



# I.E.I NEWS

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A CENTURY OF SERVICE TO THE NATION

Volume 28

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## From the President's Desk.....

For the last one and half years, the worldwide pandemic outbreak has resulted in global economic freefall. This is characterized by health shock, technological disruption, digital divide, technology-driven displacement in the job market, growing inequality in the income level, disruption in labour market and global recession. Millions of individuals all over the world have lost their livelihood, due to the tectonic shift in customers' demand orientation during the pandemic times, which resulted in a major structural change in the global economy.



At the outset, the only turnaround strategy is to facilitate the adoption of technological innovations and the development of new skills. It is a combination of quantitative and qualitative intelligence, which can leverage immense human potential to cope with rapid digitization and automation in the new normal. The new technological regime requires re-skilling and up-skilling the engineering fraternity in synergy with the new job profile. Thus, the development of human skills through cutting-edge technology is the key driver for economic success, individual well-being, and societal upliftment.

Over the past decade, the scope and opportunities created by the ground-

breaking emerging technologies signaled the introduction of the fourth industrial revolution. A number of industries have embarked on reorientation of their strategic directions in line with the capabilities of machines and algorithms. This has led to creation of more employment opportunities and growth in different dimensions. Artificial Intelligence and Data Science have created new roles in product development and manufacturing. A combination of Lean and Agile strategy in the healthcare industry has taken the center stage during pandemic times. The skilled workforce is gradually categorized as essential, remote, and hybrid. The essential workforce is the front liners, involved with emergency and essential services. This includes healthcare, e-commerce, logistics, production and delivery of medicine, oxygen, perishable items, etc. The remote workforce is working relentlessly from their respective locations, which resulted in recovery and sustainability in the economy and the hybrid workforce coordinates with both of them. Thus, the wheels of normalcy are rolling in hospitality, retail, transport, communications, and other infrastructural and essential services.

IEI observed 54<sup>th</sup> Engineers Day all over the country on 15 September 2021 on the theme 'Engineers for Skill Development & Employment in Combating COVID' to commemorate the birth anniversary of the great visionary and legend, Sir M Visvesvaraya. All the State and Local Centres of the Institution, Corporate Members of the Institutions and professionals all over the country have organized events on this focused issue and outlined the opportunities and challenges for the engineering professionals in the new normal.

Jai Hind

IEI Technical Webinar under the aegis of Aerospace Engineering Division Board

## Advances in Indian Space Program in the Centenary Years of Dr Vikram Sarabhai & Prof Satish Dhawan

Aerospace Engineering Division Board (ASDB) of the Institution observed the Birth Centenary of two eminent personalities in the Indian Space Program, Dr Vikram Sarabhai & Prof Satish Dhawan 17 August, 2021 by organizing



Dr K Sivan

Technical Webinar on the theme **Advances in Indian Space Program in the Centenary Years of Dr Vikram Sarabhai & Prof Satish Dhawan**. On the auspicious occasion, Dr K Sivan, Secretary, Department of Space, Chairman, Space Commission and Chairman, Indian Space Research Organization (ISRO); Dr K Radhakrishnan, Former Chairman of Space Commission &

Chairperson of the Board of Governors, Indian Institute of Technology Kanpur and Chairman of the Standing Committee, IIT Council; and Mr A S Kiran Kumar, Former Chairman, ISRO & President, Aeronautical Society of India graced the function as eminent Panelists. Dr B N Suresh, Chancellor, Indian Institute of Space Science



Dr K Radhakrishnan

and Technology, Trivandrum, Hon'ble Distinguished Professor, ISRO HQ, Bangalore was the Moderator of the session. Prof R M Vasagam, Chairman, ASDB, IEI in his opening



Mr A S Kiran Kumar

remarks, welcomed the distinguished speakers and moderator of the session, IEI dignitaries, Corporate members of IEI, and attendees. Prof (Dr) Swapan Bhaumik, Chairman, CATE, IEI in his address mentioned the immense contribution of two respected personalities in the Indian

space program.

Dr K Sivan delivered his presentation on the topic 'Space Sector Reforms: Unlocking India's Potential in Space Sector'. Dr Sivan, in his address, highlighted the excellent exposition of Indian space sector reforms and focused on the significant transition in the Indian space industry, stressed on unlocking India's potential in the space sector and the



Dr B N Suresh

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# Advances in Indian Space Program in the Centenary Years of Dr Vikram Sarabhai & Prof Satish Dhawan

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subsequent benefits derived by the country. Dr Sivan started his deliberation with an overview of Indian space programs prior to space reforms, when end-to-end space activities in India carried out by Department of Space (DOS), Government of India, which include design, development and realization of launch vehicles and space crafts, launch and post-launch activities and space-based services. Dr Sivan remembered with great respect and affection the glorious services rendered by Dr Vikram Sarabhai, who had introduced academia and industry for development of Indian space activities. Dr Sivan deliberated at a length the space sector reforms with Government and private funding, which results growth in space based services and applications in multitude, user's demand and requirement on a growth trajectory with huge commercial potential, which leads to greater opportunity of the country in the global space business. Dr Sivan opined that the entire requirement in the Indian space sector cannot be met by ISRO/DOS alone, which initiates the entry of private sectors and start ups in manufacturing of launch vehicles, satellites and providing the opportunity to explore space-based services. Dr Sivan emphasized on development, promotion, and authorization of private industries by means of providing infrastructural facilities, technological support, and expertise by the Government of India and strongly advocated for exploring more opportunities by private industries regarding space sector reforms. In his lecture, Dr Sivan explained the significance of regulatory system and authorization mechanism for the development of satellites and launch vehicles for providing guidance and support to the private industries. He discussed on the functions and scope of IN-SPACe, an autonomous empowered body under DOS, functional with the support from Ministries, industry, and academia and able to provide end-to-end demand-based services, commercial production and technology transfer to the start-up industries and mentioned that ISRO provides the backup support with advanced space technologies and capacity building. He mentioned the operational hierarchy, directorates of IN-SPACe, application procedure, approval process from Space Commission, application process for sharing and establishment of facilities etc. He also explained the policy and legal framework for space sector reforms, and mentioned that number of proposals have received through IN-SPACe platform from private industries for manufacturing launch vehicles, spacecrafts, and allied services. Chairman, ISRO also discussed the functions and scope of NewSpace India Limited, the nodal agency under Department of Space, Government of India, which include technology transfer, customization of products, commercial application of the products by industry etc. Dr Sivan concluded his address, mentioning the vision, mission, roles, and mandate of ISRO and ensured enhanced space activities with full infrastructural support.

Dr K Radhakrishnan deliberated his lecture on the topic 'Earth Observation Systems –Changing Paradigms of EO Applications and Services'. Dr Radhakrishnan started his lecture by paying tribute to the two legendary leaders of the Indian Space Program, who had shaped the Indian Space Program for the first two decades. He mentioned Dr Vikram Sarabhai's indomitable vision and the spirit of self-reliance and added that many vibrant institutions were established in his era and several path-breaking initiatives obtained in the field of Rocketry and Spacecraft science. Dr Radhakrishnan discussed at a length the contribution of Prof Satish Dhawan in Indian Space programs and introduction of troika model of governance at ISRO. Dr Radhakrishnan, in his address, highlighted on Prof Dhawan's contribution for launching satellites from India, his focus on seamless transition, the introduction of national space systems, formulation of programme strategy and focus, restructuring and consolidation of several units of ISRO and so on. Dr Radhakrishnan deliberated on evolving Indian earth observation systems, starting from satellite concept demonstration and aerial survey for remote sensing for land resources, development of high-resolution satellites, introduction of India's first remote sensing satellite, development

of high resolution microwaves and super spectral remote sensing, the introduction of thematic or tuned satellites, strategic dimensions of remote sensing satellites, hyperspectral remote sensing, etc. He further discussed on international framework and synergy for earth observation systems and explained the significance of remote sensing data for disaster management. Dr Radhakrishnan explained the paradigm shift in earth observation space segment and mentioned the exponential advancement in technology for earth observation sensors, platforms, onboard processing, and advents of micro-satellites, characterized by the faster deployment cycle, reduced investments, and synergistic observation across electromagnetic spectrum. He discussed the paradigm shift in data availability and accessibility for remote sensing, which includes demand-based availability of data to the user, reduced turn-around time and rapid utilization, value-added and analysis-ready data products, quantitative algorithms, and better parameter retrieval etc. Dr Radhakrishnan, in his address, deliberated at a length the paradigm shift in data analytics and solutions in earth observation systems, which include the confluence of remote sensing, cloud technology, and machine/deep learning, monitoring of land surface processes in time and space, enhanced relevance of geo-spatial solutions for governance, new models of data and information sharing etc. He mentioned that the perspectives of data users also changed with increased participation by industries and startups, optimization of data usage across natural resources, disaster management governance, climate change, the rapid rise in product information sharing, big data analytics, etc. The erudite speaker concluded his thought-provoking deliberation mentioning the scope for future earth observation systems and applications of earth observation systems in sustainable development, climate change, hazard mitigation, national security etc.

Mr A S Kiran Kumar delivered his lecture on the topic 'Influence of Vikram Sarabhai and Satish Dhawan on Indian Space Program'. Mr Kumar started his presentation with Dr Vikram Sarabhai's vision on the use of space technology for national development, which consists of capability demonstration and capacity building for harnessing space technology to meet the national, societal and strategic needs for satellite communication, remote sensing, and launch vehicle activities. He further discussed the development of the Indian space programme and introduction of satellite instructional television experiment as the world's largest socio-technical experiment. Mr Kumar deliberated on the evolution of Indian satellite communication capabilities from INSAT to GSAT series, which provide a wide array of space communication with different frequency bands and bandwidths with wide applications in weather forecasting, Potential Fishing Zone (PFZ) and Navigation – Indian Constellation (Nav IC) services for fishermen guidance and safety, satellite navigation, etc. Mr Kumar explained the function of GPS aided Geo Augmented Navigation (GAGAN), which enable aircrafts for en-route planning, precision landing, etc. He further discussed the functions of Polar Satellite Launch Vehicle (PSLV), leapfrogging activities as envisaged by Dr Vikram Sarabhai, consists of early adoption of new technologies and innovative use of accessible technologies for addressing societal problems. Mr Kumar discussed the vision of Prof Satish Dhawan, his contribution as an Institution Builder, his thought process and recommendations for space policy issues. He further discussed the pertinent issues of Direct Broadcasting Satellites and Remote Sensing, space debris management, space demarcation and Karman line, different issues of space economy, and so on. Mr Kumar concluded his address with stress on enhanced utilization of the space capability of India by public and private entities, academic institutions and opined that it leads the country to be a significant player in the space economy.

Moderator of the session, Dr B N Suresh summed up the Proceedings of the session. Maj Gen M J S Syali, VSM (Retd), Secretary & Director General, IEI proposed the vote of thanks.

## Engineers for Skill Development & Employment in Combating COVID

The Institution of Engineers (India) observed the 54<sup>th</sup> Engineers' Day on the theme **Engineers for Skill Development & Employment in Combating COVID** to commemorate the Birth Anniversary of the legendary Engineer, Sir Mokshagundam Visvesvaraya on 15 September 2021 in virtual platform. Eminent speakers on the occasion, Mr Sudhir Garg, Dean, Indian Railways Institute of Electrical Engineers Nasik (IRIEEN), Ministry of Railways, Government of India and Mr Amit Sharma, Managing Director & CEO, TATA Consulting Engineers Limited shared their thoughts with the virtual audience. The programme was started with the welcome address, delivered by Maj Gen MJS Syali, VSM (Retd), Secretary and Director General, IEI. In his address, Secretary & Director General, IEI outlined the life sketch, vision, and contribution of Sir M Visvesvaraya and mentioned the objectives, functional domains and achievements of IEI. Er Narendra Singh, President, IEI graced the occasion with his august presence and delivered the Presidential Address. In his address, President, IEI glorified the contribution and engineering excellence obtained by Sir M Visvesvaraya. President, IEI further highlighted the roles, responsibilities of engineers during the global crisis, emphasized on upskilling and re-skilling of their knowledge base and creation of new job opportunities due to digital transformation. He further added that the resilience, relentless spirit for innovation, sincerity, hard work, and commitment of the engineering fraternity can change the world.



Mr Sudhir Garg



Mr Amit Sharma

Mr Amit Sharma, Managing Director & CEO, TATA Consulting Engineers Limited while sharing his thoughts, focused on the shift in the engineering profession and emergence of new opportunities in the advent of introduction of Industry 4.0 and 5.0. He also highlighted the changed scenario in industrial perspectives and different measures to combat COVID. Mr Sharma, remembered Sir M Visvesvaraya as a great innovator with remarkable qualities that include deep acumen in project management, financial factors, ability to take the risk and so on. In his address, Mr Sharma also explained the shift of engineering profession during the pandemic as a leverage to take it in the next level. He explained Industry 4.0 and 5.0 as the convergence of technologies with a combination of digital perspectives, robotics, that principally focused on enhanced productivity, complete leverage of captive technology and application of the same in an innovative manner across all engineering domain. In his lecture, Mr Sharma focused on the mode of change in energy transition through the application of green technology, bioengineering, electric vehicles, hydrogen technology, circular economy and strongly advocated for environmental sustainability and green responsibility, which have to be incorporated in all feasibility studies and concepts of the projects undertaken by the public or private sector. The speaker, during his thought-provoking deliberation highlighted the significance of different technological interfaces, collaborations, interlinking of technical knowledge base, application of appropriate digital tools, design thinking to leverage codified knowledge and strengthen innovative work practices, innovative design and concepts etc. Mr Sharma in his lecture further highlighted the contribution of engineers in design and development of new concepts including cryogenic engine, radio telescopes and so on. He also emphasized on continuous learning and up gradation of the knowledge base. The speaker felt that the engineers should proceed beyond technological excellence, to understand the strong technological and commercial acumen of project management, develop the ability to take risks and develop self-confidence that leads to self-reliance.

In the second part of his lecture, Mr Sharma deliberated on the effect of the pandemic on engineering and technology and noted the downturn in the core engineering activities during the last one and half years. He felt that COVID has resulted in the transformation of different technical activities

to be conducted from remote locations, collaboration, enhanced use of digital tools and codified knowledge, modularizing, and functioning as a team. Mr Sharma, in the new normal strongly advocated for a flexible, agile, and adaptive remote working method. Mr Sharma, in his address, further discussed the laudable initiatives by the engineers to produce oxygen in the shortest possible time by converting Pressure Swing Adsorption (PSA) Nitrogen Unit to PSA Oxygen Unit to mitigate the huge demand for oxygen during the second wave of the pandemic. The speaker explained the adorable initiative by the engineers and scientists to manufacture oxygen concentrators with the objective to produce 100% indigenous oxygen and discussed the concept of oxygen storage and supply through household LPG cylinders as a measure to combat the future crisis. The speaker concluded his address remembering the responsibility, accountability, and humbleness, the engineers demonstrated during the period of crisis and felt that the COVID crisis developed self-confidence, ability to face challenges, and self-reliance for a sustainable future.

Mr Sudhir Garg, Dean, Indian Railways Institute of Electrical Engineers Nasik (IRIEEN) started his address with a strong focus on the notable technological development in challenging times, the positive thought process and affirmative leadership that leads to the commitment towards bringing change in the society in terms of self-reliance. In his lecture, Mr Garg highlighted the innovative power of India and added that for the latest technological development in all core areas, India is at the forefront. Mr Garg discussed at a length the significant advantages and benefits of different digital platforms, which ensure smooth workflow during the pandemic without any disruption including operation of all industrial activities with full capacity utilization. He also deliberated on the provision of new potential job opportunities, which have been created during the last one and half years and mentioned that workforce with changed skills, have been employed in different sectors and the technical knowledge is readily available with different open source platforms. Mr Garg highlighted the initiative by Government of India to modernize semi-rural or rural traditional industry with skill development of the artisans that leads to better competitive advantage. He stated that the initiative by the Ministry of Micro Small & Medium Enterprises (MSME), Government of India has resulted in the latest, modified, and updated industrial infrastructure and formation of industrial clusters. The speaker also informed that number of industrial clusters have been digitalized end to end. In his speech, Mr Garg discussed the modernisation of traditional workforce through up-skilling and re-skilling all over the country, which highlights the power of digitalization and continuous learning. Mr Garg further on the changing demand of the customer and stressed on the fulfillment of the same by designing new products, new industrial platforms. He emphasized on remanufacturing of products as a part of circular economy and net-zero carbon footprint as a business model and opined that these new business models are able to create new job opportunities. Mr Garg in his deliberation stressed on skill development all over and felt that skilling and reskilling of the workforce is the most significant affair, that needs to be concentrated, which can provide a lot of job opportunities in general and export-oriented job opportunities in particular. The illustrious speaker concluded his lecture highlighting the contribution of the engineers during the global crisis with lots of innovation, change in work pattern and workflow, thereby obtain feasible solutions within the shortest possible time and emphasized on further growth opportunities in line with the said development. He felt that more collaboration with national and international bodies, obtaining new solutions can create more job opportunities and make the country self-reliant.

Mr Suneel Grover, Chairman, BOG-NSDF delivered the concluding remarks and offered the vote of thanks. A small cultural programme was also telecasted on this occasion.

## Developments in Gas Tungsten Arc Welding (GTAW) with Reference to Wire Arc Additive Manufacturing (WAAM)

Production Engineering Division Board (PRDB), IEI organized Technical Webinar on the theme **Developments in Gas Tungsten Arc Welding (GTAW) with Reference to Wire Arc Additive Manufacturing (WAAM)** on 19 May, 2021. On the occasion, Prof (Dr) Santanu Das, Professor and Head, Department of Mechanical Engineering, Kalyani Government Engineering College, Kalyani, West Bengal and Dr Manidipto Mukherjee, Senior Scientist, Centre for Advanced Manufacturing and Metrology Group, Wire Arc Additive Manufacturing & 3D Printing, CSIR-CMERI Durgapur, West Bengal delivered lecture as eminent Panelists. Prof (Dr) G L Datta, Former Professor and Dean (Mechanical Engineering), IIT Kharagpur and Former Chancellor and Vice-Chancellor, KL University, Andhra Pradesh graced the function as the Moderator of the Session.

Dr Deb Kumar Tripathy, Chairman, PRDB, IEI in his opening remarks welcomed the Panelists & Moderator of the Session, the IEI dignitaries, Corporate Members and the attendees and briefed the audience about Wire Arc Additive Manufacturing and Activated TIG Welding. Prof (Dr) G L Datta introduced the esteemed speakers of the session and highlighted the technological advancements in Gas Tungsten Arc Welding and Wire Arc Additive Manufacturing Process in terms of developments in electrode, shielding gasses, welding flux, etc.

Prof Santanu Das, Professor and Head, Department of Mechanical Engineering, Kalyani Government Engineering College, Kalyani, Nadia delivered his presentation on the topic 'Developments in Gas Tungsten Arc Welding (GTAW) and the Use of Activated Flux'. Prof Das started his deliberation with welding basics, broad classification of welding processes, namely Solid State or Phase welding and Fusion welding. He explained the development of Solid State welding process since inception of Forge welding, Resistance



Prof Santanu Das

Spot welding, Friction welding for polymeric materials and metals, Explosive and Ultrasound welding and so on. He explained the development of Fusion welding process, starting from Carbon or Graphite Arc welding, Thermit welding, Metal Inert Gas welding (MIG), Tungsten Inert Gas Welding (TIG) etc. Prof Das explained the working principle of Arc welding process and stated that, when the pool of molten metal is formed near the tip of the electrode and as the electrode is moved along the joint, molten weld pool solidifies making the faying surface hard. Prof Das further discussed on polarity, different aspects of Direct Current Electrode Negative or Straight Polarity (DCEN or DCSP), Direct Current Electrode Positive or Reverse Polarity (DCEP or DCRP) and Alternating Current (AC). He explained applications

of Gas Tungsten Arc Welding (GTAW or TIG), characterized by the heat source, created by an electric arc between a non-consumable electrode and work piece with or without applications of filler metal. He mentioned the process features of GTAW, which include excellent control with stable arc even at low power input, provision to add filler material independently and suitability to produce intricate shape weld, for example root runs in pipe or thin sheets. GTAW is able to produce high quality welds with no slag, defect free welds with low Oxygen and Nitrogen and able to produce excellent weld profile



Dr Manidipto Mukherjee

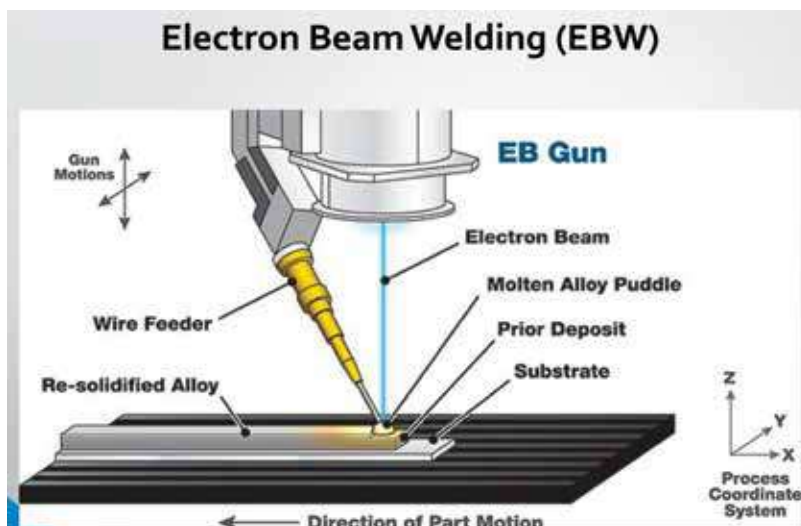
even for single sided weld, he added. He further discussed on welding power source for ferrous and non-ferrous materials and, nomenclature of non-consumable Tungsten electrodes. Prof Das demonstrated on the application of different shielding gasses, namely pure Argon, Argon-Helium, Argon-2% Hydrogen, application of backing or purge gas consists of Argon, Nitrogen etc. He also explained application of different filler materials and the advantages, disadvantages & limitations of Activated TIG welding (A-TIG) process. Prof Das lucidly demonstrated the Activated Flux and Activated TIG welding, where flux powders are suspended on solvents like Acetone, Ethanol



Prof (Dr) G L Datta

and a thin layer of flux is spread on faying surface prior to TIG welding, which results enhanced penetration due to activated flux. He explained the principle of arc construction and Marangoni Effect, which facilitate deeper penetration in A-TIG, when there is a gradient of surface tension at the interface between two phases. Prof Das explained arc constriction in A-TIG welding with and without flux, effect of Reverse Marangoni Effects in A-TIG, heat inputs and parameters of welding bead geometry, comparative study of penetration and heat input for conventional TIG and A-TIG welding and deliberated at a length the experimental investigations of A-TIG welding applying Full Factorial Response Surface Methodology (RSM) System of Design of Experiments. Prof Das concluded his presentation with the comparative results in using single flux and mixture of fluxes in A-TIG welding.

Dr Manidipto Mukherjee, Senior Scientist and Vertical Head, WAAM3DP, CAMM, CSIR-CMERI, Durgapur, West Bengal delivered lecture on the topic 'Wire Arc Additive Manufacturing'. Dr Mukherjee started his deliberation with Industry 4.0 and it's relevance with Wire Arc Additive Manufacturing (WAAM) Process and the application of Additive Manufacturing Robots with different degrees of freedoms to control the welding geometry and other relevant parameters of welding system. He explained metal deposition layer by layer in WAAM through Nonconventional welding processes, which include Electron Beam Welding (EBW) and LASER Beam Welding (LBW). Dr Mukherjee explained material deposition in WAAM through Plasma Arc Welding and the scope of metal deposition in WAAM through Hybrid - LASER - MIG and Hybrid - LASER - TIG. He further elaborated on the welding metallurgy of WAAM, function of filler materials in WAAM, and added that the thermal cycle of welding process results significant impact on micro-structural phenomenon of additive manufacturing process. He further explained the Additive Manufacturing metallurgy, which include melting and solidification, nucleation and growth behavior, phase transformation of material segregation and diffusion, precipitation properties of material, recrystallization and grain growth, liquation mechanisms of materials, embrittlement property and control of thermal expansion, contraction & residual stress. Dr Mukherjee further



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## Start-ups in Defence and Aerospace Sector: Opportunities, Challenges and Way Ahead

**Pune Local Centre** of the Institution organized Technical Webinar on the theme **Start-ups in Defence and Aerospace Sector: Opportunities, Challenges and Way Ahead** on 17 July, 2021 under the aegis of Aerospace Engineering Division Board (ASDB), IEI. Panelists on the occasion, Lt Col Santanu Roy (Retd), Chief Marketing Officer & Co-Founder, Synthreads Computing Solutions LLP; Mr Siddhesh Naik, Associate Vice President, New Space Research & Technologies; and Mr Abhishek Jain, Vice President, Strategic Partnership, ZEUS Numerix enlighten the audience with their thoughtful deliberations. Prof Kamal Kumar Ghosh, Department of Mechanical Engineering, College of Military Engineering, Pune and Chairman, Pune Local Centre, IEI was the Moderator of the Session.

Prof Kamal Kumar Ghosh, Chairman, Pune Local Centre, IEI in his welcome address mentioned the initiatives by Government of India for startups in Aerospace and Defence sectors and the associated scopes & challenges for new product development. Prof R M Vasagam, Chairman, ASDB, IEI, in his address mentioned the achievements of Indian aerospace industry in defence sector, and stressed on new initiatives by the startups for development of products in aerospace sector to enhance national security and self reliance. Prof (Dr) Swapan Bhaumik, Chairman, CATE, IEI in his address opined that India's startup investment ecosystem and funding growth are consistent in recent times.



Lt Col Santanu Roy (Retd)

Lt Col Santanu Roy, (Retd), Cofounder and CMO, Sync Threads Computing LLP, started his deliberation with different stages of startup ecosystem in line with conventional product life cycle, namely the concept stage, the early start up stage, the traction start up stage and the growth stage. Col

Roy explained different components of startup eco system, which include ideas, inventions, knowledge base, role of mentors, advisors and investors, role of funding agencies, role of support organizations etc. He elaborated defence and aerospace production in Indian as well as global perspectives, importance of start ups in terms of turn over and employment, value of sales and profit in Indian defence PSUs, and highlighted the market demand of products in Defence and Aerospace sectors, which include Unmanned Combat Vehicle, Corner Shot Weapons, Autonomous Fighter Jets, 8k Video Capture Technology etc. Col Roy further explained the exponential nature of technology by means of technology performance curve and deliberated on the cost of product development and profit

generation. Col Roy explained the opportunities for Defence start ups and role of defence PSUs in indigenization of products. He further elaborated the major challenges for start ups, which include business finance, operations management, marketing, human resource planning and invariably the challenges due to everlasting pandemic. Col Roy discussed the steps associated with the development of start ups, which include identification of the customers segment, identification of the products, application of the right business model, mapping of internal resources, continuous market research, setting budgets etc.

Mr Siddhesh Naik, Associate Vice President, New Space Research & Technologies discussed on startups and MSME norms by Government of

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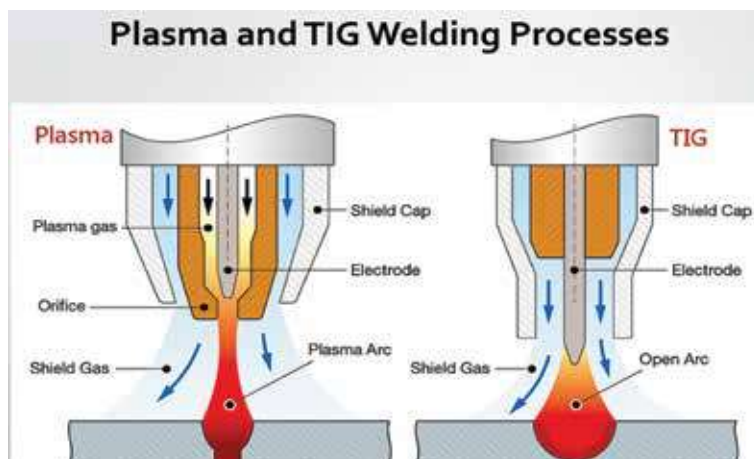
Mr Siddhesh Naik



Mr Abhishek Jain

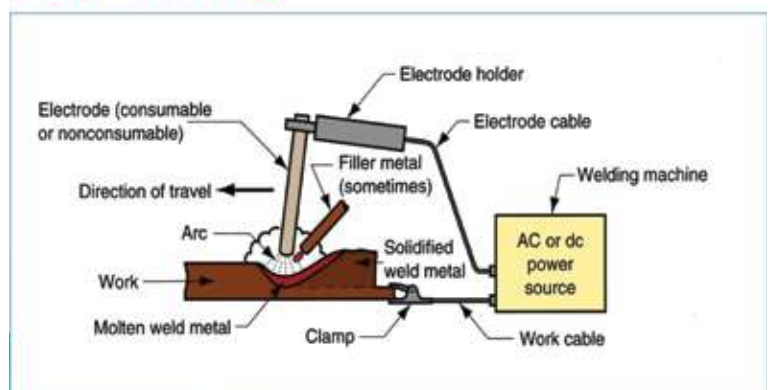
## Developments in Gas Tungsten Arc Welding (GTAW) with Reference to Wire Arc Additive Manufacturing (WAAM)

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explained formation of autogenous, homogeneous and heterogeneous metal deposition in the fusion zone during additive manufacturing process. He explained the significance of welding speed in WAAM and its effect in formation of weld pool. He discussed on the application of high degree of freedom industrial robots in WAAM for manufacturing of different intricate and complicated components; explained different coordinate systems in robotic applications, different steps in WAAM, starting from formation of CAD model of the components, sliced CAD model, simulated deposition of layers, deposition path strategy for solid and hollow sections

### Arc Welding



of individual layers, the sequences of robotic programming, formation of actual components and finishing operations. Dr Mukherjee further explained selection of different process variables in WAAM, overall process flow in component development, retaining tensile strength and micro hardness of the components as per specification etc. He concluded his lecture highlighting the challenges in WAAM.

A detailed interactive session was held at the end of deliberations. Moderator of the session, Prof (Dr) G L Datta summed up the Proceedings of the session. A vote of thanks was delivered at the end of the session.

## Cost Reduction by Reclamation of Equipment through Welding

**Bokaro Steel City Local Centre** of the Institution, in association with SAIL, Bokaro Steel Plant organized One Day Seminar on the theme **Cost Reduction by Reclamation of Equipment through Welding** under the aegis of Production Engineering Division Board (PRDB) on 31 August 2021 at Bokaro. The Chief Guest of the event, Mr S Mukhopadhyay, Chief General Manager (Maintenance), SAIL, Bokaro Steel Plant inaugurated the function by lighting the lamp. In his inaugural address, he stressed upon to explore the possibilities to reclaim the worn out/broken components of equipment through welding before discarding the same, which will help in cost reduction



enormously in turn increase in profit. In his address Mr Mukhopadhyay highlighted that reclamation methodology is one of the fast and economic means to repair worn out parts of high value items or imported in nature. Guest of Honour on the occasion, Mr P K Gupta, Ex General Manager (CO & BPP), SAIL, Bokaro Steel Plant mentioned the importance of reclamation of components, sub assemblies and equipment through welding, which is significant in view of cost reduction for production of steel and to protect the environment. The reclamation calls for systematic and scientific approach of welding which can be undertaken *in situ* conditions also, Mr Gupta added. Earlier, Chairman, Bokaro Steel City Local Centre, Mr Yogendra Nath Singh welcomed all the dignitaries, delegates & speakers and spoke about the importance of welding for reclamation of worn out components and advantages of application of information technology in welding. During the technical session,

Mr Y N Singh, Former Assistant General Manager, Repair and Reclamation Department, SAIL, Bokaro Steel Plant delivered his presentation on the topic, 'Cost Reduction by Reclamation of Equipment Through Welding'; Mr

K A P Singh, Former Deputy General Manager, Design Bureau, SAIL, Bokaro Steel Plant on the topic, 'Failures & Remedies of Foundations & Structures, Bokaro Steel Plant, Township & Mines'; Mr Akhilesh Bumb, Manager, Bokaro Power Supply Company Private Limited, Bokaro Steel City on the topic, Welding Hazards and Safety Aspects During Reclamation; Mr Binit Turkey on 'Live Gas Line Maintenance Procedure'; Mr C P Sahay, Former Deputy General Manager (Traffic), SAIL, Bokaro Steel Plant on 'Hazard and Safety Aspects During Reclamation by Welding'; Mr Manoj Kumar, Senior Manager (Projects), SAIL, Bokaro Steel Plant on 'Saving on Welding Costs – A Human Perspective' and Mr Sudhir, General Manager, Hot Strip Mill, SAIL, Bokaro Steel Plant on the topic 'Welding of Cast Iron Components'. During the valedictory function, Mr J V Shekhar, Chief General Manager (Shops), SAIL, Bokaro was the Chief Guest and appreciated the outcome of Seminar towards cost reduction.

Recommendations emanated during the day long fruitful deliberations are as follows.

*As a maintenance Engineer, it is expected to make through/elaborated study of wear pattern of all the equipment installed in the plant/industry to assess reclamation work; As an engineer, the "throw away" attitude towards worn out /broken components of equipment be reduced. Instead, possibilities must be explored for its reclamation in a systematic & scientific manner to get prolonged life; Maintenance engineers should identify and analyze the reclaimable items of plant/industry with associated reclamation processes; A standard procedure to be evolved and followed for selection of quality electrodes and welding machines to obtain products with sound reclamation and prolonged life; Environment, health and safety should be accorded top priority and should not be compromised before welding is under taken and necessary safety appliances to be used and installed in welding shops; Heavy equipment dismantling is a big job and time consuming, may be reclaimed in situ conditions including machining facility at site with established technology to minimize down time considerably; Challenging reclamation jobs successfully completed need technology exchange with in inter steel plans which would be quite beneficial for each other; Imported equipment spares can be reclaimed in case of non-availability of component to tide over the crisis; It is significant to introduce use of information technology software for sound and quality reclamation.*

## Start-ups in Defence and Aerospace Sector: Opportunities, Challenges and Way Ahead

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India, and added that startups function towards innovation and improvement of existing products. Mr Naik in his presentation, differentiated between small business and startups and explained startups as the summation of creativity, invention and innovation. Mr Naik discussed on significant startup initiatives, different regulatory issues and challenges and the notable performance of different aerospace and defence excellence.

Mr Abhishek Jain, Vice President, Strategic Partnership, ZEUS Numerix presented his lecture on the topic 'Start Ups in Defence and Aerospace Sector : Opportunities, Importance of Marketing and Procedure, Challenges faced and Should You Even Start' and stressed on the number of challenges associated with a new startup company. He discussed on different initiatives for a new company including organizational behavior, presentation of credentials, maintaining sound database for more outreach, liaison with funding agencies, associated constraints etc. Mr Jain expressed different thoughts for a new start up with focus on customer, product, manpower and innovation and opined that in the present context, startups should be

technically superior and cost effective for survival. He stressed on more collaboration with others to achieve expertise and core competence, that leads to team building and added that the best team will win. Mr Jain further discussed on different norms, procedures, policies regarding procurement, sales and audit and explained the scope to obtain product development cost through Grant-in aid scheme through 'Make in India' initiative for new start up company. He further elaborated on feasibility study procedure for technology development, registration process, and different public and private funding schemes. Mr Jain discussed further on the procedure to write good project proposal, preparation of paper of agreement, sales and marketing, structured follow up procedure and so on.

Moderator of the session, Prof Kamal Kumar Ghosh, Chairman, Pune Local Centre summed up the Proceedings of the session and mentioned the scope and opportunities of new startup companies in defence and aerospace sector. A brief questionnaire session was organized at the end of the session. Ms Aaaradhna Arvind Deshmukh, Honorary Secretary, Pune Local Centre, IEI proposed the vote of thanks.

# Importance of Soil Exploration and Soil Dynamics in Engineering Construction

**Durgapur Local Centre**, IEI in association with Dr B C Roy Engineering College (BCREC), Durgapur organized Technical Webinar on the theme **Importance of Soil Exploration and Soil Dynamics in Engineering Construction** on 19 July, 2021 under the aegis of Civil Engineering Division Board (CVDB), IEI. On the occasion, Prof (Dr) Narendra Nath Pathak, Principal, BCREC, Durgapur graced the function as Guest of Honour and addressed the virtual audience. In his address, Prof Pathak explained the importance of the program, the current scenario of engineering applications in India and scope of engineering research activities. Panelists of the session, Dr Kumar



**Prof (Dr) Narendra Nath Pathak**

Venkatesh, Associate Professor, Department of Civil Engineering, MNNIT Allahabad, Dr. Pradipta Chakraborty, Assistant Professor, Department of Civil & Environmental Engineering, IIT Patna and Dr Sanjay Sengupta, Assistant Professor & HOD, Department of Civil Engineering, BCREC shared their expertise on different aspects of soil exploration and soil dynamics. Mr Soumyadip Das, Assistant Professor, Department of Civil Engineering, BCREC, Durgapur was the Moderator of the session. Dr Nilanjan Sengupta, Director (Technical), IEI, in his opening remarks welcomed the guests and participants. Mr V B Singh, Chairman, CVDB, IEI was present during



**Dr Kumar Venkatesh**

the session and addressed the audience. Er Narendra Singh, President, IEI explained the importance of the theme and shared his professional experience. Prof (Dr) Swapan Bhaumik, Chairman, CATE, IEI also present in the event and addressed the audience.

Dr Kumar Venkatesh, Associate Professor, Department of Civil Engineering, MNNIT Allahabad, in his lecture explained different type of practical problems that are being faced during the construction. He emphasized on the point that whenever the fresh engineers move towards industry, they have to manage different projects including practical problems. Dr Venkatesh further explained the behavior of soil under different forces & shear strength. The problems in construction due to high water table were explained properly too.



**Dr Pradipta Chakraborty**

Dr. Pradipta Chakraborty, Assistant Professor, Department of Civil & Environmental Engineering, IIT Patna, in his deliberation explained the current road construction scenario. He discussed the techniques, challenges and opportunities faced during the execution of road construction projects by means of the case studies conducted in IIT Patna. Dr Chakraborty demonstrated the method to collect the samples using bore holes for laboratory testing, different tests conducted in the laboratory and the field preparation of detailed soil exploration.



**Dr Sanjay Sengupta**

Dr Sanjay Sengupta, Assistant Professor & HOD, Department of Civil Engineering, Dr B C Roy Engineering College, Durgapur in his lecture, explained the dynamic properties of soil and different type of tests adopted in current days. He explained the behavior of soil under different loads, including the seismic load occurred during earthquake. His lecture included the tests on soil which can determine their index properties as well as field tests, conducted to determine shear strength of the soil. He explained the wide applications of Seismic Reflection and Seismic Refraction tests dur to absence of boreholes or penetrations in the ground which can be time-consuming and expensive. Therefore, they are simple and low-cost solutions. Moderator of the session, Mr Soumyadip Das, Assistant Professor, Department of Civil Engineering, BCREC, Durgapur



**Mr Soumyadip Das**

summed up the Proceedings of deliberation. Mr Manoj Kumar Biswal, Honorary Secretary, Durgapur Local Centre, IEI proposed the vote of thanks.



## Superannuation from IEI

Mr Pervela Pentaiah, an employee of the Visakhapatnam Local Centre of the Institution will superannuated from the services of IEI on September 30, 2021. He joined the Institution on April 14, 1986 and rendered his services to the Institution over a period of 35 years.

IEI wishes Mr Pervela Pentaiah and his family a happy and healthy life in the future.





# News-in-Brief

The following are the brief account of Technical Activities organised by various Centres of the Institution.

## STATE CENTRES

### Gujarat

Jointly with South Gujarat Local Centre, Water Management Forum, IEI and Dr S & S S Ghandhy College of Engineering & Technology, Surat organized webinar on the topic 'Water Conservation in Textile Industry' on 9 April, 2021. Chief Guest, Prof P B Jhala, Former Senior Deputy Director, Ahemadad Textile Industry's Research Association (ATIRA) and Research Adviser, Institute of Plasma Research (IPR) and National Institute of Design (NID) addressed the gathering on this occasion. Mr M D Patel, Chairman, Water Management Forum, IEI & Chief Engineer, Sardar Sarovar Narmada Nigam Limited was the Guest of Honour of the programme. In his address, Mr Patel highlighted different activities organised by WMF for saving of water, conserving water, economic use of water in agriculture, resident, industries, etc.

### Jammu & Kashmir

Organized three-day online training programme on 'Community Based Disaster Risk Management' during 1-3 July, 2021 in association with National Institute of Disaster Management (NIDM), Government of India; in collaboration with Divisional Administration, Kashmir; National Skill Development Forum, IEI; SSM College of Engineering, Parihaspora; National Institute of Technology, Srinagar and Jammu & Kashmir State Emergency Operation Center. Theoretical and practical session were held during the training programme, which includes Basics of Disaster Management, Need for Community Based Disaster Preparedness, Sendai Framework for Disaster Risk Reduction, Community Based DRR, Psychosocial Care, Fire Safety, Basic First Aid, etc. The training programme was organised under the able guidance of Dr (Prof) Rakesh Sehgal, Director, NIT Srinagar, Ms Dilafrose Qazi, Vice Chairperson, SSM College of Engineering and Mr Suneel Grover, Chairman, BOG-NSDF. Resource persons during the event include Dr Sajad Nabi Dar, Assistant Professor, Lovely Professional University, Jalandhar; Dr Mahesh Kamble, Assistant Professor, TATA Institute of Social Sciences, Mumbai; Dr Itinderpal Singh Bali, National Master Trainer, Indian Redcross Society; Mr Gowhar Jeelani, Disaster Management Expert, Sphere India; Waseem Shafi Dar, Senior Consultant, SDMA; and other esteemed speakers. Convener of the programme, Prof Anil K Gupta, Head, Division of Environment, Climate & Disaster Risk Management, NIDM in his address stated that community based disaster preparedness is the best tool to reduce loss of life and property, as it nurtures safety in the community and it has positive outcomes. The valedictory function was presided over by Mr Pandurang K Pole, Divisional Commissioner, Kashmir.

### Karnataka

Organised International Conference on the theme 'Recent Trends in Science & Technology' during July 8-9 2021 in association with ATME College of Engineering, Mysuru. Er Narendra Singh, President, IEI graced the function as Chief Guest and addressed the audience. Dr A S Deshpande, Registrar, Visvesvaraya Technological University, Belagavi was the Guest of Honour during the event. Keynote Speakers on the occasion were Prof H P Khincha, Former Vice Chancellor, Visvesvaraya Technological University, Belagavi and Dr Mohd Helmy ABD Wahab, University Tun Hussein Onn, Malaysia.

### Kerala

Observed World Telecommunication and Information Society Day jointly with the Institution of Electronics and Telecommunication Engineers (IETE), Thiruvananthapuram Centre, on 17 May 2021 through online platform.

Panelist, Dr Ashraff S, Dean, R&D, Digital University in Kerala, deliberated lecture on the theme. Prof Radhakrishnan Nair, Immediate Past Chairman, IETE, Thiruvananthapuram Centre in his address opined in the present technology driven world, the digital transformation has immense potential to bring revolutionary changes in the quality of life.

### Maharashtra

Organised webinar on 31 July 2021 on the topic 'Equipment Reliability and Failure Analysis for Mechanical Engineering Professionals'. Keynote Speaker of the day, Mr G K Sadekar, Former Vice President, Larsen & Toubro Limited deliberated lecture on the said topic and explained different aspects of Reliability of Equipment and Systems in terms of design and engineering, manufacturing, operation and maintenance of plant and equipment. He discussed on different modes of mechanical failure, systematic failure analysis, determination of failure mechanism, development of corrective actions etc.

### Punjab & Chandigarh

Organized technical webinar on 17 April, 2021 on the topic 'Leveraging by Engineers of Sustainable Development Goals (SDG) with the purpose to redefine the role of engineers in and Post COVID -19' times. On the occasion, expert lecture was delivered by Prof (Dr) Priyavrat Thareja, Former Principal Programme Coordinator (TQEM) & Head, Metallurgical Engineering Department, Punjab Engineering College, Chandigarh on the topic and discussed on the Sustainable Development Goals duly proposed by the United Nations General Assembly in 2015 with a mission 'to achieve a better and more sustainable future for all' by the year 2030.

Organised webinar on 'COVID 19 – A Scientific Perspective' on 26 June 2021. On the occasion, Chief Guest, Prof (Dr) T S Kamal, Council Member, IEI and Guest of Honour, Mr R R Tanwar, Council Member, IEI presented their motivational views. Panellists, Dr Rakesh Kumar, Assistant Professor, School of Biotechnology, Shri Mata Vaishno Devi University, Katra, J&K ; Dr (Ms) Vineeta Tanwar, Research Scientist, Ohio State University, USA; Dr (Ms) Jaspreet Sachdeva, Clinical Scientific Expert, Novartis Healthcare Private Limited, Hyderabad; Dr Farhan, Assistant Professor, College of Health & Life Sciences, Hamad Bin Khalifa University (HBKU), Doha, Qatar and Dr Azaz Bhat, Research Scientist, Sidra Medicine, Doha, Qatar deliberated lecture on the topic.

### Telangana

In association with Hyderabad Clean Air Network organized National Technology Day on the topic 'Information for Students' on 11 May 2021 through online mode. Dr G H S Prasad, Ex-Chairperson, FMS, National Institute of Fashion Technology, Ministry of Textiles, Government of India graced the occasion as Chief Guest and lectured on the topic. Prof Murthy Tatavarthy, Associate Professor, Department of Fashion Technology, National Institute of Fashion Technology graced the occasion as Guest of Honour.

Celebrated 219<sup>th</sup> Birthday of General Sir Arthur Thomas Cotton on 15 May 2021 through online platform. Dr K Hemachandra Reddy, Chairman, Andhra Pradesh State Council of Higher Education & Chairman, Andhra Pradesh State Centre, IEI graced the function as Chief Guest. Prof Reddy remembered the contributions of General Sir Arthur Thomas Cotton in irrigation projects.

Organized World Telecommunication & Information Society Day on the topic 'Accelerating Digital Transformation in Challenging Times' on 17 May 2021 through online mode. During the technical session, eminent experts presented their technical papers. Dr Surendra Pal, Space Communication Technologist and Expert, Global Navigation Satellite System (GNSS) presented paper on 'India and it's GNSS Paradigm, A Step Towards Self Sustain (ATMANIRBHARATA)' and explained the significance of navigation and communication; Dr K Suneetha Reddy, Consultant Forensic Psychiatrist deliberated on 'Digitalization in COVID Era' and Dr K M M Rao, Chair, Life Member Affinity Group, IEEE, Hyderabad and Secretary & Deputy Director



(Retd), National Remote Sensing Centre, ISRO presented paper on 'Future of Healthcare, Challenges and Advance in ICT' and elaborated on different advancements in health care sector.

Organized inaugural function of a workshop on 'Geometric Dimensioning & Tolerancing' on 6 June 2021 through online mode. Er Narendra Singh, President, IEI graced the occasion as Chief Guest and delivered the inaugural address. Mr B Srinivasulu, Trainer and Consultant, GD&T, stake-up analysis and ASME standards delivered lecture and explained the fundamentals of geometrical tolerance.

Organised webinar in association with Department of Mechanical Engineering, Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad on the topic 'Smart Manufacturing: Connected Factories' on 17 June 2021. Dr G C M Reddy, Professor of Mechanical Engineering, CBIT, Hyderabad & Former Principal; Dr Srini Perla, Global Head, Technical Training, CYIENT, Hyderabad and Mr Suraj Vaishnav, Senior Application Engineer, India Soft Technology Private Limited, Pune delivered presentations. Dr S Satyanarayana, Immediate Past Chairman of Telangana State Centre, IEI graced the function as Session Chair. Prof. G P S Varma, Principal, CBIT; Dr P V R Ravindra Reddy, Prof & HoD, Mechanical Engineering Department, CBIT; Past Presidents of IEI; Past Chairmen of the State Centre and Council Members also present in the event.

Organized Er G V Subba Rao 5<sup>th</sup> Endowment Lecture on the topic 'Storm Water Draining System in GHMC' on 19 June 2021 through online mode. Mr C N Raghu Prasad, Joint Secretary to the Governor of Telangana graced the occasion as Chief Guest and stated that the urban flooding is one of the most frequently occurring phenomena in the world and almost every city are vulnerable to flooding in one way or other. He further opined that the surface runoff has to be reduced to prevent flooding.

Organized Er T Hanumantha Rao Fourth Endowment Lecture on 'Implementation of Decision Support Systems for Effective Management of Irrigation Projects: Successful Case Studies in India and World' on 21 June 2021 through online mode. Prof Sharad Kumar Jain, Former Director, National Institute of Hydrology, Roorkee graced the occasion as Chief Guest and in his address explained the success stories of Real Time Decision Support Systems in Bhakra Beas Management Board, Nile River Basin and Danube River Basin. Earlier, Dr Mohammed Hussain, Professor, Department of Civil Engineering, Gokaraju Rangaraju Institute of Engineering & Technology, Hyderabad presented briefly the Life and Achievements of Late Er T Hanumantha Rao.

Organized webinar on the topic 'Technological Advances & Applications in 5G' on 22 July 2021. Prof C Murali, Former Vice President, IETE, New Delhi deliberated on '5G and Beyond'; Brigadier Dr V D Abraham, Former Vice Chancellor, Shri Venkateswara University, Uttar Pradesh lectured on 'Mobile and Wireless Communication Enabler', Prof G Radhakrishna, Joint Honorary Secretary, Telangana State Centre, IEI deliberated lecture on '5G Super Technology' and Mr B Brahma Reddy, Chairman of the State Centre, IEI on '5G Wave: Future of India's Fintech'. Earlier, Mr B Brahma Reddy, Council Member, IEI welcomed the virtual audience.

Organised webinar on the topic 'Role of E-vehicles in Preventing Air Pollution' on 25 July, 2021 in association with Hyderabad Clean Air Network. Two eminent experts presented lectures on this occasion. Mr D V Rama Krishna Kumar, Project Director, Telangana State Renewable Energy Development Corporation Limited (TSREDCO) explained about need for electric mobility and crude oil consumption. Mr Y Avinash Reddy, Managing Director, EnviroSMART explained about retrofitting process of converting existing ICE engine vehicle into electric vehicles.

Organised webinar on Er A P Ranganatha Swamy 24<sup>th</sup> Endowment Lecture on the topic 'Performance of Telangana in Realisation of the Allocation in Godavari Water' on 27 July 2021. Mr S Narasimha Rao, Chief Engineer (Retd), Inter State & Water Resources, Government of Telangana graced the occasion as Chief Guest and delivered lecture on the topic.

## Tripura

Celebrated '31<sup>st</sup> Foundation Day' of Tripura State Centre, IEI during 1-2 April, 2021. Prof (Dr) Swapan Bhaumik, Chairman, CATE, IEI discussed on 'IEI-Vision & Mission'. On the occasion, a seminar was organised jointly with Oil & Natural Gas Corporation Limited, Tripura Asset on the topic 'Energy Scenario'. Mr S R Kumar, IAS, Principal Secretary, Power Department, Government of Tripura & Chairman, Tripura State Electricity Corporation Limited (TSECL), Agartala inaugurated the programme by lightening of lamp. Mr Tarun Malik, Executive Director, Asset Manager, Oil and Natural Gas Corporation Limited, Tripura graced the occasion as Chief Guest. Mr Mahananda Debbarma, Advisor, Tripura State Centre, IEI graced the occasion as Guest of Honour. Mr Neeraj Lal, Chief General Manager (Production), Oil and Natural Gas Corporation Limited, Tripura and Mr Debabrata Sukladas, Joint Director, Tripura Renewable Energy Development agency (TREDA) delivered lecture during the session.

Computer Science and Electronics & Telecommunication Engineering Division of Tripura State Centre, IEI organized technical webinar on 24 April 2021. Speakers, Dr Suman Deb, Assistant Professor, Department of Computer Science & Engineering, NIT Agartala delivered lecture on the topic 'Simultaneous Localization and Mapping for Indoor Robot Control' and Mr Sunandan Dutta, PhD Scholar, HiSIM Research Center, Hiroshima University, Japan deliberated on the topic 'Advanced Motion Control of Light-Weight Robots'.

Chemical Engineering Division of Tripura State Centre, IEI organized webinar on 24 April 2021. On the occasion, Mr Arnab Roy, Department of Chemical Engineering, NIT Agartala delivered lecture on 'Comparative Study of Activated Carbon Derived from Various Organic Sources' and Mr Biswajit Sarkar, Department of Chemical & Polymer Engineering, Tripura University delivered on 'Carbons for Soil Amendment'.

Civil Engineering Division of Tripura State Centre, IEI organized webinar on 25 April 2021. Dr Rajib Saha, Associate Professor, Department of Civil Engineering, NIT Agartala delivered the Keynote speech. Dr Malay Kumar Deb, Int PE (I) and Director, Civil Engineering Consultancy Services Private Limited deliberated on the topic 'Pile Load Tests, Issues and Concerns' and Mr Diptesh Chanda, PhD Scholar, Civil Engineering Department, NIT Agartala on 'Foundations for High Rise Superstructures'.

Mechanical & Production Engineering Division of Tripura State Centre, IEI organized webinar on 2 May 2021. On the occasion, Mr Sukanta Das, Assistant Professor, Mechanical Engineering Department, Tripura Institute of Technology delivered his presentation on the topic 'Performance Study of an Inclined Bubbling Fluidized Bed Dryer during Cashew Nut Drying' and Mr Abhiman Debnath, PhD Scholar, Department of Production Engineering, NIT Agartala on the topic 'Multi Criteria Decision Making – A Case Study'.

Electrical Engineering Division of Tripura State Centre, IEI organized webinar on 15 May 2021. On the occasion, Dr Debashish Bhowmik, Assistant Professor, Electrical Engineering Department, Tripura Institute of Technology delivered lecture on the topic 'Power System Economics including Power Market' and Mr Arnab Pal, PhD Scholar, Department of Electrical Engineering, NIT Agartala on 'Placement of Electric Vehicle Charging Station in Distribution Network'.

Computer Science and Electronics & Telecommunication Engineering Division of Tripura State Centre, IEI organized a webinar on 6 June 2021. Dr Subhrajyoti Deb, Assistant Professor, Information Technology Department, Anurag University, Hyderabad delivered lecture on the topic 'Research Paper Writing using Overleaf and Ms Mahua Chakraborty, Department of Electronics & Communication Engineering, Tripura University on 'Introduction of Machine Learning in Optical Fiber Communication System'. Prof (Dr) T S Kamal, Chairman, Electronics & Telecommunication Engineering Division Board, IEI was present during the function and addressed the audience.

Chemical Engineering Division of Tripura State Centre, IEI organized webinar on 19 June 2021. Mr Harjeet Nath, Assistant Professor, Department of Chemical & Polymer Engineering, Tripura University delivered presentation on the topic 'An Overview of Current Air Pollution Scenario and Current Advancements in the Field of Renewable Energy Generation Techniques' and Mr Joydeep Das, PhD Scholar, Department of Chemical Engineering, National Institute of Technology Agartala on 'Depollution of Rubber Processing Industry Effluent using Moringa Oleifera and Pseudomonas sp. Bacteria : A Comparison Study'.

#### Uttar Pradesh

In association with the Indian Society of Agricultural Engineers, Lucknow Chapter organized webinar on 'Electrimate Source of Power for Small Farmers of India – Need and Perspective' on 4 July 2021. Chief Guest & Keynote Speaker of the event, Dr S P Singh, Principal Scientist (Farm Machinery & Power), ICAR-Indian Agricultural Research Institute, Pusa, New Delhi delivered lecture on the topic. In his inspiring talk, Dr Singh emphasized the significance of farm power for performing various farming operations in Indian agriculture and discussed the major sources of power available in the country for mobile and stationary farm operations. Mr V B Singh, Council Member, IEI was present in the event and shared his views. Prof (Dr) Bharat Raj Singh, Director General (Technical), SMS, Lucknow and Immediate Past Chairman, UP State Centre also spoke on the occasion and expressed his concern about increasing of CO<sub>2</sub> in the atmosphere.

Organized technical webinar on the topic 'Artificial Intelligence Application in Clinical Diagnosis' in association with Bharatiya Varishta Nagarik Samiti (Bhavana) on 11 July 2021. Chief Guest & Keynote Speaker of the programme, Prof M K Dutta, Director, Centre for Advanced Studies, Dr A P J Abdul Kalam Technical University (AKTU), Lucknow, in his address explained applications of Artificial Intelligence by means of mathematical algorithms to simulate human cognitive abilities and to address challenging healthcare concerns. On the occasion, Mr V B Singh, Council Member, IEI also shared his views.

#### West Bengal

Organized technical webinar on the topic 'Internet of Things (IoT): Evolution to Smartness' on 26 June 2021. Speaker of the session, Mr Prasun Nigam, Management Team Member and Co-speaker, Mr Ashiesh Shukla both from Sensorise Digital Services, Noida delivered lecture on the topic and explained basic facets of IoT and case studies in lucid form. The speakers explained the evolution path of IoT right from the inception of digital computer to the formation of network, growth of Internet and then to cloud and finally Internet of Things. The speakers also explained different aspects of Smart Factories, Smart Cities, Smart Grids, Smart Agriculture, Smart Healthcare etc. They explained that in Smart Factory, machines and processes are able to improve through automation, self-optimization and enhanced use of AI, Big Data Analytics, Cloud Computing and IIoT.

Organised webinar on 'Information & Communication Technology (ICT) in Agriculture' on 28 July 2021. On the occasion, Dr Nabarun Bhattacharyya, Director & Head, Centre for Development of Advanced Computing, Kolkata delivered lecture on the topic and explained basic facets of emerging technologies behind ICT like Internet of Things (IoT), Artificial Intelligence, Machine Learning, Big Data, Robotics, Nano Technology, Augmented Reality & Virtual Reality, Block Chain, RFID, Telecom Technology 5G and beyond and different used cases in the domain of Agriculture in lucid form. Dr Bhattacharya explained about indigenously developed Integrated Electronic Nose and Vision System, extensively applied in quality assurance of food products, Bio sensing System to detect pesticide in foods and vegetables and so on. The programme was started with the welcome address delivered by Mr Sugata Bandyopadhyay, Chairman, Electronics & Telecommunication Sub-committee, West Bengal State Centre, IEI. He spoke about the significance of ICT and its societal benefits and application in Agriculture and made introductory remark on the theme 'Information & Communication Technology in Agriculture'. Prof (Dr) Dhruvajyoti Chattopadhyay, Vice Chancellor, Sister Nivedita University inaugurated the webinar and delivered the inaugural address.

### LOCAL CENTRES

#### Aurangabad

Observed World Environment Day in association with Department of Chemical Engineering, Shri Guru Gobind Singhji Institute of Engineering & Technology, Nanded on 5 June 2021 and organised a webinar on the topic 'Solar Thermal Energy Storage System & Its Application'. On the occasion, Prof (Dr) Shailendra K Shukla, Founder Coordinator, Centre for Energy & Resources Development (CERD), IIT BHU & Coordinator of CST, UP Incubation Centre for Grass-Root Innovators at Mechanical Engineering Department, IIT BHU, Varanasi delivered lecture on the topic and explained Solar Thermal Storage (STS) as the accumulation of energy collected by a given solar field for its later use.

#### Bareilly

Organised All India Webinar during 24-25 June, 2021 in association with Rajshree Institute of Management & Technology, Bareilly, on the topic 'Climate Change Considerations in Water Resources Planning and Management'. On the occasion, Prof N K Samad, Professor in Geotechnical Engineering, Department of Civil Engineering, Indian Institute of Technology Roorkee; Dr Saket Agrawal, Dean, Rajshree Institute of Management and Technology, Bareilly; Dr Ashish Gupta, Department of Civil Engineering, Bundelkhand Institute of Engineering & Technology, Jhansi; Ms Tulika Agarwal, Academic Advisor, Rajshree Group of Institutions, Bareilly and Mr A K Jain, Bareilly Local Centre, IEI delivered lectures on the topic. The Proceedings of the session was summed up by Dr Chhavi Sharma, Assistant Professor, MUJR University, Bareilly.

#### Bhilai

Organized webinar on 25 June 2021 on the topic 'Challenges Faced by Industries during COVID'. Speaker, Mr B P Yadav, General Manager, SAIL Refractory Unit, Bhilai delivered lecture on the topic.

#### Bokaro Steel City

Organized lecture meeting on 27 March 2021 on the topic 'Radar Based OIS & MIS System Operation (Lotus Wireless) in Coke Ovens Bokaro Steel Plant. Mr S K Pradhan, Assistant General Manager (Electrical) of Coke Oven & Bye Product Plant of Bokaro Steel Plant delivered lecture on the topic.

Organized technical webinar on 27 June 2021 on the topic 'Case Study of Sewerage Treatment Plant (STP) at Bokaro Steel City, BSL/SAIL'. Mr N P Srivastava, General Manager (Environment), SAIL, Bokaro Steel Plant, spoke on various aspects of sewerage and sewerage treatment plants using new technologies. Mr Pankaj Kumar, AGM (Project), SAIL, Bokaro Steel Plant, during his deliberation, mentioned the back ground of the existing system of sewerage treatment plant at Bokaro Steel Plant and its township.

Organized lecture meeting through webinar on the topic 'Covid-19 Management in SAIL, Bokaro Steel Plant and its Hospital' held on 30 June 2021. Chief Guest, Mr N P Srivastava, General Manager (Environment), SAIL, Bokaro Steel Plant stated that enhanced awareness programme coupled with strict adherence of Government protocols helped a lot to restrict spread of Covid-19 inside the plant. Speaker of the event, Dr B B Lal, Ex-Joint Director, Bokaro General Hospital delivered his presentation on the topic and covered all aspects of Covid-19 pandemic. Mr Nitesh Ranjan, AGM (ECD), SAIL, Bokaro Steel Plant presented paper on 'Covid-19 Management in SAIL, Bokaro Steel Plant'.

Organised technical paper presentation through online mode on 30 July 2021 on the topic 'Controllers in Automation Industry'. During the session, Mr Harihar Rout, Deputy General Manager (ETL), SAIL, Bokaro Steel Plant presented paper on the topic and explained in detail the definition and history of programmable logic controller (PLC) and explained on system architecture. In his lecture, he also explained the basics of PLC, software selection criterion, power supply modules, CPU-LED indicators, to name a few.

Bokaro Steel City Local Centre, IEL organised a paper presentation on 17 August 2021. On the occasion, Mr Manoj Kumar, SAIL, Bokaro Steel Plant presented technical paper on the topic 'Start-ups and Engineers' and discussed at a length about start ups as career, commitment towards start ups etc.

### Coimbatore

Organised technical webinar in association with Department of Civil Engineering, Kumaraguru College of Technology, Coimbatore on 18 June 2021. Chief Guest of the event, Mr Denzil Daniel, Junior Research Fellow, Centre for Excellence in Disaster Mitigation and Management, Indian Institute of Technology Roorkee delivered lecture on the topic 'Vulnerability of Springs: The Challenge of Multiple Stressors in the Context of Water Security and Springshed Management in the Himalayas'.

Organised technical webinar on 24 June, 2021 in association with Department of Mechanical Engineering, Dr N G P Institute of Technology, Coimbatore. Chief Guest, on the occasion, Dr N Kulasekharan, Simulation Technical Manager, VALEO India Private Limited, Chennai delivered lecture on the topic 'Opportunities and Challenges in Electric Vehicles' and shared his views and expertise with the august audience.

Organised technical webinar on the topic 'Observational Network and Weather Services by India Meteorological Department' on 9 July, 2021 in association with Centre for Research and Development, KPR Institute of Engineering and Technology, Coimbatore. On the occasion, Dr B Amudha, Scientist E, Aerodrome Meteorological Office, India Meteorological Department, Chennai was the Chief Guest and delivered lecture on the said topic. On the occasion, Dr Thangaraj, Professor and Head, Centre for Research and Development, KPR Institute of Engineering and Technology, Coimbatore and Lt Dr A K Priya, Associate Professor, Department of Civil Engineering, KPR Institute of Engineering and Technology, Coimbatore addressed the audience.

Organised technical webinar on the topic 'IoT Products, Benefits and Challenges in IT Industry' on 16 July, 2021 in association with the Department of Information Technology, Hindusthan College of Engineering and Technology, Coimbatore. Chief Guest of the event, Mr R V Vinay, Senior Project Manager, Robert Bosch Engineering and Business Solutions India Private Limited, Bangalore delivered lecture on the said topic. Dr I Jesmine Selvakumari Jeya, Associate Professor and Head, Department of Information Technology, Hindusthan College of Engineering and Technology, Coimbatore and Dr B Gomathi, Associate Professor, Department of Information Technology, Hindusthan College of Engineering and Technology, Coimbatore were also present on the occasion and addressed the audience.

Organised Technical Webinar on the topic 'Smart Textiles for Sensing Applications' on 23 July, 2021, in association with Department of Textile Technology, Kumaraguru College of Technology, Coimbatore. Chief Guest of the event, Dr Aravin Prince Periyasamy, Postdoctoral Researcher, Department of Bioproducts and Biosystems, Aalto University, Finland delivered lecture on the said topic.

In association with Department of Information Technology, Dr N G P Institute of Technology, Coimbatore organised webinar on 27 July 2021. Chief Guest of the event, Mr K R Deepak, Air Traffic Controller, Airports Authority of India, Coimbatore International Airport and Branch Secretary, Air Traffic Controller's Guild (India), Coimbatore Branch delivered lecture on the topic 'Introduction to Air Traffic Control and Career Prospects in Indian Aviation Sector'. During the lecture he focussed on the characteristics of Civil Aviation and the associated activities that take place in the Airport and also discussed about career prospects in Aviation Industry. Earlier, Dr P Sampath, Professor and Head, Department of Information Technology, Dr N G P Institute of Technology, Coimbatore introduced the Chief Guest. Dr S U Prabha, Principal, Dr N G P Institute of Technology, Coimbatore delivered lecture during the session.

Organised webinar on the topic 'Fine Tuning in Specific Energy Consumption of an Industry' on 31 July, 2021, in association with Department of Electrical and Electronics Engineering, Kumaraguru College of Technology, Coimbatore. Chief Guest, Mr M Rameshkumar, Consultant, Sri Energy Solutions, Dindigul delivered lecture on the said topic and principally focused on electrical load management. Dr K Malarvizhi, Professor & Head, Department of Electrical and Electronics Engineering, Kumaraguru College of Technology, Coimbatore also addressed the audience. Dr M Mohanraj, Associate Professor, Department of Electrical and Electronics Engineering, Kumaraguru College of Technology, Coimbatore introduced the Chief Guest.

### Durgapur

Observed World Environment Day on 5 June 2021 through virtual platform. Speaker, Dr Shibendu Shekhar Roy, Professor, Mechanical Engineering Department, National Institute of Technology Durgapur deliberated lecture on the theme 'Ecosystem Restoration' and talked about 'Ecosystem and Development of Oxygen Concentrator – The Need of the Day'. Prof Roy briefly elaborated the need of Oxygen for a better life, how our ecosystem fulfils such requirements, artificial way of Oxygen generation by use of technology, PSA Oxygen generation technology, development of portable low cost Oxygen concentrator, technology behind Oxygen concentrator and role of Oxygen generation to save the environment.

### Faridabad

Organized technical lecture on the topic 'Role of Mechanical Engineers in Meeting Oxygen Demand for COVID 19 Pandemic' on 7 August 2021 through online mode. On the occasion, Mr Sameer Kumar, Co-Founder, Oxyfit and Apex Ally and Mr Ravi Shanker Gupta, PCRA External Faculty deliberated lectures on the topic and highlighted the role of engineers to produce oxygen concentrators and oxygen plants in order to meet the demand on critical points. The session was moderated by Mr Ankur Mittal, Group Manager & Program Leader, Energy Management, National Council for Cement and Building, Faridabad. The moderator in his address stated that the objective of the webinar is to make aware about Industry 4.0 standards, remote monitoring, operation and cost effective supply of the medical oxygen.

### Gorakhpur

Organized webinar on the topic 'Skill Development and Employability in Construction Sector: Prerequisite of Atmanirbhar Bharat' on 30 May 2021. Mr Pawan Kumar Mishra, Additional Director, Construction Industry Development Council Established by the Planning Commission, Government of India was the speaker of the day. Mr Mishra in his speech, stressed on changing the strategic narrative of India from survival to strength and development of workforce with skill reorientation.

Organized technical webinar on the topic 'Artificial Intelligence & Machine Learning' on 4 July 2021. Mr Rajesh Kumar Trivedi, Chairman, Uttar Pradesh State Centre, IEL graced the occasion and addressed the august audience. Speaker, Dr Sachi Mall, Associate Professor & Head, Department of Computer Science & Engineering, Institute of Technology & Management, GIDA, Gorakhpur deliberated lecture on the topic and mentioned that Artificial Intelligence (AI) is a broad branch of Computer Science, aims to create systems that can function intelligently and independently like human being and the intelligent processes include learning, reasoning and self-correction. Specific AI applications include machine vision, speech recognition and expert systems; Deep Neural Network and Machine Learning are the components that make machines work intelligently; Machine Learning, a subset of Artificial Intelligence, refers to systems that can learn by themselves; the speaker added.

Organized technical webinar on the topic 'Environmental Impact of Electronic Waste and Its Management' on 11 July 2021. Mr V B Singh, Council Member, IEL and Mr Vinay Kumar Shukla, Past Honorary Secretary, Gwalior Local Centre graced the occasion. Prof (Dr) Bharat Raj Singh, Director General (Technical), School of Management Sciences, Lucknow and Immediate Past Chairman, UP State Centre deliberated lecture on the topic and discussed on e-waste and refurbishment or recycling of the same.

Organised technical webinar on 14 August 2021 on the topic 'Concepts, Applications & Key Challenges in Control Technology'. Speaker of the session, Dr Awadhesh Kumar, Assistant Professor, Department of Electrical Engineering, Madan Mohan Malaviya University of Technology (MMUT), Gorakhpur delivered lecture on the topic and discussed on the concept of control systems, its design, formulation of algorithm, diversified applications, which include high-performance aircrafts, industrial process plants, planetary rovers, communication networks etc.

#### **Jamshedpur**

Organised technical webinar on 8 April 2021 on the topic 'Sustainable Development in Industrial Engineering – A Case Study of C Blast Furnace Gimbal Charging System'. On the occasion, Mr T Thirumurugan, Principal Technologist, SSTG, Tata Steel Limited delivered lecture on the topic and shared his knowledge, expertise and experience about Gimbal Top charging system. He also mentioned the advantages and challenges of this new system of charging furnaces.

Organised technical webinar on 17 June 2021 on the topic 'Metallurgical Investigation of Ultrasonic Test Failed Axle'. On the occasion, Mr Laxmidhar Senth, Foreman, LD#2 & Slab Cluster, Tata Steel Limited, Jamshedpur spoke on the theme and shared his knowledge, expertise and experience and recommends few measures to minimize the defects and reduce rejections.

#### **Kanpur**

Jointly with The Institution of Electronics and Telecommunication Engineers, Kanpur Centre, IEEE, Uttar Pradesh Section, Med Tech, Indian Institute of Technology, Kanpur and Incubation Hub, Harcourt Butler Technical University, Kanpur was organized a technical webinar on 9 July 2021 on the topic 'AR/VR/XR – Future of Visualization'. Mr Kumar Mridul, Founder and CEO, Ghost Vision Private Limited was the Guest Speaker on this occasion. He delivered lecture on the topic and mentioned Augmented Reality as the most advanced visualization technique.

#### **Kanyakumari**

Conducted technical webinar on the topic 'Sustainable Manufacturing' on 20 June 2021 through virtual platform. Keynote speaker of the event, Dr A S S Balan, Assistant Professor, Department of Mechanical Engineering, NITK Surathkal delivered on fourth Industrial Revolution, Cyber Physical Systems and different aspects of cryogenic manufacturing.

Organized technical webinar on the topic 'Global Future Transportation Technologies' on 31 July 2021. Keynote speaker on the occasion, Mr A Megalingam, Research Scholar, University Malaysia Pahang delivered lecture on the topic and highlighted the pertinent issues of future transportation technologies being developed by various countries.

Organized technical webinar on the topic 'Recent Trends in Power Electronics' on 4 August, 2021. Speaker of the session, Dr Dishore Shanmugham Vanaja, Professor and Head, Department of Electrical and Electronics Engineering, Rajadhani Institute of Engineering and Technology, Attingal, Kerala delivered lecture on the topic.

Organised one day workshop on 31 August 2021 on the topic 'Application of MATLAB in Civil Engineering' in association with Amrita College of Engineering and Technology, Erachakulam through online platform. On the occasion, Ms S B Aiswerya, Assistant Professor, Department of Electronics and Communication Engineering, Amrita College of Engineering and Technology delivered lecture on introduction to MATLAB Environment and Installation of MATLAB. Ms. R Ramya, Assistant Professor, Department of Electrical and Electronics Engineering, Amrita College of Engineering and Technology delivered lecture on Basic MATLAB Commands, Syntax, Operations and Decision Making. Mr S Suresh, Assistant Professor, Department of Computer Science and Engineering, Amrita College of Engineering and Technology delivered lecture on the topic 'Design of Beams' and delivered on IS 456:2000 Code of Practice and Hands on training in MATLAB for Design under Reinforced Beam. Mr D Akhil Varma,

Assistant Professor, Department of Computer Science and Engineering, Amrita College of Engineering and Technology delivered lecture on 'Design of Columns' and explained IS 456:2000 code of practice and hands on training in MATLAB for Design of Columns.

#### **Kanchepuram**

Observed World Environment Day on 5 June 2021. Dr N Raja Rajeswari, Professor & Associate Dean, Saveetha Engineering College (SEC), was the Chief Guest of the session. On the occasion, Dr M Velan, Council Member, IEI delivered Keynote address on the topic 'Restoration of Water bodies'.

#### **Kattankulathur**

In association with Department of Aerospace Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai organised technical webinar on 21 November, 2020 on the topic 'Liquid Propulsion Systems'. Keynote Speaker, Mr Girish Utage, Lead Propulsion Engineer, Space Machines Company delivered lecture on the topic and highlighted about the latest developments in liquid propulsion systems.

In association with Department of Aerospace Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai organised technical webinar on 24 November, 2020 on the topic 'Patent and its Importance in Research'. Keynote Speaker of the event, Mrs. Preethi Narayanan, Patent Consultant delivered lecture on the topic and explained about the patent filing and its importance in research.

In association with Department of Aerospace Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai organised technical webinar on 26 November, 2020 on the topic 'Miniaturization of Satellites and Green Propellants'. Keynote speaker, Ms. Krishti Das, System Engineer for Propulsion Systems, Bradford Space, Netherlands delivered lecture on the topic and explained about the satellites and green propellants in Space Propulsion Systems.

In association with Department of Aerospace Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai organised a technical webinar on 28 November 2020 on the topic 'Moon to Mars, Future of Space Exploration'. Keynote Speaker, Ms Janet Ivey, President of Explore Mars, CEO of Janet's Planet, Cosmic Educator, STEM Evangelist delivered lecture on the topic and explained about space exploration of Moon to Mars.

#### **Kharagpur**

Organized webinar on 5 June 2021 on the topic 'Reclamation of Degraded Land of Metallurgical Industry - Case Study of Bhushan Steel Plant, Odisha'. On the occasion, Mr Padmanav Mahakud, Chief Manager, Horticulture, Tata Steel BSL Limited, Odisha delivered lecture on the topic and discussed on formation of slags and its disposal, which results land degradation and converted the lands as derelict. The solid wastes in these derelict lands results air pollution, water pollution, aesthetic pollution and land degradation; Revegetation in these derelict lands provides not only a practical solution to all these problems, it will also lead to ecological restoration, he added.

#### **Madurai**

Organised webinar on the topic 'Entrepreneurship Opportunity in Agriculture' on 19 July 2021 in association with Small Industries Product Promotion Organisation, Madurai. Chief Guest, Mr P Sivakumar, CEO, Madurai Agri Business Incubation Forum (MABIF), Agriculture College Campus, Madurai delivered lecture on the topic and mentioned the scope and functioning of NABARD and Tamil Nadu Agricultural University (TNAU). Earlier, Mr P Rajamani, Council Member, IEI delivered welcome address and thanked the Chief Guest.

Celebrated its 41<sup>st</sup> Anniversary and arranged a lecture meeting on 19 July 2021 through online platform. Chief Guest of the event, Dr M Palaninatharaja, Principal (In-charge), Thiagarajar College of Engineering, Madurai delivered lecture on the theme 'Empowering the Engineering Students as Professional in the Context of NEP 2020'. Earlier, Mr P Rajamani, Council Member, IEI

delivered the welcome address. On the occasion, Mr Sathappan, Founder Honorary Secretary of Madurai Local Centre, Mr R Ramdoss, Chairman & Mr S Kannan, Honorary Secretary, Tamilnadu State Centre, IEI and many Council Members greeted the Madurai Local Centre.

### **Nagpur**

Observed World Environment Day on 5 June 2021 on virtual platform. Chief Guest of the session, Dr C B S Sengar, Advisor – Environment, Bhushan Power & Steel Limited delivered Keynote address on 'Greening the Mind, Healing the Mother Earth' in line with the theme of the day, 'Ecosystem Restoration'. In his presentation, he elaborated importance of ecosystem, types of ecosystem and various measures to be taken by individual as well as organisations. Dr H O Thakare, Council Member, IEI summed up the proceedings of the session.

### **Palghat**

Organised webinar on the topic 'Is Quantum Computing poised to Spur Breakthroughs in Science and Technology or is it mere a Hype' on 14 July 2021. Speaker, Mr K Madhana Mohan, IRSEE, Deputy Chief Electrical Engineer (Retired), Indian Railways deliberated lecture on the topic. During his lecture, Mr Mohan mentioned that World Quantum Computing harnesses the phenomena of quantum mechanics to deliver a huge leap in computational power to solve complex problems that today's most powerful super computers cannot solve and never will be in future.

### **Pantnagar**

Observed World Environment Day on 5 June 2021 via online mode. On the occasion, Dr Sandeep Gupta, Assistant Professor, Department of Civil Engineering, College of Technology, Pantnagar shared his experience regarding the present situation of shapeless nature and environmental imbalance. He emphasized on nature based nutrition for a better life style and nourishment all over. Dr P V Singh, Junior Research Officer, Department of Soil & Water Conservation Engineering, College of Technology, Pantnagar categorically mentioned about the importance of clean natural environment. Dr P K Singh, Professor, Department of Irrigation & Drainage Engineering, College of Technology, Pantnagar also spoke on the occasion.

Started 'The Saturday Talk Series' via online mode on and from 26 June 2021. The first talk of the Series was 'From Brain to Systems: Foundation of AI', delivered by Dr Sanjay Mathur, Chairman, Pantnagar Local Centre, IEI. In his address, he explained about the connections between Brain Science and Artificial Intelligence.

### **Ramagundam**

Observed World Environment Day on 5 June 2021. Guest of Honours of the session were Dr R Markandeya, Principal, JNTUH College of Engineering, Manthani and Dr M S Venkatramayya, Professor, Mining Engineering Department, Malla Reddy Engineering College (Autonomous). Speaker of the day, Dr N Darga Kumar, Head, Civil Engineering Department, JNTUH College of Engineering, Manthani deliberated lecture on the theme 'Ecosystem Restoration of Coal Mine Degraded Lands'.

Organised webinar on 20 June 2021 on the topic 'Conservation of Biodiversity'.

### **Rourkela**

Observed World Telecommunication and Information Society Day on 17 May 2021 through online mode. Speaker of the day, Dr Ratnakar Dash, Department of Computer Science and Engineering, National Institute of Technology Rourkela delivered lecture on the theme of the day 'Accelerating Digital Transformation in Challenging Times' and mentioned that during COVID crisis, Information & Communication Technologies played a crucial role. He further opined that the role of Digital Transformation is to deliver an efficient, accountable, transparent and auditable output for the benefit of all.

### **Tiruchirappalli**

In association with The Indian Institute of Metals, Tiruchirappalli Chapter, Computer Society of India, Tiruchirappalli Chapter, Indian Institute of Welding, Tiruchirappalli Branch and Indian Welding Society, Southern Zone organized lecture on the topic 'Advanced Welding Simulators' on 21 May 2021 through virtual platform. On the occasion, Mr Adrian Macias Lopez, International Sales, Seabery, Spain; Mr Harshal Patil and Mr Nilesh Jogi delivered lecture with practical demonstrations on Augmented Reality training in welding.

Organised lecture meeting on 25 May 2021 through virtual mode. Dr S Anand, Professor, Department of Electronics and Communication Engineering, Mepco Schlenk Engineering College, Sivakasi, Tamil Nadu delivered lecture on 'Recent Technology in Microstrip Antenna Design – Substrate Integrated Waveguide (SIW) and Metamaterial Antennas' and expressed his views on Micro strip antennas, substrate integrated waveguide, Metamaterial antennas etc.

Organized lecture meeting on 6 July 2021 through online mode. Dr J Santosh, Director, Centre for Climate Change, Periyar Maniammai Institute of Science and Technology, Vallam, Tanjore delivered lecture on the topic 'Fundamentals and Practices in Biomethanation Technology'. During deliberation, he explained that the Biomethanation Technology refers to the production of a combustible gas and a value added fertilizer by anaerobic fermentation of organic materials under certain controlled condition of temperature, pH, C/N ratio, etc. It provides a better and cheaper fuel for cooking, lighting and for power generation, he added.

Organized lecture meeting on 20 July 2021 through online platform. On the occasion, Lt. Dr A K Priya, Associate Professor, Department of Civil Engineering, KPR Institute of Engineering & Technology, Coimbatore delivered lecture on the topic 'Bioremediation : Environmental Cleanup Process'. As part of the presentation, she mentioned that the Environmental pollution has been rising in the past few decades due to increased anthropogenic activities. Bioremediation is an attractive and successful cleaning technique to remove toxic waste from polluted environment, which is highly involved in degradation, eradication, immobilization or detoxification of diverse chemical wastes and physical hazardous materials from the surrounding through the all-inclusive and action of microorganisms, the speaker added further.

Organised Lecture Meeting through virtual mode on the topic 'IoT for Smart City Application' on 10 August, 2021 jointly with Computer Society of India, Tiruchirappalli Chapter, Indian Institute of Welding, Tiruchirappalli Branch, Indian Institute of Metals, Tiruchirappalli Chapter and Indian Welding Society, Southern Zone. Speaker, Dr Gulshan Taj, Associate Professor, Department of Civil Engineering, M/s Sona College of Engineering and Technology, Salem, Tamil Nadu delivered lecture on the said topic. and discussed on application of IoT to prevent environmental deterioration, reduce sanitation problems, mitigate traffic congestion and thwart urban crime.

### **Tirunelveli**

Organized technical seminar on 'Evolution of Cloud Computing – A Technical Approach' on 1 July 2021 via online platform. Speaker, Mr Prajval J, System Management Specialist, IBM India Limited, Bangalore delivered lecture on the topic.

Organized technical seminar on 'Eye Opening to Full-Stack Development' on 8 July 2021 via online platform. Speaker, Mr T Andrew Rayan, Senior Developer, Centizen Inc, Tirunilveli delivered lecture on the topic and discussed on different aspects of Java Web Developer, building end-to-end applications, data storage using MongoDB etc.

Organized technical seminar on 'Composites Penetration in Engineering Applications' via online platform on 15 July, 2021. Speaker, Prof G Manikandaraja, Assistant Professor, Department of Mechanical Engineering, AAA College of Engineering and Technology, Sivakasi, Tamilnadu delivered lecture on the topic, discussed on different composite matrix materials and

also explained the application in corrosive environments such as chemical processing plants, pulp and paper converting, oil and gas refineries and water treatment facilities.

Organized technical seminar on 'Virtualization vs. Containerization with Docker – An Overview' on 23 July 2021 through online platform. Speaker, Prof (Ms) K Vidhya, Assistant Professor, Department of Computer Science and Engineering, KPR Institute of Engineering and Technology, Coimbatore deliberated lecture on the topic. During lecture, she explained that virtualization enables to run multiple operating systems on the hardware of single physical server, while containerization enables to deploy multiple applications using the same operating system on a single virtual machine.

Organized technical seminar on 30 July 2021 through online platform on the topic 'Machine Learning Fundamentals'. Speaker, Dr N Vijaya, Associate Professor, Department of Computer Science and Engineering, K Ramakrishnan College of Technology, Trichy, Tamilnadu deliberated lecture on the topic.

Organized technical seminar on 'Software defined Networks' on 13 August 2021 through online mode. Dr T Vigneswari, Professor, Department of Information Technology, Sri Manakula Vinayagar Engineering College, Pondicherry delivered lecture on the topic and opined that Software defined Networks will help the companies to enable virtualization of their networking infrastructure.

Organized technical seminar on 'Smart Manufacturing' through online platform on 6 August 2021. Prof Subbaiah S, Department of Mechanical Engineering, Kumaraguru College of Technology, Coimbatore deliberated lecture on the said topic and explained the process that employs computer controls, modelling, big data and other automation to improve manufacturing efficiency. He further discussed on transformation of traditional manufacturing to smart factory.

#### Trichur

Organised technical meeting on 24 July 2021 through virtual mode. Speaker, Dr Finto Raphael, Associate Professor and Head of the Department, Department of Biomedical Engineering, Sahrdaya College of Engineering & Technology, Kodakara deliberated lecture and explained the involvement of Bio-medical engineers in the fight against COVID 19 pandemic. The speaker mentioned that Bio-medical Engineers have taken active role in build up

of treatment facilities, life support systems, disinfection facilities and bio-medical audit at major healthcare units.

#### Udaipur

Organized technical webinar on 3 July 2021 on the topic 'Current Trends in Underground Mining Industry 4.0' in association with Faculty of Engineering, Pacific University, Udaipur. Keynote speaker of the session, Mr Kishore Kumar, Director, Zawar SBU, Hindustan Zinc Limited, Vedanta Group, deliberated lecture on the topic and mentioned that earlier underground mining was considered to be less productive, unsafe, less advanced etc, while the latest advanced technology enables more productivity in a scientific manner. Moderator of the session, Mr Piyush Javeria, Director, Faculty of Engineering, Pacific University, Udaipur highlighted the importance of using the Industry 4.0 in the underground mining industry.

Organised technical webinar on the occasion of Rajasthan Energy Day on 19 July 2021 on the topic 'Smart Grid – Creating the Change in Electricity Distribution'. During the session, Panellists – Mr Sanjay Bhardwaj, CEO, Nexgen Consultancy Private Limited and Mr G K Parekh, Zonal Chief Engineer, Ajmer Vidhut Vitaran Nigam Limited, Udaipur deliberated lectures on the topic. Mr Bhardwaj in his lecture explained the function of smart meters to monitor the area wise distribution load. Mr Parekh in his address deliberated on the challenges to meet the consumer's demand, supply and management of electricity.

#### Varanasi

Organized 'Professor B B Bansal Memorial Lecture' via online platform on 19 April 2021. Speaker on the occasion, Mr Raghuvendra Kumar, General Manager, Jalkal Vibhag, Nagar Nigam, Varanasi deliberated lecture on the topic 'Potable Water Supply in Varanasi: Problems and Solutions'.

Organised technical webinar on 20 June 2021 on the topic 'Marine Transportation and its Development'. Mr K N Singh, CEO, Northstar Academy, Varanasi was the Keynote speaker of the lecture meeting. In his lecture, Mr Singh highlighted the importance of marine transportation, its infrastructural needs, current challenges as well as the international rules and regulations. He discussed the growth and development in coastal services and the contemplation on the port development on Ganges in Varanasi.

Organized technical paper meeting via online platform on 4 July 2021. Speaker of the event, Mr R R Yadava, ITS, Director, Department of Telecommunications, Government of India deliberated lecture on the topic 'National Security Aspects of Telecommunication'.

## World Habitat Day 2021

World Habitat Day is celebrated annually on the first Monday of October. The event focuses on the state of human settlements and the basic right to adequate shelter. It also aims to remind people that they are responsible for the habitat of future generations. World Habitat Day was established in 1985 by the UN General Assembly, and was first celebrated in 1986.

The theme for this year's World Habitat Day is **Accelerating Urban Action for a Carbon-free World**. Cities are responsible for some 70 percent of global carbon dioxide emissions with transport, buildings, energy, and waste management accounting for the bulk of urban greenhouse gas emissions. The future of our planet depends on national, regional and local governments and organizations, communities, academic institutions, the private sector and all relevant stakeholders working together to create sustainable, carbon-neutral, inclusive cities and towns.

World Habitat Day will amplify the global "Race to Zero" Campaign and UN-Habitat's "Climate Action 4 Cities" and encourage local governments to develop actionable zero-carbon plans in the run up to the international climate change summit COP26 in November. "Race to Zero" is a global campaign to rally leadership and support from businesses, cities, regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth. The objective is to build momentum around the shift to a decarbonised economy ahead of COP26, where governments must strengthen their contributions to the Paris Agreement. This will send governments a resounding signal that business, cities, regions and investors are united in meeting the Paris goals and creating a more inclusive and resilient economy.

A Concept Note on the theme Accelerating urban action for a carbon-free world is available at the following link:

<https://urbanoctober.unhabitat.org/sites/default/files/2021-09/concept-note-whd.pdf>



Monday 4 October, 2021



# Engineering Staff College of India

Autonomous Organ of The Institution of Engineers (India)  
(An ISO 9001: 2015 Certified Institution)  
Old Bombay Road, Gachi Bowli, Hyderabad – 500 032

## CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMMES (CPDPs) FOR THE MONTH OF OCTOBER 2021

Sl. No.	Name of the Course	Scheduled Dates
1.	Leadership and Teambuilding Skills for Organization Development	04 – 06 Oct, 21
2.	Analysis for Structural Leakages and Treatment Methods	04 – 06 Oct, 21
3.	Instrumentation and Seismic Analysis of Gravity Dams with Software Applications	04 – 08 Oct, 21
4.	Preparation of Estimation for Water Supply & Sewerage Projects.	05 – 07 Oct, 21
5.	Cyber Security Best Practices for Managers & Executives	04 – 08 Oct 21
6.	Project Management using MS Project 2019	04 – 08 Oct 21
7.	GEM Procurement Procedures – Gem Account operation from Basic to expertise (Buyer module)	04 – 08 Oct 21
8.	Total Quality Management	05 – 07 Oct, 21
9.	Materials Eco System & Post Processing Techniques in Additive Manufacturing	05 – 07 Oct, 21
10.	Open Access, Power Trading - ABT Scenario	05 – 08 Oct, 21
11.	Process, Technology and Application of Aerospace Materials	05 – 08 Oct, 21
12.	Preparation of Mining Plan, Environmental Impact Assessment & Environmental Management Plan, Project Report in Mining	06 – 08 Oct, 21
13.	Online Webinar on “ISO 37001 – Anti-Bribery Management System” (ABMS)	07 Oct, 21
14.	Smart City Solution and Environmental Aspects	19 – 20 Oct, 21
15.	Intellectual Property Rights (IPR) – Patent	19 – 21 Oct, 21
16.	Latest techniques in Control & Instrumentation in Power Plants and process industries applications	19 – 22 Oct, 21
17.	Risk Assessment & Safety Management Plan in Mining	20 – 22 Oct, 21
18.	Geospatial Applications in Water Resources	20 – 22 Oct, 21
19.	Online Webinar on “People Capability Maturity Model” (PCMM)	25 Oct, 21
20.	Glimpses on Development of UAVs for Various Applications	25 – 29 Oct, 21
21.	Corrosion Engineering, Emerging Technologies, castings and Advance Material	25 – 29 Oct, 21
22.	DevOps Tools and Practices for Software Development	25 – 29 Oct 21
23.	Web Development Using PHP & MY SQL	25 – 29 Oct 21
24.	Quality & Reliability Management	26 – 28 Oct, 21
25.	Operation & Maintenance of Distribution Transformers and Leading to Zero Breakdowns	26 – 28 Oct, 21
26.	E-Procurement, E-Tendering, EPC Contracts in Projects	26 – 28 Oct, 21
27.	Glimpses on Development of UAVs for Various Applications	26 – 29 Oct, 21

**For detail information please contact:**

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## Obituary

Mr G Prabhakar, Past President, IEI left for his heavenly abode on 10 September, 2021. Born in 15 April, 1944 in a family of freedom fighters at Warangal, Mr Prabhakar had maintained an outstanding scholastic record throughout his academic carrier. He exhibited exemplary talent not only in curricular activities, but also in the extracurricular events and bagged several State Level and National Level Awards. He obtained his Bachelor of Technology in Mechanical Engineering in the year 1975 from Jawaharlal Nehru Technological University Hyderabad. During his professional carrier, he was a Faculty Member in the State Technical Education Department for about 14 years. On selection by the State Service Commission, he had joined Irrigation and CAD Department, Government of Andhra Pradesh as Deputy Executive Engineer, holds several important positions in the Department and became Deputy Chief Engineer, Major Irrigation. He had the rare opportunity of serving as OSD in I&CAD Department, Government of AP to render advises to Administrators as well as Ministries to take decision on technical issues. As a Consultant, he oversaw the quality assurance of Irrigation Projects under implementation in the State. He had been appointed as one of the Members of the Steering Committee of the Planning Commission for the Twelfth Five Year Plan (2012 – 2017) on Higher and Technical Education.

Mr Prabhakar joined the State Centre Committee representing Mechanical Engineering Division and served Andhra Pradesh State Centre as Joint Honorary Secretary for four sessions and in the year 1994, unanimously elected as Honorary Secretary and served the Centre continuously for four years parallel to his important official assignment in the State Government. In the year 1998, he was unanimously elected as the Chairman of the Centre for two sessions. During his laudable service as Chairman, numbers of national and international technical activities were organized at Hyderabad including the 15<sup>th</sup> Indian Engineering Congress, where Hon'able Past president of India, Dr A P J Abdul Kalam delivered Memorial Lecture. He had been the Chairman/Member of various Committees of IEI, such as Committee for Advancement of Technology & Engineering (CATE), Regional Coordination Committee (RCC), Finance Committee (FC), Service Rules & Headquarters Management Committee (SHMC), Indian Member Committee of World Federation of Engineering Organizations (IMC-WFEO) to name a few. Mr G Prabhakar was the Vice President of the Institution for the session 2002-03. Mr Prabhakar had assumed Office as the President, IEI, at the Ninety-first Annual General Meeting of the Institution held at Kochi on December 16, 2010 for the 2010-2011 Session.



## President IEI inaugurated Engineers' Bhawan at Bareilly



Er Narendra Singh, President, IEI inaugurated the Engineers' Bhawan, Bareilly Local Centre at Bareilly on 13 September, 2021. A Curtain Raising Ceremony was organised in the august presence of Mr V B Singh, Council Member, IEI; Mr S C Goyal, Past Chairman, Uttarakhand State Centre; Mr Masarrat Noor Khan, Chairman Elect, Uttar Pradesh State Centre; dignitaries, eminent engineers and Corporate members in and around Bareilly. On the occasion, Mr K B Agarwal, Founder Chairman, Bareilly Local Centre and Mr Sudhir Kumar Gupta, Chairman, Bareilly Local Centre were felicitated and awarded by Er Narendra Singh, President, IEI with Certificate of Appreciation for 'Outstanding Contribution to the Infrastructural Development of the Centre'.

# I.E.I NEWS

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