participated in IP Awareness programme/training	25/02/2026	National Intellectual Property Awareness Mission
	Certification of appreciation for his contribution in AI Content Development For the subject of "NANO MATERIALS"	Jan - Apr 2026	Education Department, Government of Gujarat
	Certificate of appreciation for his highly esteemed contribution in “Planning, implementation and organizing mega placement camps in all districts of Gujarat”	Jan - Mar 2026	Placement cell, department of education, government of Gujarat during the year
	Certificate of appreciation for re-viewing grassroots innovative ideas under “Inspire - Manak Awards 2025-26”.	Jan - Feb 2026	National Innovation Foundation-India (DST)

CERTIFICATES EARNED BY STUDENTS

Name of the student	Title of the training/Activity	Duration	Organizer
Vedant Chaudary	Successfully completed the NPTEL course on "Corrosion/Environment Degradation/Surface Engineering" scored 78%.	Jul - Oct 2025	NPTEL
	Successfully completed the NPTEL course on "Principles of casting technology " scored 72%.	Jan - Mar 2026	
Sairaj Aglave	Successfully completed the NPTEL course on "Corrosion/Environment Degradation/Surface Engineering" scored 75%.	Jul - Oct 2025	NPTEL
	Successfully completed the NPTEL course on "Principles of casting technology " scored 60%.	Jan - Mar 2026	
Sunny Kasbe	Successfully completed the NPTEL course on "Corrosion/Environment Degradation/Surface Engineering" scored 61%.	Jul - Oct 2025	NPTEL
	Successfully completed the NPTEL course on "Principles of casting technology " scored 72%.	Jan - Mar 2026	
Anish Bhujbal	Successfully completed the NPTEL course on "Corrosion/Environment Degradation/Surface Engineering" scored 63%.	Jul - Oct 2025	NPTEL
Om Salunke	Successfully completed the NPTEL course on "Corrosion/Environment Degradation/Surface Engineering" scored 76%.	Jul - Oct 2025	NPTEL
Pratiksinh Chavda	Successfully completed the NPTEL course on "Introduction to Material Science and Engineering" and scored 53%	Jan - Mar 2026	NPTEL

MEDIA COVERAGE



ZOOM

SANDESH

સરકારી ઈજનેરી કોલેજ દ્વારા NDT વિષય પર વ્યાખ્યાન

મેટલર્જી વિભાગ (NBA Accredited) સરકારી ઈજનેરી કોલેજ સેક્ટર-૨૮ દ્વારા એક્સપર્ટ લેક્ચર સિરિઝ ઓન NDTનું આયોજન કરવામાં આવ્યું હતું. આ કાર્યક્રમમાં ત્રણ ઔદ્યોગિક નિષ્ણાત વક્તાએ વિદ્યાર્થીઓને નોન-ડીસ્ટ્રક્ટિવ ટેસ્ટિંગ (NDT) ના વિવિધ પાસાઓ અંગે માર્ગદર્શન આપ્યું હતું. આ વ્યાખ્યાન નિષ્ણાત વેન્કટ એન. રામાનીએ NDT કેરિયર ઓપ્શન એન્ડ મેથડ : લીક ટેસ્ટિંગ વિષય પર માર્ગદર્શન આપવામાં આવ્યું હતું. તેમણે લીક ટેસ્ટિંગ ક્ષેત્રમાં NDT ક્ષેત્રમાં કારકિર્દીની તકો તથા લીક ટેસ્ટિંગ પદ્ધતિઓ અંગે ઊંડાણપૂર્વક માહિતી આપી હતી

કે. કે.પટેલ વિદ્યાલયમાં નિવૃત્તિ સન્માન સમારંભ

સરકારી ઈજનેરી કોલેજ ગાંધીનગર દ્વારા ઔદ્યોગિક ક્ષેત્રે કાસ્ટિંગ પ્રક્રિયામાં ગેટિંગ સિસ્ટમ અને મેથોડિંગનું મહત્વ પર નિષ્ણાત વ્યાખ્યાનનું આયોજન

ગાંધીનગર, તા. ૨૫

સરકારી ઈજનેરી કોલેજ, સેક્ટર ૨૮, ગાંધીનગરના મેટલર્જી વિભાગ (NBA Accredited) દ્વારા "Requirement and Importance of Gating System and Mahoding for Castings" વિષય પર તા. ૨૪ ફેબ્રુઆરી ૨૦૨૬ના રોજ સવારે ૧૧:૦૦ થી બપોરે ૦૧:૦૦ વાગ્યા દરમિયાન નિષ્ણાત વ્યાખ્યાનનું આયોજન કરવામાં આવ્યું હતું. આ કાર્યક્રમમાં ઉદ્યોગ જગતના અનુભવી નિષ્ણાત કેતન તલાટી (Director-Foundry Operaion, K Tech Engineers) મુખ્ય વક્તા તરીકે ઉપસ્થિત રહ્યા હતા. તેમણે કાસ્ટિંગ પ્રક્રિયામાં ગેટિંગ સિસ્ટમ અને મેથોડિંગનું મહત્વ, ધાતુના પ્રવાહનું નિયંત્રણ, ખામી નિવારણ, ઉત્પાદન ખર્ચમાં ઘટાડો અને ગુણવત્તા સુધારણા અંગે વિસ્તૃત માર્ગદર્શન આપ્યું હતું. વિદ્યાર્થીઓને ઉદ્યોગમાં પ્રાયોગિક અમલીકરણ અને આધુનિક ફાઉન્ડ્રી પ્રેક્ટિસ વિશે મૂલ્યવાન માહિતી પ્રાપ્ત થઈ હતી. કાર્યક્રમનું આયોજન ડો. આઈ.બી. દવે (ખાતાના વડા) તથા ડો. એસ. પી. દવે (આચાર્યા)ના માર્ગદર્શન હેઠળ કરાયું હતું. કાર્યક્રમના સંયોજક તથા સંકલન કાર્ય ડો. દેવાંગ મહેતા દ્વારા સફળતાપૂર્વક સંચાલિત કરવામાં આવ્યું હતું.

આ નિષ્ણાત વ્યાખ્યાન દ્વારા મેટલર્જી અને યાંત્રિક વિભાગના વિદ્યાર્થીઓને કાસ્ટિંગ ઉદ્યોગમાં જરૂરી ટેક્નિકલ સમજ, પ્રોસેસ ઓપ્ટિમાઈઝેશન અને ગુણવત્તા નિયંત્રણ અંગે ઊંડાણપૂર્વક જ્ઞાન પ્રાપ્ત થયું, જે તેમની રોજગારી અને વ્યાવસાયિક કારકિર્દી માટે ઉપયોગી સાબિત થશે.



ઈજનેરી કોલેજ ખાતે વ્યાખ્યાન

સરકારી ઈજનેરી કોલેજ ખાતે તાજેતરમાં મેટલર્જી વિભાગ દ્વારા વ્યાખ્યાનનું આયોજન કરવામાં આવ્યું હતું. આ પ્રસંગે ઉપસ્થિત રહેલા નિષ્ણાતો દ્વારા વિદ્યાર્થીઓને માર્ગદર્શન આપવામાં આવ્યું હતું.

સ્પર્ધામાં વિદ્યાર્થીઓ વિજેતા બન્યા

વિદ્યાર્થીઓ માટે શૈક્ષણિક મુલાકાત



સરસાતી ઈલમેટ્રી કોલેજ સેક્ટર ૩૮ માટે અભ્યા
કરતા વિદ્યાર્થીઓ માટે તાજેતરમાં સેન્ટ્રીટી સેકલપો
મુબાકાતનું આયોજન કરવામાં આવ્યું હતું. જેમાં સિવિ
વિભાગના વિદ્યાર્થીઓએ ભાગ લઈને માર્ગદર્શન

NDT એક્સ્પોમાં ગાંધીનગરના છાત્રોએ ભાગ લીધો



ઈન્ડિયન સોસાયટી ફોર નોન-ડિસ્ટ્રક્ટિવ ટેસ્ટિંગ (ISNT) ના અમદાવાદ ચેપ્ટર દ્વારા વિકસિત ભારતના નિર્માણમાં NDT મુખ્ય ઉદ્દેશ્ય સાથે NDT Expo ૨૦૨૬નું આયોજન કરાયું હતું. જેમાં સરકારી ઇજનેરી કોલેજ, સેક્ટર ૨૮ના મેટલર્જી વિભાગના સહ. પ્રધ્યાકપક ડો. એચ. એચ. જાદવ અને ૨૮ વિદ્યાર્થીઓએ તેમજ સંસ્થાના સિવિલ વિભાગના ૨૨ વિદ્યાર્થીઓએ ભાગ લીધો હતો. વિદ્યાર્થીઓએ NDT આધારિત ટેકનીકલ પોસ્ટર પ્રસ્તુત કર્યા હતા. આ કાર્યક્રમમાં ISRO, IITs, IPR જેવી સંસ્થાના વૈજ્ઞાનિકો, નિષ્ણાતો અને ઉદ્યોગ ક્ષેત્રના અનુભવીએ ભાગ લીધો હતો. વિદ્યાર્થીઓએ રજૂ કરેલ નોન-ડિસ્ટ્રક્ટિવ ટેસ્ટિંગ (NDT)ના આધુનિક ટેક્નોલોજી આધારિત પોસ્ટરને ઉપસ્થિત નિષ્ણાતો દ્વારા પ્રશંસા મળી હતી.



ગાંધીનગરના સેક્ટર-૨૪માં કરીવાર
રોડની કામગીરીમા પાણીની લાઈન તૂટી
પીવાના પાણી માટે રહીશો પરેશાન

ગરમીની મોસમમા પશુ બિમાર પડવાની
દહેશત : પશુપાલકોની સાવધાની જરૂરી

ગાંધીનગર અસડી ડેપોમાં ગત વર્ષે
૮૫,૩૭,૯૯૭મુસાફરોની બસમાં સફર

ચિલોડા પંથકમાં ડોર ટુ ડોર કચરો એકત્રિત
કરવાની કામગીરી ઠપ્પ : ગ્રામજનો ત્રાહિમામ

કલોલની બાઈક ચોરીનો ચૂનો ઉકેલાયો
મહેસાણામાં ચોરેલી મોટરસાઈકલ
સાથે ખરોડ ગામનો શખ્સ ઝડપાયો

ઉનાવા ગામમાં રોડ- ગટરની ધીમી
કામગીરીથી ગ્રામજનો ત્રાહિમામ

વર્ષ ૨૦૨૪-૨૫માં ૮૦,૪૭,૮૮૧
મુસાફરોએ બસની સવારી કરી હતી

અમદાવાદથી યુવકનું અપહરણ કરી
ઢોરમાર મારીને અમાનુષી અત્યાચાર

કડી-થોળ રોડ પર સિધવાઈ મંદિર પાસે
કારની ટક્કરે બાઈક સવાર યુવાનનું મોત

MEDIA COVERAGE



બલભદ્રસિંહ વગદવાસહ ડાભીની પેઢીમાંથી નોંધિદશાહ બાબુલશા દિવાને એક વર્ષ અગાઉ રૂ.૪૮ હજારની લોન

તકસીરવાન ઠરાવી ત્રણ માસની કેદની સજા ફટકારવામાં આવી છે.

ફેઝ ડાયાગ્રામ અને હિટ ટ્રીટમેન્ટ વિષય પર વ્યાખ્યાન

સરકારી ઇજનેરી કોલેજ, સેક્ટર-૨૮ ગાંધીનગરના મેટલર્જી વિભાગ (NBA Accredited) દ્વારા ફેઝ ડાયાગ્રામ, ટ્રાન્સફોર્મેશન અને હિટ ટ્રીટમેન્ટ તથા Fe-Fe3C ડાયાગ્રામના ઔદ્યોગિક ઉપયોગો વિષય પર નિષ્ણાત વ્યાખ્યાન યોજાયું હતું. આ કાર્યક્રમમાં ડો. મૃણાલકુમાર ચૌધરી (એલ.ડી. કોલેજ ઓફ એન્જિનિયરિંગ, અમદાવાદ) મુખ્ય વક્તા તરીકે ઉપસ્થિત રહ્યા હતા. તેમણે વિષયને સરળ રીતે સમજાવી પ્રાયોગિક ઉપયોગો પર પ્રકાશ પાડ્યો હતો. કાર્યક્રમ ડો. આઇ.બી. દવે અને ડો. એસ.પી. દવેના માર્ગદર્શન હેઠળ યોજાયો હતો અને ડો. ડી.જી. શર્મા તથા ડો. દેવાંગ મહેતા દ્વારા સફળ સંચાલન કરવામાં આવ્યું હતું. આ વ્યાખ્યાન દ્વારા વિદ્યાર્થીઓને ટેકનિકલ અને ઔદ્યોગિક જ્ઞાનમાં વધારો થયો.



વિનિયર સિટીઝન સોસિયલ ગાંધીનગર દ્વારા ગ્રામ્ય વિસ્તારમાં વસવાટ કરતા ડઈઓને ઘરે બેઠા વ્યાખ્યાનની સુવિધા ઓનલાઈન વાન થકી પૂરી પાડવામાં આવી રહી છે. જે અંતર્ગત ગાંધીનગરની અને જેનું સંસ્થા દ્વારા નવી વાન અર્પણ કરવામાં આવી છે. જેનો લોકાર્પણ સમારોહ યોજાયો હતો.

ઈજનેરી કોલેજ ખાતે વ્યાખ્યાન

સરકારી ઇજનેરી કોલેજ સેક્ટર ૨૮ ખાતે તાજેતરમાં એનડીટી વિષયક નિષ્ણાત વ્યાખ્યાનનું આયોજન કરવામાં આવ્યું હતું. આ પ્રસંગે ઉપસ્થિત રહેલા મહાનુભાવો દ્વારા વિદ્યાર્થીઓને વિષય આધારિત માર્ગદર્શન આપવામાં આવ્યું હતું.

બીએપીએસ દ્વારા મહિલાદિન ઉજવણી

બીએપીએસ ચાંધીનગર દ્વારા તાજેતરમાં મહિલા દિનની ઉજવણી કરવામાં આવી હતી. આ પ્રસંગે મહિલા મંડળની બહેનો મોટી સંખ્યામાં ઉપસ્થિત રહી હતી અને વિવિધ પ્રવૃત્તિમાં જોડાઈ હતી. આધ્યાત્મિક માર્ગદ



વિદ્યાર્થીઓ માટે શૈક્ષણિક મુલાકાત

સરકારી ઈજનેરી કોલેજના મેટલર્જી વિભાગના વિદ્યાર્થીઓ માટે તાજેતરમાં શૈક્ષણિક મુલાકાતનું આયોજન કરવામાં આવ્યું હતું. જે અંતર્ગત ટ્રુમેન કેમ્પની મુલાકાત વખતે વિદ્યાર્થીઓને માર્ગદર્શન પ્રાપ્ત કર્યું હતું.

શાળાના બાળકોને પગરખા વિતરણ

ઈજનેરી કોલેજ દ્વારા શૈક્ષણિક મુલાકાત



સરકારી ઈજનેરી કોલેજના મેટલર્જી વિભાગના ચોથા સેમેસ્ટર ન વિદ્યાર્થીઓ માટે તાજેતરમાં શૈક્ષણિક મુલાકાત અને એક્સપર્ટ સેશનનું આયોજન કરવામાં આવ્યું હતું. જે અંતર્ગત વિશ્વકર્મા કોલેજની મુલાકાત લીધી હતી અને માર્ગદર્શન પ્રાપ્ત કર્યું હતું.

સરકારી ઈજનેરી કોલેજમાં વેબિનાર



સરકારી ઈજનેરી કોલેજ સેક્ટર-૨૮ ખાતે ઓનલાઈન વેબિનાર સિરીઝનું આયોજન કરવામાં આવ્યું હતું. જેમાં ઉપસ્થિત રહેલા મેટલર્જી વિભાગના ભૂતપૂર્વ વિદ્યાર્થીઓ ઉપસ્થિત રહ્યા હતા. મેટલર્જી એન્ડ મટીરીયલ સાયન્સ અંગે માર્ગદર્શન આપવામાં આવ્યું હતું.-૪



II ગાંધીનગર

હવે ખેડબ્રહ્માથી સીધા અસારવા : રેલવે ટ્રેક તૈયાર

હિંમતનગરના મહાવીરનગરમાં 30 દબાણો હટાવાયા

Recovery of Cobalt and Lithium from Spent Electric Vehicle Batteries

By Mr. Vedant Chaudhary (240133121020)

The growing use of electric vehicles (EVs) has increased the demand for lithium-ion batteries (LIBs). As these batteries reach the end of their service life, managing battery waste has become an important environmental and economic concern. Spent batteries contain valuable metals such as lithium, cobalt, nickel, and manganese, making them a valuable secondary source of raw materials. Recovering lithium and cobalt through recycling reduces environmental pollution, lowers dependence on mining, and supports a sustainable circular economy.

Composition and Importance of Spent EV Batteries

Lithium-ion batteries consist of a cathode, anode, electrolyte, separator, and current collectors. The cathode contains most of the valuable metals, particularly lithium and cobalt, in compounds such as lithium cobalt oxide ($LiCoO_2$) and nickel-manganese -cobalt (NMC) materials. As demand for EVs grows, recycling these metals becomes increasingly important for conserving resources and ensuring a stable supply for battery production.

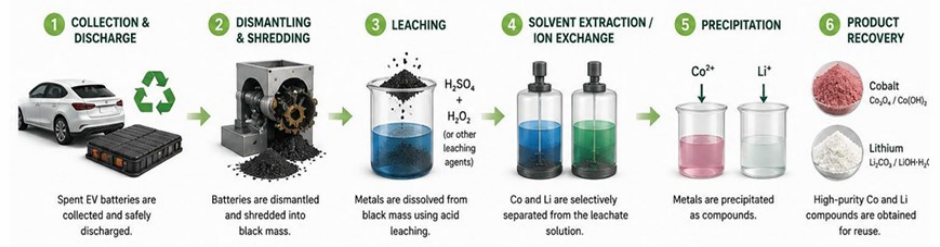
Collection and Pretreatment

Recycling begins with the collection and safe transportation of spent batteries. To reduce fire risks, batteries are discharged before processing. They are then dismantled, crushed, and mechanically separated to recover materials such as aluminum, copper, and plastics. These steps produce a concentrated powder called black mass, which contains lithium, cobalt, nickel, manganese, and graphite. Black mass serves as the main feedstock for metal recovery.

Recovery Technologies

Pyrometallurgical recycling involves high-temperature smelting, which recovers metals such as cobalt and nickel as alloys. Although suitable for large-scale operations, it requires high energy consumption and often results in lithium losses.

Hydrometallurgical recycling is the preferred method because it offers higher recovery efficiency and lower energy use. Black mass is treated with acids to dissolve metals, which are then separated through extraction and precipitation processes. Lithium is commonly recovered as lithium carbonate or lithium hydroxide, while cobalt is recovered as cobalt sulfate or cobalt oxide. Recovery rates above 90% can be achieved under optimized conditions. An emerging technique, direct recycling, restores cathode materials without breaking them down into individual metals. This approach reduces chemical consumption and energy use while preserving the value of the original cathode material.



Environmental Impact

Improper disposal of spent batteries can contaminate soil and water with hazardous substances. Recycling helps prevent environmental damage, reduces the need for mining, and lowers greenhouse gas emissions. Continued improvements in recycling technologies are expected to increase efficiency and sustainability.

Conclusion

Recovery of cobalt and lithium from spent EV batteries is essential for sustainable electric mobility. Recycling conserves valuable resources, reduces environmental impacts, and supports the growing demand for battery materials. Hydrometallurgical methods currently provide the most efficient recovery of lithium and cobalt, while direct recycling offers promising future potential. Effective battery recycling will play a key role in supporting a circular economy and ensuring a reliable supply of critical materials.

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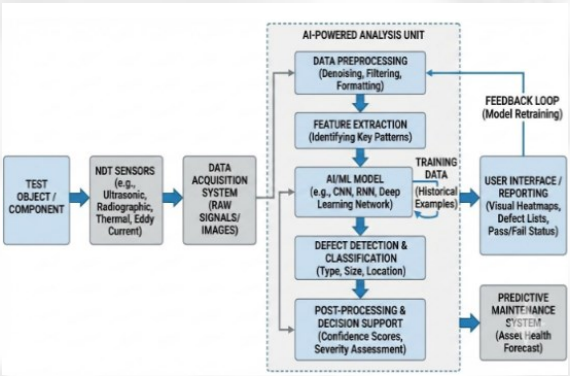
Artificial Intelligence in Non-Destructive Testing (NDT)

By Mr. Anish Bhujbal (240133121002)

Artificial Intelligence (AI) is transforming Non-Destructive Testing (NDT) by enabling automatic defect detection, intelligent data analysis, and predictive maintenance. Traditional NDT methods often rely on manual interpretation, which can be time-consuming and prone to human error. AI techniques such as Machine Learning (ML), Deep Learning (DL), and Computer Vision improve inspection accuracy and reliability in methods including Ultrasonic Testing (UT), Radiographic Testing (RT), Eddy Current Testing (ECT), and Visual Testing (VT). These advancements are increasingly being adopted in aerospace, oil and gas, manufacturing, and infrastructure sectors.

Methodology

The implementation of AI in NDT follows a systematic process. First, inspection data is acquired using NDT techniques such as UT, RT, ECT, and VT. The collected data is then pre-processed through noise filtering and normalization to improve quality. Relevant features are extracted from images or signals and used to train AI models based on machine learning or deep learning algorithms. Once trained, these models automatically detect and classify defects, supporting accurate decision-making and predictive maintenance. Recent studies have demonstrated the effectiveness of Convolutional Neural Networks (CNNs) in analyzing radiographic images and ultrasonic signals. Research published by professional organizations such as ASNT and IEEE indicates that AI-assisted inspection can achieve a higher probability of defect detection than conventional manual methods. AI-driven radiographic analysis reduces interpretation time, while automated ultrasonic evaluation improves crack sizing accuracy.



Applications and Advantages

- Faster inspection and real-time analysis.
- Improved defect detection accuracy.
- Reduced dependence on operator expertise.
- Ability to process large volumes of inspection data.
- Support for predictive maintenance and cost reduction.

Key applications include aerospace component inspection, weld inspection in pipelines and pressure vessels, nuclear power plant safety monitoring, automotive quality assurance, and structural health monitoring of bridges and infrastructure.

Challenges

Despite its benefits, AI adoption in NDT faces challenges such as the need for large training datasets, high computational requirements, certification and standardization issues, data security concerns, and the demand for skilled professionals. Future developments are expected to focus on fully automated defect detection, faster and more accurate inspections, predictive maintenance systems, real-time monitoring, and integration with Industry 4.0 smart manufacturing environments.

Conclusion

AI is revolutionizing Non-Destructive Testing by enhancing inspection efficiency, accuracy, and reliability. Although challenges remain, continuous advancements in AI technologies are paving the way for smarter, safer, and more cost-effective inspection systems across various industries.

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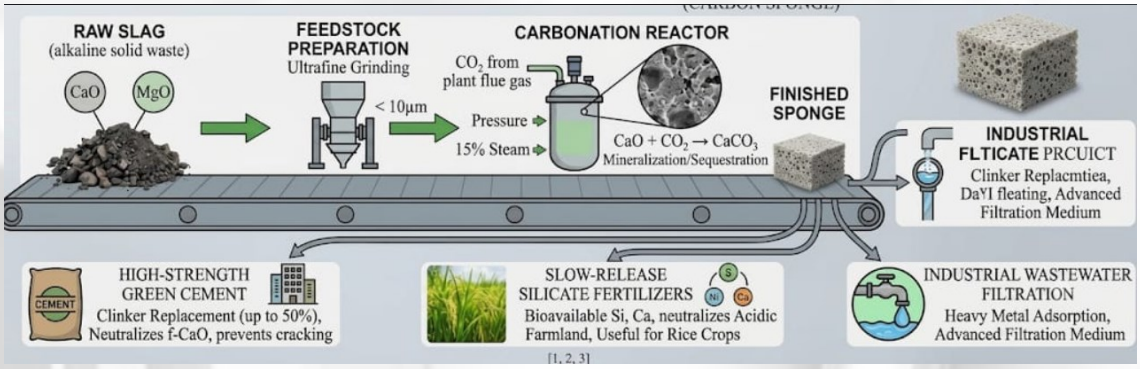
Mineralizing Steel Waste

By Mr. Neeraj Kumar (250133121011)

Abstract
Steel slag is traditionally viewed as a bulky byproduct, primarily utilized as a low-value aggregate in road construction. This article outlines the process of accelerated carbon mineralization—transforming steel waste into an active "carbon sponge." By locking industrial CO_2 into the slag to create green cement additives, mineralization offers a highly profitable, dual-solution for both solid waste management and greenhouse gas reduction.

Introduction
The production of one tonne of crude steel inevitably generates between 150 to 200 kg of slag. While physical recycling methods exist, they fail to utilize the inherent chemical potential of the material. Steel slag is rich in reactive alkaline earth metals, specifically calcium oxide (CaO) and magnesium oxide (MgO). Instead of passive disposal, modern metallurgical engineering now focuses on Direct Gas-Solid Mineralization. This approach not only neutralizes the volumetric instability of raw slag but actively sequesters atmospheric carbon, turning a disposal burden into a premium resource for sustainable infrastructure.

Beyond Cement: Real-World Applications of Mineralized Slag
- High-Strength Green Cement: The carbonation process neutralizes unstable free lime (fe_2CaO) into stable calcite ($CaCO_3$). This eliminates the swelling and cracking issues of raw slag, allowing it to safely replace up to 50% of energy-intensive clinker in structural concrete.
- Slow-Release Silicate Fertilizers: Mineralized slag retains highly bio-available silicon (Si) and essential micronutrients. When deployed in agriculture, it acts as a dual-action soil conditioner that neutralizes acidic farmland while boosting the structural strength.
- Industrial Wastewater Filtration: The ultrafine, porous structure generated during the "carbon sponge" reaction transforms the slag into an advanced adsorption medium, proven highly effective at stripping heavy metals from industrial wastewater streams.



Key Challenges in Implementation
- Material Variability: Slag composition changes with different steelmaking processes (BOF and EAF), affecting consistent (CO_2) absorption.
- High Energy Requirement: Ultrafine grinding to sub-micron size consumes large amounts of energy, which may reduce environmental benefits.
- Process Optimization: Reactor temperature control is difficult higher temperatures improve calcium extraction but reduce (CO_2) solubility needed for carbonation.

Conclusion: Future Scope and Trends
The era of treating slag as mere landfill or road-fill is ending. The future of metallurgy lies in industrial symbiosis, where the waste gas of one process becomes the reactant for another. By mastering the carbon mineralization of steel waste, metallurgical plants can significantly lower their carbon tax liabilities while supplying the booming global market for sustainable construction materials.

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ART GALLARY

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ART GALLERY

मैं झुकूंगा नहीं,
मैं रुकूंगा नहीं,
चलता रहूंगा जब तक मैं थकूंगा नहीं।
थकने के बाद मैं फिर उठूंगा और फिर चलूंगा,
जब तक मैं शिखर पर नहीं पहुंचूंगा।
इस सफर में अकेला नहीं हूं मैं,
है मेरे साथ सबकी उम्मीदें।
अपने सपनों को पूरा करूंगा,
मैं इस सफर पर चलता रहूंगा।

आएंगी कई मुश्किलें, पर सबको पार करना है,
चाहे आए आंधी या तूफ़ान, मुझे बस आगे बढ़ना है।
चलते चलते ये ना हो कि मैं खुद से हार मान जाऊं,
चलता रहूंगा मैं तब तक जब तक खुद को ना जान जाऊं।

आएगा एक ऐसा समय भी जब खुद से भरोसा उठ जाएगा,
आएगा एक ऐसा समय भी जब तू खुद से हार मान जाएगा;
पर याद रखना एक बात, क्यों तुमने चालू किया था चलना।
अगर पाना है उस सपने को, तो तुम बस आगे बढ़ना।

भूल जाना सारे जख्म और भूल जाना अपने सारे दुख,
तुम ना झुकना,
तुम ना रुकना,
तुम बस आगे चलना।

Written by Mr. Aryan M. Singh (240130121002)



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॥ कर्ममयं ज्ञानं एवं ज्ञानमयं कर्म ॥