

MET.TEL NEWSLETTER

METALLURGY DEPARTMENT

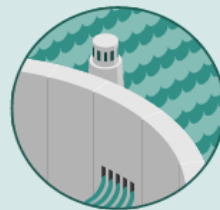
DR. S. & S. S. GHANDHY COLLEGE OF
ENGINEERING & TECHNOLOGY, SURAT



WIND ENERGY



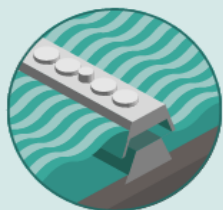
SOLAR ENERGY



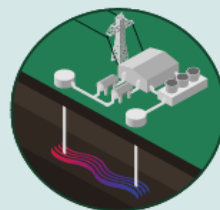
HYDROELECTRICITY



WAVE POWER



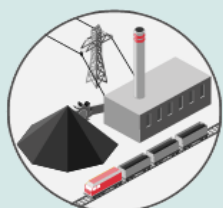
TIDAL POWER



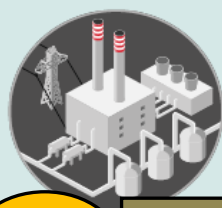
GEOTHERMAL ENERGY



BIOMASS ENERGY



COAL PLANT



NUCLEAR PLANT

4th

ENERGY SOURCES EDITION

JULY 2021

Message From the Desk of Head of The Department

Dear Colleagues and Students,

As we embark on the fourth edition of our Metallurgy Department Newsletter, I am delighted to address you all with a message of resilience, progress, and unity in the face of unprecedented challenges. This year, our focus revolves around the pivotal theme of energy sources, a topic that holds immense significance in shaping the future of our field.

Undoubtedly, the past year has been arduous for us all, with the COVID-19 pandemic disrupting our routines and presenting numerous hurdles, especially in transitioning to online teaching. However, with unwavering determination and the invaluable support of platforms like Microsoft Teams, we successfully navigated through these challenges, ensuring the continuity of education through online lectures and seminars.

I am immensely proud of our faculty members who exhibited remarkable adaptability and dedication by participating in online training sessions to augment their expertise and ensure the delivery of quality education to our students. Moreover, our department took proactive steps by organizing a compelling webinar series on "Recent Trends in Metallurgy" spanning five days, which garnered significant participation and appreciation.

In addition to academic pursuits, we remained committed to our social and environmental responsibilities. We commemorated World Environment Day by organizing various activities, including poster competition on environment, engaging our students in fostering awareness and appreciation for our natural surroundings.

As we reflect on our collective achievements and challenges overcome, let us remain steadfast in our commitment to excellence, innovation, and sustainability in the field of metallurgy. Let us continue to harness the power of collaboration and knowledge exchange to propel our department to new heights of success and significance.

I extend my heartfelt gratitude to each and every member of our department for their unwavering support, resilience, and dedication. Together, let us embrace the opportunities that lie ahead and continue to inspire and empower one another towards a brighter future.

Warm regards,

Mrs. Bindu H. Goyal

Head of the Metallurgy Department

STAFF MEMBERS



Mrs. B. H. Goyal (HOD)
ME-Industrial Metallurgy



Mr. S. F. Parmar (LME)
ME- Material Technology



Ms. S. M. Patel (LME)
ME- Material Technology



Mr. M. J. Joshi (LME)
ME-Material Technology
PhD (Pursuing)



Mr. T. K. Kyada (LME)
ME-Industrial Metallurgy



Mr. R. D. Dave (LME)
ME-Welding Technology



Mr. N. G. Patel (LME)
ME-Industrial Metallurgy



Mr. A. M. Gautam (LME)
ME-Material Technology



Ms. J. B. Lad (Lab. Asst.)
Diploma Mechanical

INSIDE THIS ISSUE

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VISION OF THE INSTITUTE

“To be a unique center of excellence in technical education & innovation for sustainable growth of industry and society.”

MISSION OF THE INSTITUTE

- To impart globally viable technical core competencies and skills.
- To respond effectively to the ever-changing needs of industry and community at large.
- To promote conducive campus environment and resources for qualitative education and innovation.
- To inculcate moral, ethical and professional values amongst all internal stakeholders.

VISION OF THE DEPARTMENT

“To lead in diploma metallurgical engineering education with focus on innovation and sustainable development of industry and society”.

MISSION OF THE DEPARTMENT

- To impart and empower students with relevant knowledge, competence and creativity with special emphasis on metallurgical engineering.
- To promote conducive environment for all round development of students.
- To promote linkages with external agencies to meet changing needs of industry and society.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- The metallurgy diploma graduate will be able to make successful career in metallurgical industry to meet ever changing needs of industry.
- To enable diploma graduate for lifelong learning and higher studies.
- Identifying and engage in innovation, become an entrepreneur for sustainable development of society.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- Apply the fundamental knowledge of metallurgy for the benefit of society, industries and research organizations.
- Diploma holders will be able to select suitable techniques for testing of metals and alloys.

FACULTY DEVELOPMENT PROGRAM

SR. NO.	NO. OF FACULTY PARTICIPATED	START DATE	END DATE	TRAINING NAME	ORGANIZER
1	08	28/07/2020	18/08/2020	UDAYAM (Unlimited Digital Advanced Yearlong Academic Method of Learning) E-Content Development	KCG/EDUCATION DEPTT/ GOG
2	08	06/07/2020	14/09/2020	COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS (IPR)	KCG/EDUCATION DEPTT/ GOG

SR. NO.	FACULTY NAME	START DATE	END DATE	TRAINING NAME	ORGANIZER
1.	Mr. S. F. Parmar	14/09/2020	04/12/2020	Powder Metallurgy	NITTTR Madras
2.	Mr. S. F. Parmar	18/01/2021	23/03/2021	Principle of Casting Technology	Mooc, NPTEL
3.	Ms. S. M. Patel	10/09/2020	11/11/2020	Orientation towards Technical Education & Curriculum Aspects Module 1	National Initiative For Technical Teachers Training (NITTT-2021)
4.	Mr. M. J. Joshi	10/09/2020	11/11/2020		
5.	Mr. A. M. Gautam	08/09/2020	24/10/2020	Nurturing Innovation & Startup Ecosystem	Gujarat Start Up & Innovation Hub (I - Hub) , KCG Gujarat



GLIMPSES OF WEBINAR SERIES “RECENT TRENDS IN METALLURGY”

Five days webinar series on “Recent Trends in Metallurgy” was organized for students, faculties, and industry personnel by Metallurgy Department from 19/10/2020 to 23/10/2020. 162 candidates participated in this webinar series.

This webinar series was mainly focused on recent trends in steel industries, ceramics and composites materials, mechanical testing, and non-ferrous industries. Eminent speakers from esteemed organizations shared their knowledge with participants in this series.

Webinar Series on “RECENT TRENDS IN METALLURGY”

19th to 23rd OCTOBER 2020

Organized By
Metallurgy Department
Dr. S. & S. S. Ghandhy College of Engg. & Tech., Surat



Registration Link:
<https://forms.gle/Ra6Aii2WXQx5Uf478>

- All sessions will be conducted on Google Meet.
- E-certificates will be provided to registered participants who will attend all the sessions and fill daily feedback.



Mr. Rajesh Goyal
Assistant Vice President
Welspun Corp., Anjar

Topic: Metallurgy of Linepipe Steel
Date: 19th October 2020
Time: 03:00 to 05:00 PM



Dr. Manish Patel
Scientist - E
Defence Metallurgical
Research Lab.,
Hyderabad

Topic: Advanced Ceramics & Composites
Date: 20th October 2020
Time: 03:00 to 05:00 PM



Mr. Raghu Shant
Assistant General Manager,
JSW Steel, Karnataka

Topic: Corrosion in Linepipe Steel
Date: 21st October 2020
Time: 03:00 to 05:00 PM



Mr. Adya Charan Arohi
Research Scholar,
IIT Kharagpur, West Bengal

Topic: Mechanical Testing of Metals & Alloys
Date: 22nd October 2020
Time: 03:00 to 05:00 PM



Mr. Raghavendra Joshi
Partner,
Aadhya Engineering, Vadodara

Topic: Challenges & Opportunities in Non-Ferrous foundries
Date: 23rd October 2020
Time: 03:00 to 05:00 PM

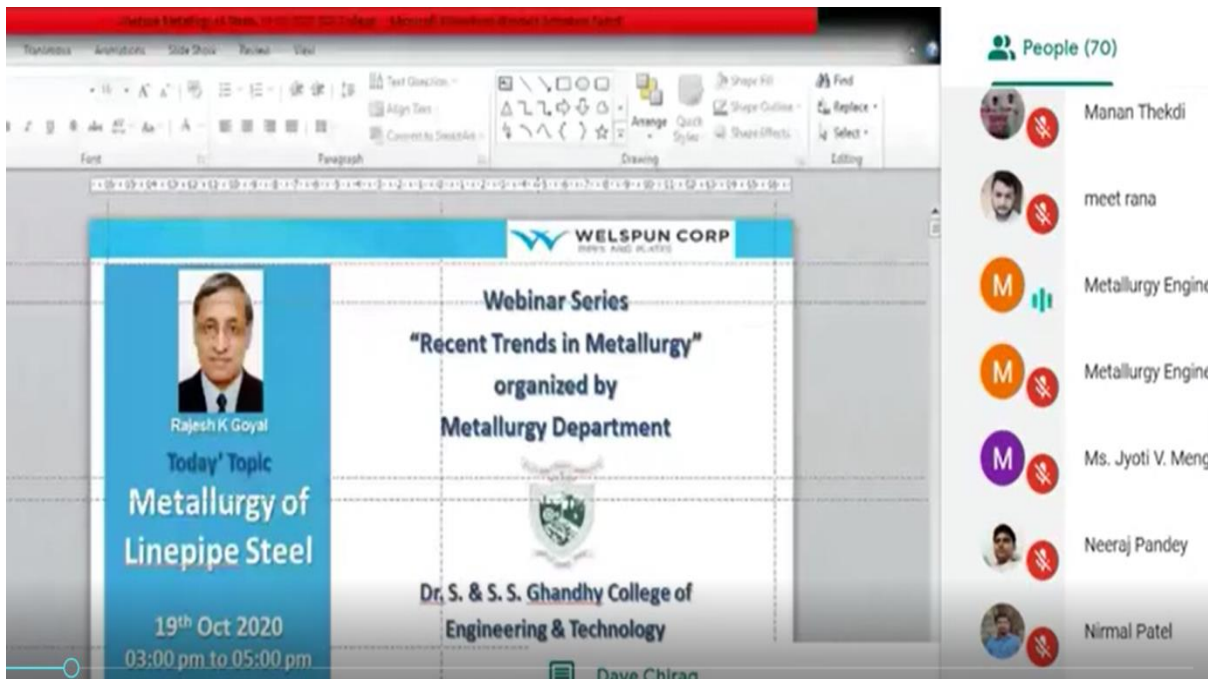
PATRON
Mr. N. A. Sangani
Principal
Dr. S. & S. S.
Ghandhy College
of Engg. & Tech.,
Surat

CONVENER
Mrs. B. H. Goyal
BoD
Dr. S. & S. S.
Ghandhy College
of Engg. & Tech.,
Surat

ORGANIZING COMMITTEE:
Mr. S. F. Parmar
Ms. S. M. Patel
Mr. M. J. Joshi
Mr. T. K. Kyada
Mr. R. D. Dave
Mr. N. G. Patel
Mr. A. M. Gantam

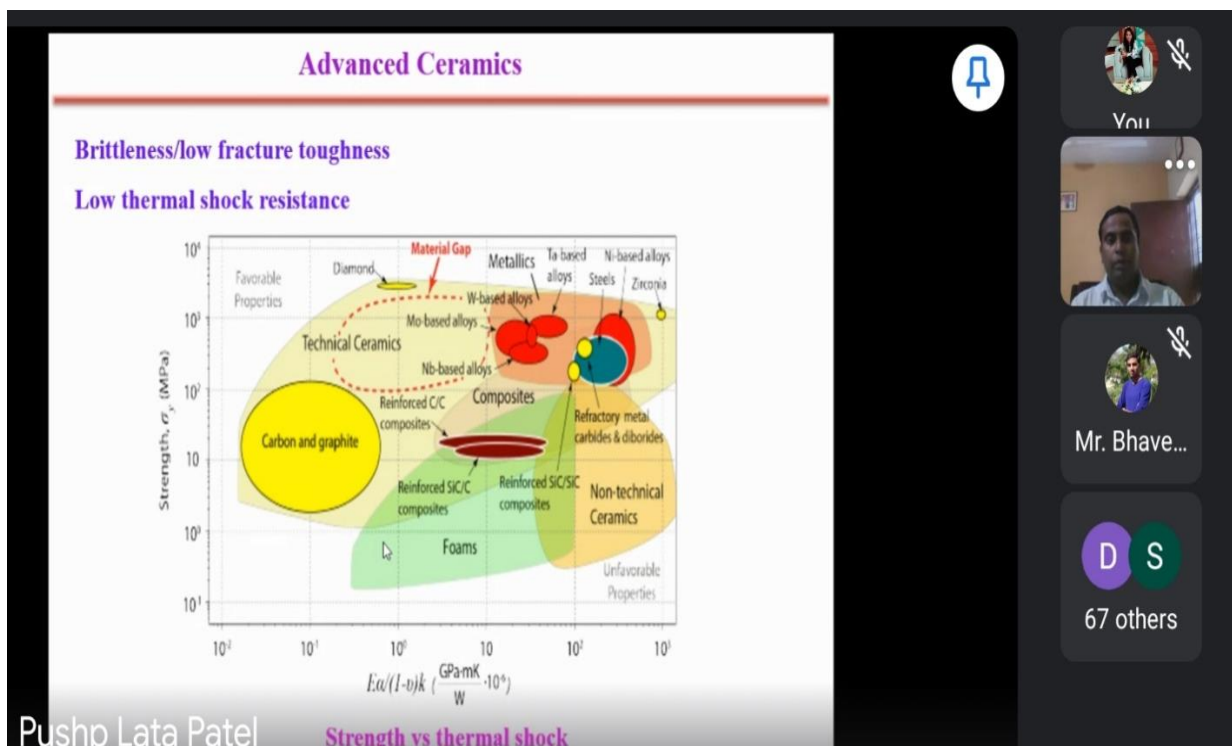
DAY 1

Day 1 session “Metallurgy of Line Pipe Steel” was conducted by Mr. Rajesh Goyal, Assistant Vice President, Welspun Corp., Anjar.



DAY 2

Day 2 session “Advanced Ceramics & Composites” was conducted by Dr. Manish Patel, Scientist E, DMRL, Hyderabad.



Advanced Ceramics

Brittleness/low fracture toughness

Low thermal shock resistance

Strength, σ_f (MPa)

$E\sigma_f/(1-\nu)_f$ (GPa·mK · 10⁴)

Pushp Lata Patel

Strength vs thermal shock

DAY 3

Day 3 session “Corrosion in Linepipe Steel” was conducted by Mr. Raghu Shant, Assistant General Manager, JSW Steel, Karnataka.

Types of Pipelines in Oil and Gas Industry

The diagram illustrates the flow of oil and gas from extraction to end-use. It shows gas wells, oil and gas shale plays, gas gathering pipelines, oil gathering pipelines, gas processing plants, oil processing plants, gas transmission pipelines, oil transmission pipelines, gas distribution, propane trucks, and oil refineries. A legend indicates that yellow represents crude oil (may contain gas/liquids) and blue represents natural gas (may contain gas/liquids).

Source: GAO | GAO-14-067

Raghu Shant

meet.google.com is sharing your screen. Stop sharing Hide

Meeting controls: You, Metallurgy, Raghu, 51 others

DAY 4

Day 4 session “Mechanical Testing of Metals & Alloys” was conducted by Mr. Adya Charan Arohi, Research Scholar, IIT Kharagpur, West Bengal.

Summary

Basics of Tension

- To perform the tension, fatigue and nano indentation tests
- Difference between High and Low cycle fatigue
- Different kinds of stress strain curve, hysteresis loops, cyclic hardening and softening behaviour
- To improve the mechanical properties
- Failure analysis of Tension and fatigue tests

Ti-5553 Work

- High temperature homogenization leads to more uniform microstructure and removes the dendritic structure.
- Ti-5553-F and Ti-5553-R have almost same volume fraction of α_2 even if the degree of deformation is changed. Both bimodal microstructure have nearly same hardness.
- The localized strain measured during tensile test is getting concentrated at the mid of gauge length. It reaches to a value of 2.3 % which is 65 % higher than the average strain to failure.

Multiaxial Fatigue

- The yield strength and UTS of IMI 834 alloy at room temperature is found to be 994 ± 21 and 1084 ± 26 MPa. The alloy possess a good ductility of 11.8 ± 0.5 %.
- The material exhibits lowest fatigue life under combined axial-torsion fatigue load amongst all the cases.
- Neither cyclic hardening nor cyclic softening has been observed in the case of pure axial fatigue. Whereas cyclic softening has been observed in pure torsion fatigue.
- The orientation of the crack path and fracture mode are dependent on the degree of multiaxiality.
- The pure axial fatigue samples fractured at an angle of 90° to the axis of loading conditions whereas pure torsion fatigue samples were fractured at an angle of 45° to the axis of loading. While in the case of combined axial torsion fatigue, mixed axial as well as helical fractures were seen.

Adya Charan Arohi

Oct 22, 2020

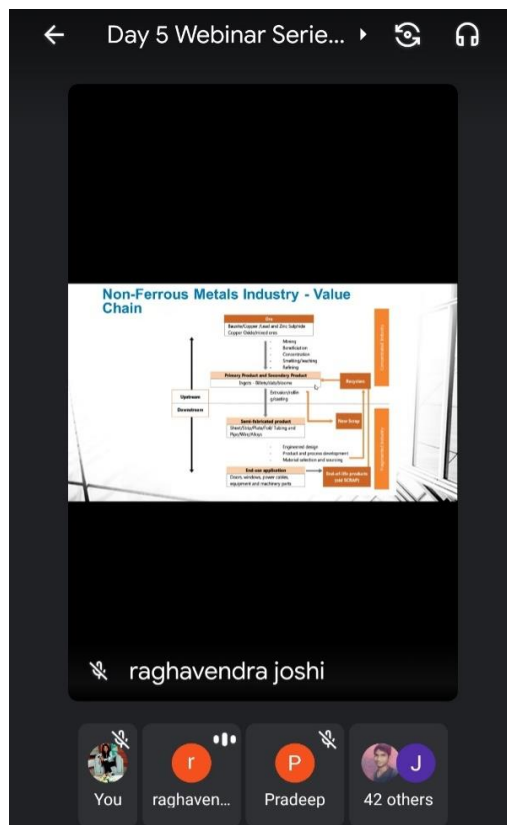
“Recent Trends in Metallurgy”

Slide No: 50

Meeting controls: You, Adya Char..., Nirmal, 36 others

DAY 5

Day 5 session “CHALLENGES & OPPORTUNITIES IN NON-FERROUS FOUNDRIES” was conducted by Mr. Raghavendra Joshi, Partner, Aadhya Engineering Vadodara.



GLIMPSES OF “INDUSTRIAL FOLLOW UP VISITS”

- As per GTU curriculum, students of 6th semester have to undergo industrial training of 14 weeks. As per the guideline's faculties went to respective companies for follow up and routine visit to keep check on their progress report. Metallurgy students went for industrial training at 10 different industries.



A site visit was arranged at Hazira Refractory, Surat on 10/03/2021.



A site visit was arranged at JMT, Sachin, Surat on 10/03/2021.



A site visit was arranged at Crescent Foundry Pvt Ltd, Jambusar, Baroda on 12/03/2021.



A site visit was arranged at Gujarat Switch Gear Manufacturing Com, Khambhat on 12/03/2021.



A site visit was arranged at Vertex Aluminum Extrusion, Kim, Surat on 15/03/2021.



A site visit was arranged at Kalpataru Power Transmission, Gandhinagar on 15/03/2021.



A site visit was arranged at JMT, Udhana, Surat on 16/03/2021.



EXTRA CURRICULAR ACTIVITIES

INTERNATIONAL YOGA DAY CELEBRATION

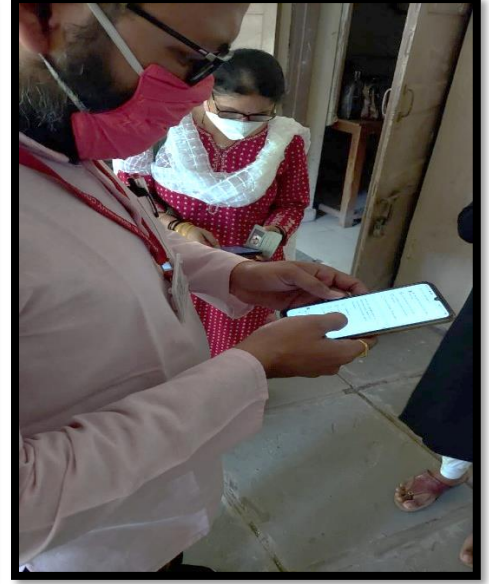
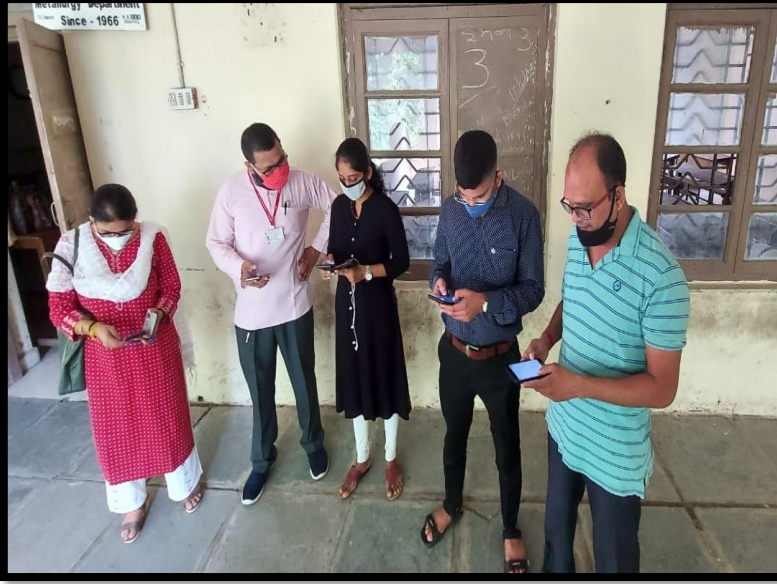
In view of the pandemic situation (COVID-19), this time the International Yoga Day was celebrated under the campaign of “Do yoga Beat Corona”. As part of state-wide public awareness, faculty and staff members along with students were asked to post photographs/video of Yoga posture on social media with a hash tag of #DoYogaBeatCorona, #GujaratStateYogaBoard, #GTU.

Dr. S.& S. S. Gandhi college of Engg. & Tech. family members were asked to join for yoga practice through Facebook page of Gujarat yoga board on 21/06/2020 at 7:00 am from their residence.



COVID 19 AWARENESS QUIZ

Covid-19 awareness quiz was organized by National Service Scheme (NSS) local unit of Dr. S. & S. S. Ghandhy College of Engg. & Tech., Surat to spread the awareness among faculties and students on 13th October, 2020. All the faculty members of the department and students participated in the quiz.



COVID PLEDGE CEREMONY

प्रतिज्ञा

मैं _____ संकल्प लेता/लेती हूँ कि मैं कोविड-19 के बारे में सतर्क रहूँगा/रहूँगी और मुझे और मेरे साथियों को इससे जुड़े खतरे को हमेशा ध्यान में रखूँगा/रखूँगी।

मैं इस घातक विषाणु के प्रसार को रोकने संबंधी सभी आवश्यक सावधानियों बरतने का वचन देता/देती हूँ। मैं कोविड से जुड़े आचार-व्यवहार का अनुसरण करने और दूसरों को भी इसके लिए प्रोत्साहित करने का भी वचन देता/देती हूँ।

मैं सदैव माँस्क/फिस कवर पहनूँगा/पहनूँगी, विशेषकर सार्वजनिक स्थलों पर।

मैं दूसरों से कम-से-कम 2 गज की दूरी बनाकर रहूँगा/रहूँगी।

मैं अपने हाथों को नियमित रूप से और अच्छी तरह साबुन और पानी से धोऊँगा/धोऊँगी।

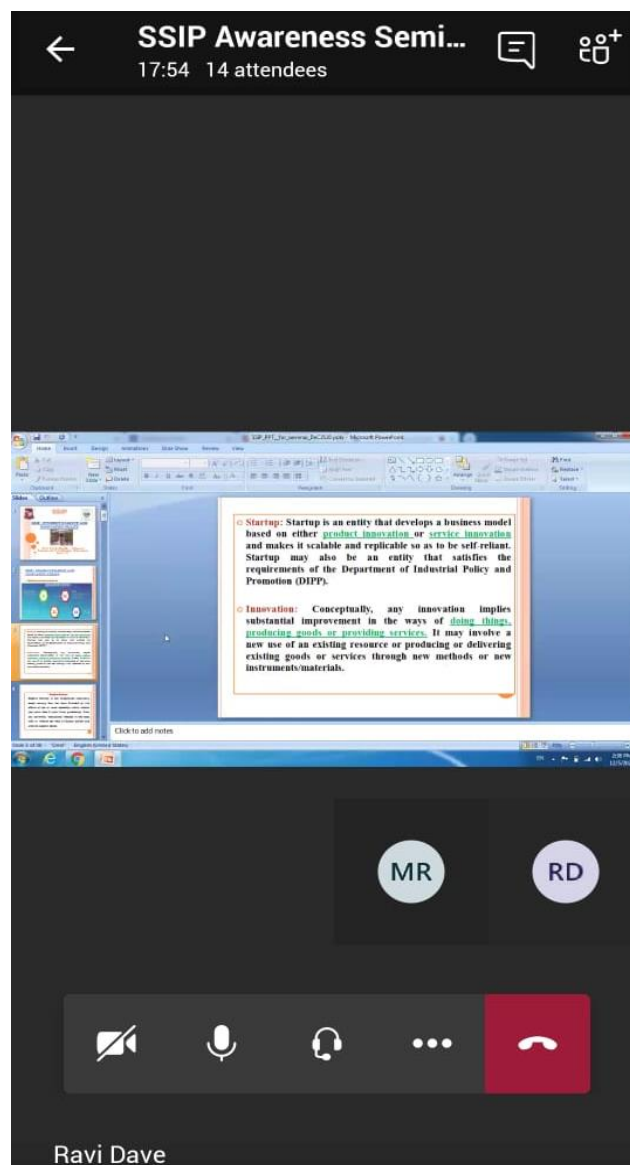
हम एक साथ मिलकर कोविड-19 के खिलाफ इस लड़ाई को जीतेंगे।

Covid pledge was taken by all the department faculty members on 5th November, 2020.



WEBINAR ON SSIP AWARENESS

The Metallurgy Department organized a webinar on SSIP awareness for first-year students, which took place on May 12, 2020. This webinar aimed to familiarize attendees with the SSIP program and its significance in the realm of innovation and entrepreneurship. Through this initiative, students had the opportunity to gain insights into the various aspects of SSIP and how it supports innovative ideas and concepts. The webinar served as a platform for students to understand the role of SSIP in fostering a culture of innovation within the academic and entrepreneurial spheres. Overall, the event provided valuable knowledge and awareness about SSIP to the participants, empowering them with essential information for their academic and professional endeavours. Webinar was attended by a total of thirteen students.



WORLD ENVIRONMENT DAY - 2021

World Environment Day 2021 celebration was organized by EBSB Cell, NCC, NSS Cell and BVM during 05-06-2021 to 10-06-2021. Metallurgy students and staff members celebrated this day planting the trees in campus.



POSTER COMPETITION

To celebrate world environment day 2021, Bhutpurv Vidhyarthi Mandal and Ek Bharat Shreshtha Bharat team of Dr. S. & S. S. Gandhi College of Engineering and Technology, Surat and Water Management Forum, Ahmedabad jointly organized "Poster Competition" on 05/06/2021 through online mode.

09 metallurgy students were participated in this competition. Maitrik Jadav, student of 5th semester metallurgy got 1st rank in this competition.

Dr. S. B. S. S. Ghandhy College of Engineering and Technology, Surat
Water Management Forum, Ahmedabad

World Environment Day 2021 Celebration

You are invited to participate in

Poster Competition

TOPICS based on annual themes of world environment day in different years:
 1) Ecosystem Restoration (2021, Pakistan)
 2) Time for nature (2020, Colombia)
 3) Beat Plastic Pollution (2018, India)
 4) Forests: Nature at your service (2015, India)
 5) Your planet needs you – Tackle the climate change (2009, Mexico)

Date of Competition: 05/06/2021
Time: 10:30 AM to 06:00 PM

GUIDELINES:
 1) Only enrolled students of SSGB, Surat can participate in the competition.
 2) The poster will have minimum A3 size of 30 cm x 42 cm.
 3) The poster should be drawn and coloured. No pasting or cutting allowed.
 4) Enrollment top, Full Name, Branch, Semester must be clearly mentioned on the right-hand bottom corner of the poster.
 5) Poster should be in individual envelope.
 6) The drawing/painting must not include national flag, brand name or illustration of depict any religious deity.
 7) Scoring will be done on the basis of neat and clean work, as well as the relevance of the theme selected.
 8) Decision taken by organizing team will be the final decision.

REGISTRATION & SUBMISSION LINK
<https://forms.gle/36U5oZBR5uphH5AA>

Patron: Mr. N. A. Sangani, Principal (SSGF, Surat)
Conveners: Mrs. Dipali Gaywala, EBSB coordinator (SSGF, Surat); Mr. Pavan Pawala, BVM Coordinator (SSGF, Surat)
Competition coordinators: Ms. Supruti Maltra, Lec. Automobile Dept. (7400029947); Ms. Sonam Patel, Lec. Metallurgy Dept. (9924188938)

Water Management Forum will honour each of the winners with cash prizes:
 • First prize of the competition: Rs. 1001/-
 • Second prize of the competition: Rs. 501/-
 • Third Prize of the competition: Rs. 251/-
 • E-Certificate will be given to all participants.

Jointly Organized By
 GEPSA, Ek Bharat Shreshtha Bharat, Water Management Forum

"Let's nurture the nature so that we can have a better future."



The number of co-curricular and extracurricular activities carried out at the institute and departmental level. The details of these activities are:

Sr. No.	Activity	Conducted By	Date
1.	Webinar on Water Management	NSS	21/03/2021
2.	Swachhata Pledge	EBSB	21/03/2021
3.	Quiz on Ek Bharat Shreshtha Bharat	EBSB	30/03/2021
4.	Webinar Tourism & Culture of Chhattisgarh	EBSB	15/04/2021
5.	Poster Competition on Eco System Restoration	BVM, WMF. EBSB	05/06/2021
6.	72th Republic Day Celebration	NCC	26/01/2021
7.	Poster Making of Covid 19 Awareness	NCC	14/04/2021
8.	Vaccination of Cadets and Volunteer at Vaccination Center	NCC	11/05/2021 to 15/05/2021
9.	Ek Mai Sau Keliye	NCC	20/05/2021 to 30/06/2021

PROJECT OFFERED IN 5TH SEMESTER

GROUP	PROJECT TITLE	GUIDE
1	Heat Treatment Furnaces	Mrs. B. H. Goyal
2	Testing of molding sand with different testing methods	Mr. S. F. Parmar
3	Comparative study of various Mg-Alloys for different applications	Ms. S. M. Patel
4	Nano material reaction	Mr. M. J. Joshi
5	Review on impact testing method for ferrous material.	Mr. T. K. Kyada
6	Comparative study of SMAW and GTAW process	Mr. R. D. Dave
7	Corrosion of different metals	Mr. N. G. Patel
8	Advanced ceramic material for high temperature applications.	Mr. A. M. Gautam

INDUSTRIAL TRAINING IN 5TH SEMESTER

Sr. No.	Industry Name & Address
1.	Hazira Refractory Ichhapore G.I.D.C Surat
2.	Jay Metal Cast (JMT) Blok No A/15 Plot No 6/7/8 Udhna, Surat
3.	JMT India Inc. 59/60 Plot Sachin, Surat
4.	Everlite Batteries, Surat
5.	Surat Aluminium Co. Surat
6.	Vertex Aluminium Extrusion Co. 68-A Ekta Ind. Pipodra G.I.D.C Kim Surat
7.	L & T Heavy Engineering, Surat
8.	Theis Precision Steel Indian Pvt. Navsari
9.	Crescent Foundry, Jambusar
10.	Gujarat Switch Gear, Khambhat
11.	Kalptaru Power Transmission, Gandhinagar
12.	Perfect Metal CTM Char Rasta, Ahmedabad

STUDENT SPOTLIGHT



Vekatesh Sindham, Student of Metallurgy Department, Dr. S. & S. S. Gandhi College of Engineering & Technology, Surat secured 1st position in Gujarat Technological University in 2020.

STUDENT PARTICIPATION

SR. NO.	NAME OF STUDENT	DATE	TYPE OF ACTIVITY	ORGANIZER
1	Mr. Kush K. Rajput	09/08/2020	Training on "Industrial NDT & Welding Practices & ASME Standards"	Metallurgy Dept., GEC Gandhinagar
2	Mr. Meet C. Rana	09/08/2020	Training on "Industrial NDT & Welding Practices & ASME Standards"	Metallurgy Dept., GEC Gandhinagar
3	Mr. Trushar S. Rana	09/08/2020	Training on "Industrial NDT & Welding Practices & ASME Standards"	Metallurgy Dept., GEC Gandhinagar
4	Mr. Dhaval J. Kangriwala	09/08/2020	Training on "Industrial NDT & Welding Practices & ASME Standards"	Metallurgy Dept., GEC Gandhinagar
5	Mr. Mann G. Parmar	15/09/2020	Quiz on Material Science	Metallurgy Dept., GEC Gandhinagar

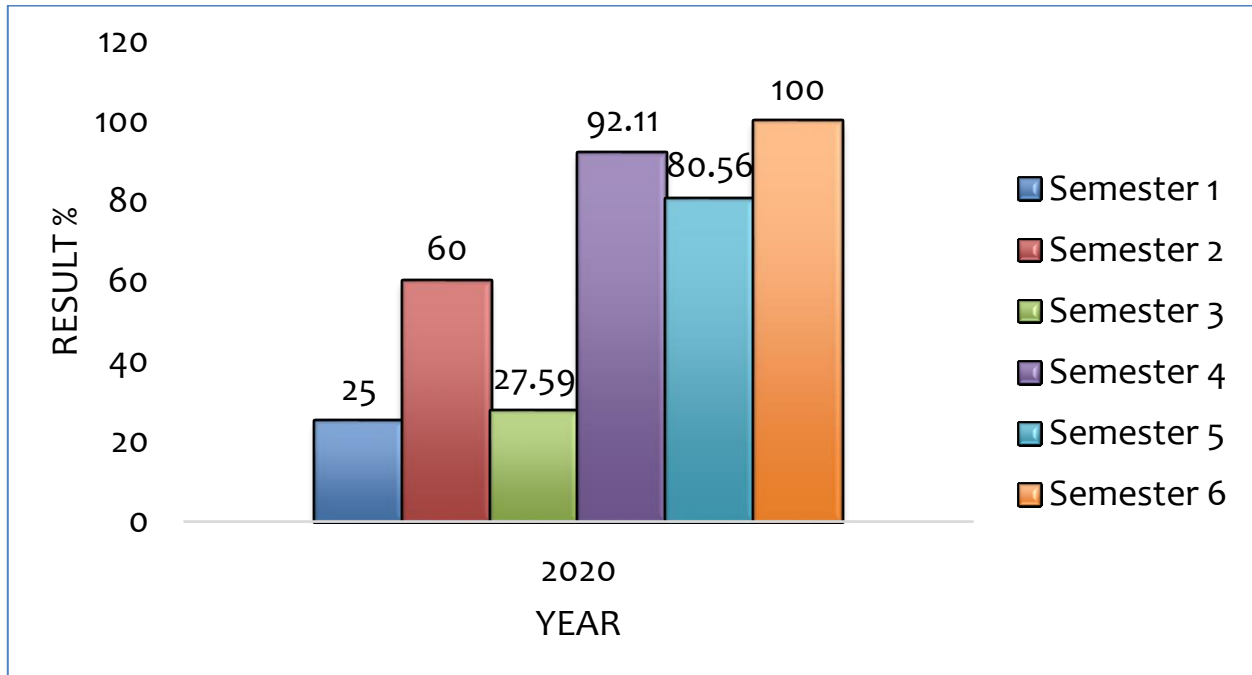
STUDENT PARTICIPATION IN NCC



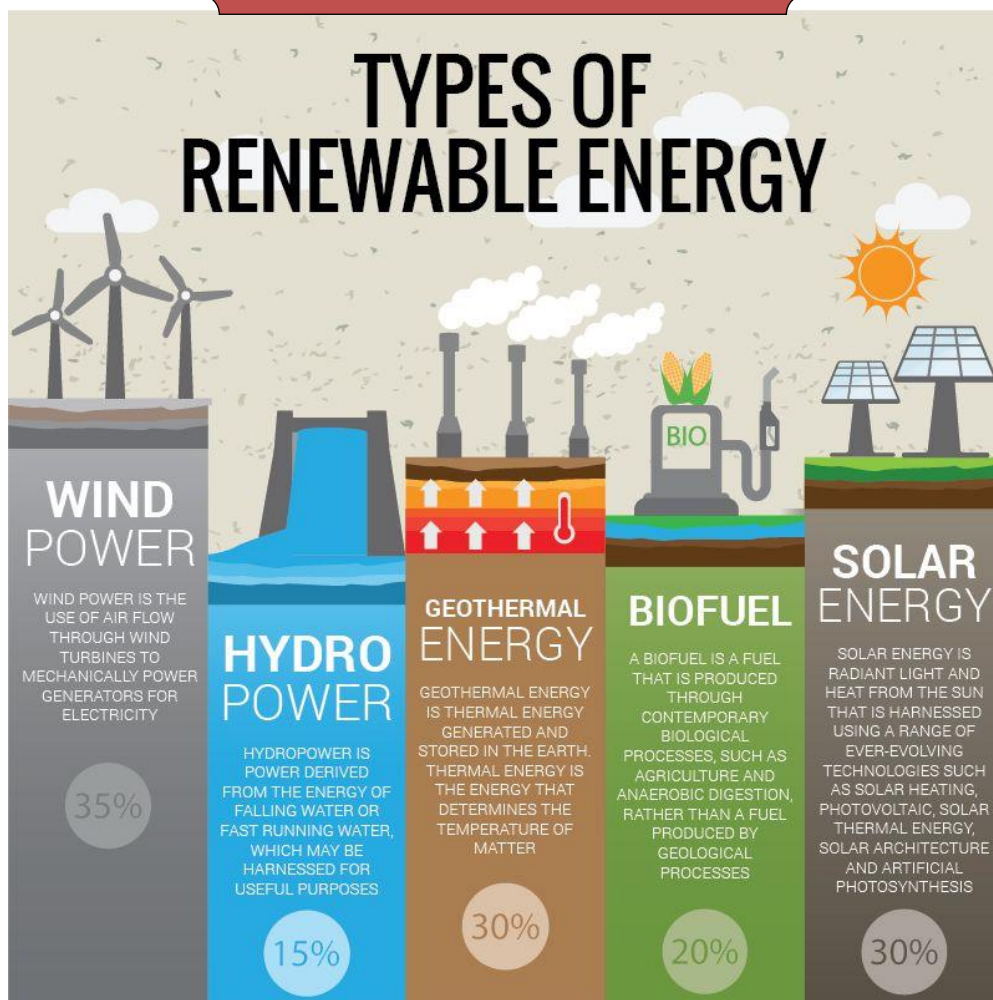
Sr. No.	Name of Students
1	Lawaniya Adep
2	Jenish



RESULT OF 2020 EXAMINATION



TECHNICAL GALLERY



By Payal Patel

Title: A Comprehensive Review of Energy Sources: Advancements, Challenges, and Opportunities

Trushar Rana, Yuvraj Kharwar, Dhaval Kangriwala

Introduction:

In light of increasing global energy demands and environmental concerns, the exploration of sustainable energy sources has gained paramount importance. This comprehensive review provides an in-depth analysis of various energy sources, examining their potential, challenges, and advancements in the quest for a sustainable energy future.

Renewable Energy:

Renewable energy sources, including solar, wind, hydro, and biomass, offer promising alternatives to fossil fuels. Solar energy, with ongoing advancements in photovoltaic technologies and concentrated solar power systems, demonstrates significant potential for widespread adoption. Similarly, wind energy continues to evolve, driven by innovations in turbine design and grid integration, albeit facing challenges related to intermittency and site availability. Hydroelectric power, while a longstanding renewable energy source, confronts environmental concerns and ecosystem disruptions, prompting exploration of low-impact technologies. Biomass energy presents opportunities for biofuel production and waste-to-energy conversion, yet considerations for resource availability and emissions remain critical.

Nuclear Energy:

Nuclear energy, characterized by its high energy density and low greenhouse gas emissions, remains a contentious yet influential player in the energy landscape. Despite its potential, nuclear power faces challenges regarding safety, waste management, and proliferation, necessitating ongoing research and technological advancements to address concerns and enhance public acceptance.

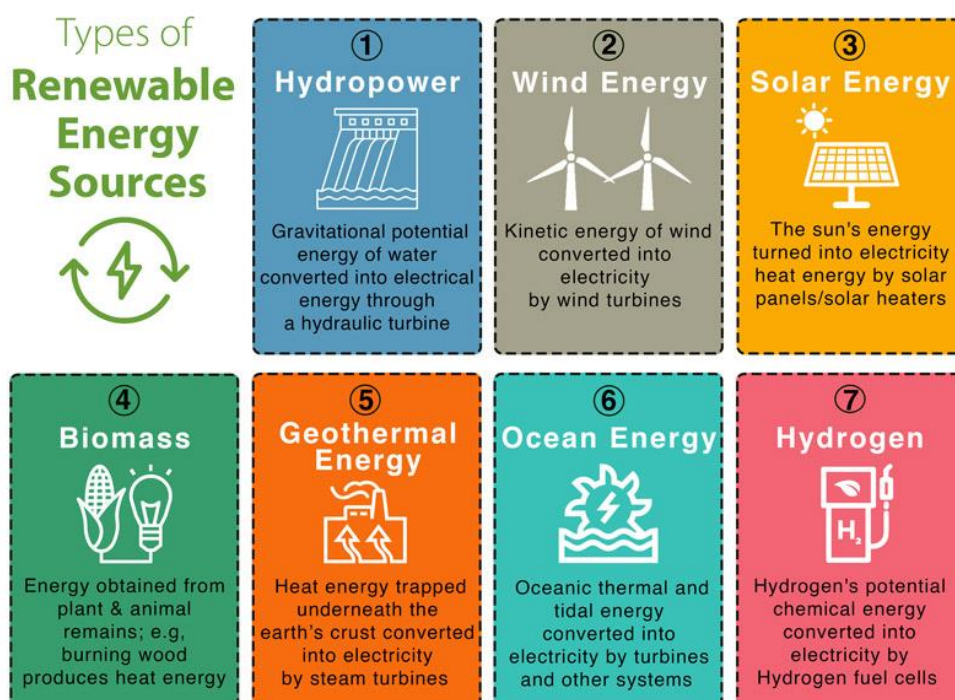
Emerging Technologies:

Beyond traditional renewables and nuclear power, emerging technologies such as tidal and geothermal energy offer novel approaches to sustainable energy generation. Tidal energy harnesses the kinetic energy of ocean currents, while geothermal energy taps into the Earth's heat for electricity production and heating applications, demonstrating significant potential for further development and deployment.

Conclusion:

In conclusion, this comprehensive review underscores the importance of diversifying energy sources and fostering innovation to achieve a sustainable energy future. By leveraging advancements in renewable energy technologies, alongside prudent utilization of nuclear and emerging sources, societies can mitigate climate change, enhance energy security, and foster socio-economic development on a global scale. However, addressing challenges and realizing the full potential of these energy sources will require concerted efforts from policymakers, researchers, and industry stakeholders to navigate the complexities of the energy transition successfully.

By Shloka Patel, Manav Patel



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