



# I.E.I NEWS

October 2020

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A CENTURY OF SERVICE TO THE NATION

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## Observation of 53rd Engineers' Day

### Engineers for a Self-Reliant India

Uttarakhand State Centre of the Institution observed 53<sup>rd</sup> Engineers' Day on 15 September, 2020 on the theme **Engineers for a Self-Reliant India**. Mr Vishwa Mohan Joshi, Director, National Skill Development Forum, (NDRF) in his opening remarks explained the significance to celebrate the Engineers Day.



Mr N Ravi Shankar

Mr Aditya Kumar Dinkar, Chairman, Uttarakhand State Centre and Council Member, IEI delivered the welcome address and informed the audience regarding the Message received from Hon'ble Education Minister, Government of India. Maj Gen (Dr) S Bhattacharya, VSM (Retd), Secretary & Director General, IEI presented an overview of IEI through online platform. Mr Ranveer Singh Chauhan, Council Member, IEI presented the life sketch of Sir M Visvesvaraya. Mr N Ravi Shankar, IAS, Ex-Chief Secretary (UK) and Chancellor, DIT University, Dehradun in his address highlighted the achievements by Indian engineers and technologists, and stressed

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## Observation of Royal Charter Day

### Blockchain & it's Impact on Current Business Scenario

Uttarakhand State Centre of the Institution celebrated Royal Charter Day on 9 September, 2020 through organizing a Webinar on the theme **Blockchain & it's Impact on Current Business Scenario**. Mr Aditya Kumar Dinkar, Chairman, Uttarakhand State Centre and Council Member, IEI delivered the welcome address. Maj Gen (Dr) S Bhattacharya, VSM, (Retd), Secretary & Director General, IEI



Dr Sunil Rai

delivered the brief overview of the event. Er Narendra Singh, President, IEI, while delivered his Presidential Address, explained the significance of Incorporation of Royal Charter. The Guest of Honour during the function, Dr Sunil Rai, Vice Chancellor, University of Petroleum and Energy Studies (UPES), Dehradun in his speech explained Blockchain as a revolution in computer

technology and shared his views regarding advancement in computer hardware and software, application domain of data structure, autonomous systems, data efficiency and security in Blockchain and so on. Dr Rai explained the application of Bitcoins, Cryptocurrency and mentioned Blockchain as a secured data storage system. The speaker explained application of Blockchain in healthcare, banking and investments, education sector, manufacturing, supply chain etc and emphasized on building self reliance. Speaker during the session, Dr Amit Aggarwal, Director, APJ Abdul Kalam Institute

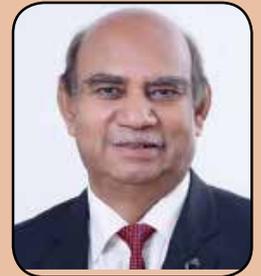


Dr Amit Aggarwal

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

Water is very essential for all living beings. Even though the major portion of earth is covered by water, there is severe shortage of drinking water in most of the countries across the world. Seawater covers 71% of the planet surface and represents 97% of the world's water. Desalination of sea water appears as a solution for this problem. Advanced desalination technologies that are applied to seawater and brackish water prove to be effective alternatives in a variety of situations. Desalination is a technique where the excess salts are removed from sea water or brackish water converting it into safe potable or usable water. Desalination methods are categorized into thermal processes and membrane processes.



In Thermal Water Desalination, Saline content is separated by evaporating seawater in distillation systems. A process known as Multiple Effect Distillation (MED) reuses the energy generated during vapour condensation, reducing the energy consumption required to heat the water. Membrane based Reverse Osmosis (RO) Desalination process has become a widely used solution to provide drinking water from seawater or brackish water. It is particularly suited in countries under water stress and with limited energy resources. Hybrid Water Desalination process, where thermal desalination and reverse osmosis are being combined, allows electricity use to be optimized and reduces production costs which are also being considered now.

Existing desalination plants use enormous quantities of energy and cause a number of environmental issues. Renewable energy options, mostly solar and geothermal systems, have been examined in detail to supply the energy needed for water desalination. The co-location benefit of energy derived from the ocean to power seawater desalination processes is appealing. However, the promise and potential of ocean-based power generation for desalination systems is being investigated in detail.

During the recently concluded IEI Technical Webinar on "Ocean Energy: Applications and Way Forward", experts have deliberated on the issue. The great potential of ocean energy for seawater desalination in terms of diverse energy forms, flexible integration methods and various deployment strategies can provide important environmental, water and social benefits for seawater desalination, thus promote sustainability in water-energy nexus. The use of ocean energy in desalination applications could benefit the future development of ocean energy technology in renewable energy sector. Utilisation of marine current energy converters (hydro-kinetic energy) for powering desalination plants is being experimented in many parts of the world now. Tides (generated by forces between the moon, sun and earth) are very predictable, and not too dependent on local weather conditions, and many ocean or river currents are continuously flowing, i.e., have a relatively low variability in

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## Inspection, Investigation, Repair & Rehabilitation of Urban Transport Structures

**West Bengal State Centre** of the Institution organized IEI Centenary Technical Webinar on the theme **Inspection, Investigation, Repair & Rehabilitation of Urban Transport Structures** on 26 September, 2020 under the aegis of Civil Engineering Division Board, IEI. Dr Nilanjan Sengupta, Director (Technical), The Institution of Engineers (India) delivered the welcome address. Moderator during the Session, Mr Moitrey Chatterjee, Advisor and Project Consultant & Registered Valuer, introduced the Panelists and initiated the Webinar Session.

Panelist during the Session, Mr Amitabha Ghoshal, Chief Advisor to the Board of Directors, STUP Consultants Private Limited & President, Consulting Engineers Association of India initiated his presentation by saying that maintenance of assets for structures of our urban transport systems is as important as the construction of the same and requires lot of innovative measures to do so. Because of limited financial resources in our country we are inclined to extract more than the maximum life out of a structure which often leads to risk of failure of the structure.



Mr Amitabha Ghoshal

Mr Ghoshal underlined the principal causes of deterioration, namely natural causes and man-made intervention. He opined that the principal causes of this deterioration are lack of systematic inspection / maintenance, inherent design deficiency, inappropriate use of surroundings, inadequate provision against earthquake / wind, accidents / blast, changes in design loading criteria, revision of codes and changes in service requirement. He further highlighted opening up of pre-stressing cones, that raise the possibility of corrosion of pre-stressing cables and

filling of expansion joints preventing movement of the structure with change of temperature. The speaker further mentioned rehabilitation as another important subject area, when during the process of repair it is required to maintain mobility of personnel and transport of materials. It is therefore important for assessment of inadequacies, selection of scheme and detailing of rehabilitation – all these need to be done judiciously with lot of care and innovative engineering, he added. Mr Ghoshal presented two case studies – one steel bridge (110 years old) & the other of concrete. Mr Ghoshal further enumerated that designers ought to keep in mind that all urban transport structures need maintenance and therefore appropriate access to all members/locations need to be kept in design itself. All structures also need to have maintenance protocol like Howrah Bridge, which has been periodically maintained that still stands strong even after 78 years of intense use.

Panelist during the Session, Mr Sundar Banerjee, Chairman & Managing Director, The Braithwaite Burn and Jessop (BBJ) Construction Company Limited, explained the importance of the theme, particularly in the context of old urban structures which have outlived its life resulting in deterioration of the structures due to increased heavy traffic than the designed parameters, poor maintenance, corrosion due to ingress of water & pollution impact. He emphasized the importance of identifying such structure through proper survey and locate historical data of these urban



Mr Sundar Banerjee

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## Engineers for Self Reliant India

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on the initiatives for new start ups and entrepreneurship. Er Narendra Singh, President, IEI graced the function with his august presence and addressed the audience.



Prof Ajit Kumar Chaturvedi

Prof Ajit Kumar Chaturvedi, Director, IIT Roorkee in his Keynote address stressed on bridging the gap between transforming the engineering knowledge for mankind, growth and development of society and thereby strengthening and inculcating the importance of entrepreneurship, which in turn enhance the managerial skills of engineers, initiate more start ups, generate employment and facilitate delivery of best output for the society, that leads to the constitution of self reliant India. Prof Chaturvedi felt that this is the right time to recognize business out of engineering and recommended that engineers have to walk extra mile to add entrepreneurship skills and by generating more start ups, quality products and services will be delivered, which results an increased size of economy.

Mr Sudhir Garg, Joint Secretary, Ministry of Micro, Small and Medium Enterprises, Government of India, while delivering the thematic address, opined that, to make the country self reliant, it is the time for commitment to strengthen further the technological capability of the country and go ahead to a faster pace to achieve our position



Mr Sudhir Garg

in the dynamic world. To play a larger role in global economy and supply chain, Mr Garg opined to develop highly skilled manpower to generate more innovations and transforming the same into feasible solutions in consultation with the industries which results Indian industry to become more competitive to produce quality products and services in a cost effective manner, the key factor to make the country self reliant. The speaker explained MSMEs as self motivated innovators and the key intelligent suppliers to design new products and services. Mr Garg, in his address, focused on creating technological infrastructure across the country, adoption of modern engineering practices including lean manufacturing and digital transformation, more industry-academia collaboration in exploring intellectual capabilities for low cost innovations etc. The speaker also mentioned the initiatives by Ministry of MSME to support the innovations in MSME sector by introducing Center of Excellences and Incubation Centres in association with reputed Institutions and other Ministries, which leads to generation of more business opportunities with service integration, e-mobility and so on. Mr Garg concluded with more focus on employment generation and enhancing growth potential in villages, sustainability, green manufacturing, and waste to wealth, solutions for distributed livings, development of smart villages, AI and VR based solutions etc.

Mr Suneel Grover, Chairman, BOG-National Skill Development Forum (NSDF), IEI delivered the closing remarks and mentioned that engineers apply their knowledge to create new and exciting prospects to solve the problems. Mr Dharm Chandra, Honorary Secretary, Uttarakhand State Centre proposed the vote of thanks. Dr Pooja Gupta, UPES, Dehradun moderated the function.

## Compressed Stabilized Earth Blocks (CSEB) for a Sustainable Future

The Institution of Engineers (India) organized IEI Centenary Technical Webinar on the theme **Compressed Stabilized Earth Blocks (CSEB) for a Sustainable Future** under the aegis of the Civil Engineering Division of the Institution on 19 September 2020. Over 430 people attended the Webinar to listen to some expert opinion from the eminent Panelist Mr Satprem Maini, Architect/ Director, Auroville Earth Institute, UNESCO Chair Earthen Architecture.



Mr Satprem Maini

Mr Inderdeep Singh Oberoi, Director, A D Global Synergies Private Limited was the Panelist cum Moderator for the Webinar, who provided a befitting prelude to the event by mentioning that the current business has left the ecosystem depleted and the need to adopt a sustainable model is emerging which must be socially equitable, economically viable and ecologically bearable. He mentioned that the construction sector needs to fall back upon traditional and vernacular designs that produce inherently low-energy buildings. He introduced the Panel during the session, Mr Satprem Maini. Mr Oberoi highlighted the achievements of Mr Maini and informed that since 2000, Mr Maini has been the representative for Asia of the UNESCO Chair 'Earthen Architecture Constructive Cultures and Sustainable Development'.

The key-areas addressed by Mr Maini during the hour long session include paradigm of modern architecture and sustainable development, millennia old earthen architecture as a precursor to CSEB technology, R&D at Auroville Earth Institute, projects and CSEB buildings worldwide and technical data and specifications related to CSEB. He kicked off with the impediments of modern architectural practices which involve general apathy towards acknowledging the detrimental effects involved in such constructions built with more energy hogging materials and technologies. He dwelt upon the concept of 'Embodied Energy in Building Materials' which comprises of initial and recurring embodied energies and also elaborated upon operating energy and carbon emissions and its environmental impact on a global scale. He spoke on environmental impact in terms of CO<sub>2</sub> emissions resulting from concrete industry, burning of wood in Country Fired Brick (CFB) industries, burning of coal for industry fired bricks etc. While deliberated on sustainability, Mr



Mr Inderdeep Singh Oberoi

Maini highlighted the social, environmental and economic dimensions. He mentioned that sustainable construction practices should aim at uplifting local skills and empowering people, proper management of natural resources and promote endogenous growth. The millennia old earthen architectural practices address the above mentioned issues to a considerable extent; opined Mr Maini and cited examples of several structures erected across the globe to corroborate his views. While endorsing the use of CSEB, Mr Maini mentioned that CSEBs are a mix of soil, sand, a stabilizer (5% cement) and water which can be compressed in a press and cured within an attractable time frame and can attain an impressive dry compressive strength and have been widely used across all continents and tested under most oppressive climatic conditions. He mentioned about the work of Auroville Earth Institute towards popularizing the use of CSEB and the full range of indigenous equipments developed to facilitate construction using CSEB. He shared data about the dry & wet compressive strength, bending and shear strength (dry), water absorption, apparent bulk density, embodied energy per m<sup>3</sup> which make it a more suitable alternative than the CFB. Mr Maini also shared statistics depicting favourable hydro-thermal behaviour of CSEB, particularly in temperate climate, where it has successfully regulated indoor humidity helping in achieving thermal comfort throughout the year without the need for air conditioning. While speaking on the cost-effectiveness of CSEB, Mr Maini highlighted that the majority of cost involved in the manufacture of the CSEB blocks is towards labour and soil treatment while the use of cement is negligible. He also mentioned that the amount of mortar required compared to conventional construction is considerably less and the requirement of plaster is almost negligible. He mentioned that it is a labour intensive technology and provides job opportunities/livelihood to people and thereby help in growth of local economy and hence sustainability. The ability of CSEB to promote endogenous development is crucial towards natural resource management and its low CO<sub>2</sub> emission per m<sup>3</sup> compared to other commonly used building materials.

Mr Maini also answered to the chat-based queries received from attendees wherein he informed that CSEB can be used as a building material for a maximum of 6-8 storey constructions with suitable engineering design considerations beyond which cement and mortar will be required. He also mentioned that construction of CSEB blocks with high clay content should be avoided and soil with 35-40% clay content must use lime as a supplementary material. He mentioned that training manual and facilities are available with Auroville Earth Institute and those interested may visit the institute's website.

## Blockchain & it's Impact on Current Business Scenario

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of Technology, Tanakpur, in his address explained different aspects of digital transformation and digital exploration. Blockchain is a technology to create and maintain the cryptographically secured and shared distributive ledger, which is characterized by its accountability and transparency towards digital connectivity; Dr Aggarwal added. The Keynote speaker during the session, Mr Sandip Kumar, Managing Partner, Connected Mindz, in his address emphasized on transparency and data security of Blockchain technology. The speaker further deliberated on the inception of digital currency and Bitcoins, Ethereum Blockchains, Public Blockchain Systems,



Mr Sandeep Kumar

Consortium Blockchains, Hyperledger Blockchains, Enterprise Blockchains, significance of consensus during Blockchain transactions and data control, application of Blockchains in educational institutions etc. Chief Guest during the occasion, Dr Narendra S Chaudhuri, Vice Chancellor, Uttarakhand Technical University in his address explained theoretical conceptualization and subsequent consolidation of concepts, that leads to development and implementation of computer languages. Mr Suneel Grover, Chairman, BOG-National Skill Development Forum (NSDF), IEI delivered his concluding remarks. Mr Dharm Chandra, Honorary Secretary, Uttarakhand State Centre proposed the vote of thanks.



Dr Narendra S Chaudhuri

## Troubleshooting in Pneumatic Ash Conveying Systems – Do Not Treat Symptoms, Treat the Root Cause

West Bengal State Centre of the Institution organized IEI Centenary Technical Webinar on the theme **Troubleshooting in Pneumatic Ash Conveying Systems – Do Not Treat Symptoms, Treat the Root Cause** on 25 September, 2020 under the aegis of Mechanical Engineering Division Board, IEI. Mr Kalipada Das, Honorary Secretary, West Bengal State Centre, IEI delivered the opening remarks and introduced the Panelists. Mr Kashmir Lal Mallik, Past Chairman, West Bengal State Centre delivered the welcome address.



Dr S S Mallick

Panelist during the session, Dr S S Mallick, Associate Professor, Powder Flow Laboratory, Mechanical Engineering Department, Thapar Institute of Engineering and Technology and Director, BulkSolids Innovation India Private Limited, in his address focused on the unexplored causes regarding nonperformance of dry ash handling systems, pneumatic conveying systems, subsequent diagnostic tools and solutions, design aspects of ash handling and troubleshooting for sustainable power development. The speaker explained the plant requirement for ash handling systems, common problems encountered, different reasons diagnosed and corrective actions. The speaker further explained the variations in ash properties, including particle size, bulk density, particle size distribution, conveyability, floodability etc. Dr Mallick further explained different functional aspects of air velocity, flow rate, pressure drop, pneumatic conveying of powders, vacuum systems and blockages, blow tank optimization, fluiding air flow, ash agglomeration, blow tank sizing etc and deliberated on latest Ultra Dense Phase (UDP) and Pneumatic Conveying Technology . The speaker during his concluding remarks mentioned that design and troubleshooting of pneumatic ash conveying system requires systematic diagnosis of root cause, taken into account the interfaces between the components and systems.



Mr Anirban Datta

Prof Dr Peter Wypych, Professor, University of Wollongong, Australia (UOW), Director, International Solids Handling Research Institute (ISHRI) and Senior Advisor, Bulk Solids Innovation India (BSII) explained the functional aspects of pressurized hopper feeders, blow tanks and stressed on operational control of blow tanks to ensure adequate feed rate capacity. Dr Wypych explained key features and characteristics of blow tank feeders, different way outs to maximize operational performance of the blow tanks including reliability, rate of discharge, air consumption rate etc. The speaker further explained different aspects of blow tank design, function of Top discharge, Side discharge blow tanks, Single



Prof Dr Peter Wypych



(batch) blow tanks, Tandem blow tanks, Piggy back blow tanks, different problems associated with the blow tanks, identification of root causes and solutions. While concluded, Dr Wypych mentioned that once the blow tanks properly selected and operated, it is able to perform with optimum reliability and efficiency over a long period of time with minimum interference. Mr Anirban Datta, Manager, Mechanical & Piping, Richard Design Services

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## Inspection, Investigation, Repair & Rehabilitation of Urban Transport Structures

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Mr Moitrey Chatterjee

structure for timely repair & rehabilitation to avoid loss of national property & human lives. This include inspection, investigation, repair & rehabilitation. He also covered the inspection part which includes Foundation, Super-structure & Bearings and record the verticality, deflection, displacement, visible cracks, alignment and settlement. Based on the Inspection report, a detailed investigation need be carried out with the help of appropriate instrumentation and the same need to be compared with reference to the designed parameters, and after the investigation, only a considered opinion can be formed as to whether the structure requires to be demolished or repaired: he explained. The speaker mentioned that

minor repairs can be obtained without interfering with the uses of the structure, however heavy repairs or demolition of the structure would invite rehabilitation. Mr Banerjee briefly outlined the case study of the extensive repairs & restoration of Howrah Bridge by BBJ Construction Company Limited and the investigation procedure by RITES. He shared the details of the same through a presentation and explained the configuration of the super-structure. Mr Banerjee mentioned that in the year 1992, major repairs were undertaken for Stringers under carriageway got corroded, when all 14 Expansion joints were replaced with Elastomeric Slab seat Expansion joints and Top chord rivets etc.

A lively Question-Answer session was held, when pertinent questions were raised, that leads to fruitful deliberations. Mr Kalipada Das, Honorary Secretary, West Bengal State Centre proposed the vote of thanks.

## Long Span Bridge Construction

The Institution of Engineers (India) organized IEI Centenary Technical Webinar on the theme **Long Span Bridge Construction** under the aegis of the Civil Engineering Division of the Institution on 24 September 2020. Close to 500 people attended the Webinar to gain expert level insight from the eminent panelists namely, Prof Mahesh Tandon, FNAE, Managing Director, Tandon Consultants Private Limited, International Professional Engineer (India) and Prof Prem Krishna, Former Professor, IIT Roorkee. Mr Snehashis Sinha, Sinha & Associates, International Professional Engineer (India), moderated the session.



Prof Mahesh Tandon

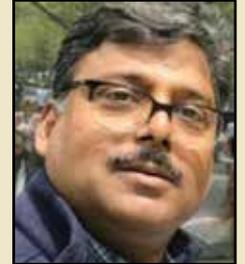
Prof Prem Krishna commenced the Webinar speaking on the design and constructional aspects of Long Span Bridges. He touched upon preliminaries like bridge span ranges/types and then transcended to the need for long span bridges. He highlighted the implications which are to our advantage like reduced foundation construction, time and cost, better ability to withstand impact & fatigue, and reduced travel time. However, we need to bear with increased superstructure cost and negotiate with pronounced wind effect for such structures, mentioned Prof Krishna. He also ushered in aspects like forms of bridges and its role in effective material utilization and reduction in dead weight. It leads to increase in dead load to live load ratio, and hence it is an important design imperative to bring down dead weight through appropriate choice of forms and materials, mentioned Prof Krishna. He also mentioned that direct stress versus flexural considerations is another important design parameter. Prof Prem Krishna mentioned that India needs some catching up to do to compete with the rest of the world especially in cable-stayed and suspension bridge technologies. While speaking on responses and control for occasional loads arising out of seismic or wind activities. Prof Krishna further mentioned that it is of paramount importance to ensure stability and safety of deck and the pylon due to buffeting caused which may be alleviated to some extent by use of steel. He spoke on various aerodynamic effects like vortex shedding, buffeting and fluttering and its effect on the deck and the way to negotiate the same besides creating provision for dealing with other structural/aerodynamic damping issues through use of fairings, winglets etc. He concluded emphasizing the need for investigation through construction stages.



Prof Prem Krishna

Prof Mahesh Tandon, who followed Prof Krishna, began his presentation with the concept of extra-dosed bridges along with an overview of cost (per m<sup>2</sup>) against various centre spans namely, solid slab, T-beam, Constant Depth Box Girder, Hunched Box Girder and Arch, Cable-stayed & Suspension Bridges. He informed about the new IRC Guidelines in the making pertaining to Extradosed Bridges (B9.3) and Cable Stayed Bridges (B9.4). He elucidated various issues with facts and figures like balanced cantilever technique, unbalanced cantilever, free cantilever technique (for construction over fast flowing rivers) with special mention of Howrah Bridge which is an entirely riveted construction as weldable steel and HSFG bolts were not available at that time. He spoke on the importance of side spans in constructions which involves free cantilevering. Prof Tandon, thereafter, switched to cable bridges-Extradosed, Stayed and Suspension, with distinctly different structural actions. He mentioned that for cable-stayed and extradosed concrete box-girder bridges, free cantilevering remains the most appropriate and widely used method of construction. He mentioned the suspension bridge principle and presented a parametric representation of most suitable span ranges. Prof Tandon also mentioned that stress range due to live load decides fatigue and these approximates to 0.4 and 0.6 of Ultimate Strength for Cable-stayed and Extradosed bridges respectively and most importantly fatigue of stay-cable is the deciding factor for all allowable

stresses that comes into play. He explained the concept of stress change of stayed cable (due to live load) against the distribution of live vertical load theoretically using Kasuga's model. India's standing against the extradosed bridges built worldwide was also presented by Prof Tandon supplemented by various projects which have been completed so far in India while citing the DMRC Pragati Maidan Extradosed Bridge along with its salient features like concrete encasing to provide protection and stiffness, enclosing normal prestressed and grouting cables apart from the structure being suspended laterally and DMRC Moolchand Extradosed Bridge which has special cable stays and is suspended axially. He discussed at length the 'needle beam issue' and technology to avoid the same by introducing an additional pier at the expansion joint location. He spoke about some of the prominent 'single pylon bridges', namely the Worli Bandra Link (Mumbai) and the Signature Bridge (New Delhi) of India, where the pylon is having a distinct backstay and the shape of the pylon is such that the centre of gravity provides stability to the main span. He shared information on some of the world's greatest suspension bridges constructed during the period 1937-1998 while emphasizing the fact that such constructional marvels came into being so early despite limited technology available at that time. He also discussed technology employed in the construction of world's largest concrete filled steel tubes (CFST) railway arch bridge in Tibet with main span of 460 m and a total length over 600 m.



Mr Snehashis Sinha

The Webinar also provided an effective virtual platform for interaction between the Panelists and the attendees where Prof Tandon and Prof Krishna answered to chat-based queries received from enthusiasts.

### Troubleshooting in Pneumatic Ash Conveying Systems – Do Not Treat Symptoms, Treat the Root Cause

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India Private Limited, the Moderator during the session mentioned the role of coal based thermal power plants in Indian scenario and opined that, though there would be a paradigm shift towards application of renewable energies in sustainable power generation, coal based thermal power plants would continue to contribute to the major part of power generation. The Webinar was well attended by the professionals from industry and academia. The fruitful deliberations during the Question-Answer session definitely help the participants

to enrich their knowledge base. Mr Kalipada Das, Honorary Secretary, West Bengal State Centre, IEI delivered the vote of thanks.

## Emerging Trends in Service Robotics

Coimbatore Local Centre of the Institution organized All India Seminar on the theme **Emerging Trends in Service Robotics** during March 09-10, 2020 under the aegis of Production Engineering Division Board, IEI. The objective of the Seminar is to provide a platform for exchange of innovative thoughts, information and insights on recent advances in service robots and its emerging technologies among the researchers, academicians and executives of industry. The Chief Guest during the function, Mr Muthu Vangaliappan, CEO and Co-Founder, Katomaran Technology and Business Solutions elaborated the significance of service robots. Mr Vangaliappan also delivered the Keynote Lecture on the topic 'Service Robots – Present and Future Trends' and shared his experiences in developing a new start-



up company and challenges faced in developing a service robot. Ms M Saranya, Department of Instrumentation and Control Systems Engineering, PSG College of Technology Coimbatore delivered Keynote Lecture on the topic 'Image Processing in Drones'. Dr A P Sudheer, Department of Mechanical Engineering, NIT Calicut presented Keynote Lecture on the topic "Gait Generation of Humanoid Robots" and elaborated on the development of humanoid robots with much more focus on gait generation. Dr M Santhakumar, Department of Mechanical Engineering, IIT Palakkad presented Keynote Lecture on the topic "Mobile Manipulators" and elaborated on design of mobile manipulators and control systems for service robots. During the technical sessions, number of papers were presented embracing the theme and sub theme, which include: Development of Service Robots in the field of Agriculture; IoT based Automated Systems for Supermarkets; Development of EEG based Control System for Robots; Non-Linear Decision Boundaries to classify drivable and non-drivable area for a lane detection robot using SVM; Borewell Trap Rescue System; Role of Robots in Pest and Weed Control etc. Earlier, Mr P R Natarajan, Chairman, Coimbatore Local Centre and Council Member, IEI delivered the welcome address. Dr H Ram Mohan, Honorary Secretary, Coimbatore Local Centre proposed the vote of thanks.

### ADDENDUM TO

Report on IEI Centenary Technical Webinar on '**Green Building with Integrated Design Approach**', published in September 2020 issue of IEI News on page 3.

The following addendum is issued to the already published report on IEI Centenary Technical Webinar on 'Green Building with Integrated Design Approach', published in September 2020 issue of IEI News on page 3. All other content remains unaltered.

The Webinar was moderated by Mr Sushil K Bajaj, Artech Consultant and Member of The Institution of Engineers (India).



*Recommendations emanated from two-day deliberations are as follows. With the recent development of technologies, there are numerous advancements regarding application of robotics in the field of manufacturing, management and service sectors. A new field of robot that is moving things up in a major manner is Autonomous Mobile Robots (AMRs). Otherwise called mobile robots, AMRs are the most recent automation development, which provide extreme flexibility in diversified applications. A report titled "Mobile Robots, Autonomous Vehicles, and Drones in Logistics, Warehousing, and Delivery 2020-2040" by IDTechEx reveals that the market for mobile robotics and drones in delivery and warehousing is likely to reach a staggering \$81 and \$290 billion in 2030 and 2040, respectively. There are huge applications of mobile robots in service sectors. With a densely populated country like India, the need for mobile robots in service sectors is vital as discussed in the following sections.*

**Domestic:** Domestic use includes cleaning the floors, pet monitoring, serving, pool maintenance and performing the home tasks based on the human orders.

**Research:** Robotic systems carry out different functions, which include repetitive tasks involved in research. These vary from repetitive obligations made with the aid of gene samplers and sequencers, to systems which could nearly replace the scientist in designing and walking experiments, analysing information or even forming hypotheses.

**Construction:** Construction robots are expert carrier robots currently used in the creation of new buildings. These robots automate dangerous and exhausting tasks to protect people out of danger. Like most robots, construction robots show their well worth by means of supplying predominant operational value-savings via elevated uptime and reduced labour cost.

**Defence:** Defence robots are deployed to fight eventualities and protect personnel from danger like detecting land mines etc.

**Medical:** The medical robots principally are telepresence robots for remote caregiving, disinfectant robots to reduce risk acquired infections, robots that could precisely and efficaciously draw blood, robotic exoskeletons that provide support, rehabilitation robots etc. Mobile nano robots are playing a crucial role in drug delivery.

**Farming:** Agricultural robots perform operations like seeding, weeding, watering, fertilizing and plucking of fruits/vegetables in the field.

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

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comparison to for example solar and wind. The development of Tidal Energy Converters and Marine Current Energy Converters have gained momentum. We are hopeful in near future that the scientists and engineers can find a cost-effective way of desalination of sea water to meet the global crisis of fresh water.

In this connection, it is worth to mention that IEI is now embarked upon organizing Technical Webinars under the aegis of different Engineering Division Boards and Committees with the objective to render the latest technical information to its members through digital transformations. I request all State and Local Centres to come forward with detailed proposals for organizing Webinars based on diversified topics and details of Panellists with the objective to enlighten the engineering professionals to upgrade their skills. I am sure that these cloud based events are immensely beneficial for the engineers and technologists to share their expertise and strengthen their knowledge base through fruitful interactions with the Panellists.

Stay healthy, stay safe.

Jay Hind.

# IEI Celebrates

# 53<sup>rd</sup> Engineers' Day

Theme: Engineers for a Self-Reliant India

The 53<sup>rd</sup> Engineers' Day was celebrated by the Institution all over the country on September 15, 2020 to commemorate the 160<sup>th</sup> birth anniversary of legendary Engineer-Statesman Bharat Ratna Sir M Visvesvaraya through online platform. Brief accounts of the celebration as received from various Centres are highlighted hereunder.

## STATE CENTRES

### Bihar

Bihar State Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day through organising a Webinar on the theme of the day. Mr Anant Kumar Sinha, Founder Owner of M/s Infinity Mircosystems, Hyderabad was the Guest of Honour & Keynote Speaker on the occasion. During his address, Mr Sinha mentioned the roles and responsibilities of engineers in the context of design, development and execution of robotics, aerospace systems and sub-systems, industrial automation, precision engineering and complete end-to-end solutions in the said areas using electronics, software, hardware and mechanical tools for making self reliant India. Earlier, Mr Nishi Kant Prasad Sinha, Chairman, Bihar State Centre and Council Member, IEI welcomed the Guest of Honour & Keynote Speaker and the participants.

### Chhattisgarh

Chhattisgarh State Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 19 September, 2020 through online platform. In this occasion, Mr Arun Kumar Sharma, Former Director (Productions), National Aluminium Company Limited delivered Lecture on the topic "Future Role of Engineers in Nation Building – Indian Perspective" and opined to focus more on automotive industry, electronics sector, pharmaceutical sector, defence sector and information technology for self reliance. Dr D S Bal, Former Director, Department of Technical Education, Government of Chhattisgarh delivered address on "Interaction of Engineering and Technology with the Society" and laid emphasis on the humanistic approach of utilizing science, technology and engineering.

### Gujarat

Gujarat State Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day jointly with Water Management Forum, IEI and in association with Nirma University, Ahmedabad through organising a Webinar on the topic 'Role of Civil Engineers in Developing Self-Reliant India'. Mr Navinchandra B Vasoya, Past President, IEI graced the function as Chief Guest and Dr R N Patel, Director, Institute of Technology, Nirma University, Ahmedabad and Mr P R Patelia, Chief Engineer (National Highway) & Additional Secretary, Roads and Building Department as Guest of Honours. Mr Pavan Bakeri, Managing Director, Bakri Group presented a Paper on the topic 'Civil Engineering and Society'. Mr Harsh Singhla, Manager (Construction), S P Singla Construction Private Limited presented his lecture on the topic 'Construction of Signature Bridge (Cable Stayed Bridge) between Okha and Beyt Dwarka'. Dr S M Ali, Director (Membership), IEI was also present during the function and addressed the gathering. Earlier, Mr Hiro Udhavdas Kalyani, Chairman, Gujarat State Centre, and Council Member, IEI delivered the welcome address. Mr Shyam Varghese, Honorary Secretary, Gujarat State Centre proposed the vote of thanks.

### Kerala

Kerala State Centre of the Institution observed 53<sup>rd</sup> Engineers' Day on 15

September, 2020. Mr N Rajkumar, Immediate Past Chairman, Kerala State Centre and Mr Ashok Kumar K, Honorary Secretary, Kerala State Centre were present in the function.

### Maharashtra

Maharashtra State Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day by organising a programme through Webinar. Keynote Speaker during the session, Mr Mahendra Kapadia, deliberated a lecture on the theme of the Day. Dr Himanshu Madhukar Raje, Chairman, Maharashtra State Centre and Council Member, IEI addressed the audience. Mr Narendra Karbhari Birar, Honorary Secretary, Maharashtra State Centre in his address introduced the speaker with all participants.

### Manipur

Manipur State Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Mr Achom Roudrajit Moirang, Honorary Secretary, Manipur State Centre delivered the welcome address. Mr K Temba Singh, Immediate Past Chairman, Manipur State Centre elaborated about the theme. Mr Th Joykumar Singh, Former Controller of Technical Education, Manipur and Former Chief Engineer, Public Works Department, Government of Manipur explained the importance of self reliance and the roles of engineers in the country to achieve the goal. Mr N Shyamsundar Singh, Chairman, Manipur State Centre and Council Member, IEI addressed the audience.

### Puducherry

Puducherry Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Chief Guest during the function, Mr R Mananathan, Chairman, Manatec Group of Companies, Puducherry, while delivered Lecture on the theme of the day, stressed on indigenous manufacturing. Earlier, Prof (Dr) Raman Saravanane, Chairman, Puducherry State Centre and Council Member, IEI welcomed the participants. Prof (Dr) B Radjaram, Honorary Secretary, Puducherry State Centre proposed the vote of thanks.

### Telangana

Telangana State Centre of the Institution observed 53<sup>rd</sup> Engineers' Day through organising a Webinar. Hon'ble Governor of Telangana, Dr Tamilsai Soundararajan graced the occasion as Chief Guest and Mr K S Sreenivasa Raju, IAS, Secretary, Tourism, Culture and Sports, Government of Telangana, as Guest of Honour. The Chief Guest in her address focussed on the innovative mindsets of the engineers towards contribution in the development of the country. The Guest of Honour in his address appreciated the contributions of engineers in the field of irrigation and power. Dr S Satyanarayana, Immediate Past Chairman, Telangana State Centre was also present during the occasion and narrated the life and achievements of Sir M Visvesvaraya. Mr G Sudhakar, Council Member, IEI and Mr Chandra Mohan, Member, Mining Engineering Division Board, IEI were also present during the function. Earlier, Dr G Rameshwar Rao, Chairman, Telangana State Centre and Council Member, IEI, welcomed the gathering and presided over the meeting. Mr T Anjaiah, Honorary Secretary, Telangana State Centre proposed the vote of thanks.

## LOCAL CENTRES

### Ahmednagar

Ahmednagar Local Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day to commemorate 160th Birth Anniversary of Bharat Ratna Sir M Visvesvaraya by organising a Webinar. Mr S Ranganathan, Vice-President, D&A Business, L&T Defence, Mumbai delivered Keynote address on the theme of the day. In his address,

Mr Ranganathan highlighted ancient structures and monuments, which stand testimony to engineering skills adopted by us in the ancient times. Mr Sangam Sinha, Chairman, Ahmednagar Local Centre delivered his welcome address. Mr Monohar Mukund Anekar, Honorary Secretary, Ahmednagar Local Centre addressed the audience. A technical session was arranged during the occasion, where papers were presented on the theme of the day.

### Brahmapur

Brahmapur Local Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Mr Satchidananda Panigrahi, Former Chief Engineer, Department of Water Resources, Government of Odisha was the Chief Guest and Mr Ratikanta Sabat, Former Chief Engineer, Department of Water Resources, Government of Odisha, the Guest of Honour. Chief Speaker during the function, Mr R K Maharana, Superintending Engineer, Rural Works Circle, Brahmapur presented the thematic address and emphasized on sustainable development without compromising the environmental consequences. Earlier, Dr Arun Kumar Padhi, Chairman, Brahmapur Local Centre welcomed the audience. Mr Srikant Mahapatra, Former Superintending Engineer, Department of Water Resources, Government of Odisha also present during the occasion. Mr Surendra Kumar Panigrahi, Honorary Secretary, Brahmapur Local Centre proposed the vote of thanks.

### Bareilly

Bareilly Local Centre of the Institution observed 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Mr Devendra Kumar Mishra, Chief Engineer (Civil), Public Works Department, Government of Uttar Pradesh, Bareilly graced the function as Chief Guest and Mr Nainjeet Singh Sobti, Managing Director, Sobti Infratech Limited, Bareilly as Guest of Honour. Mr Hemant Yadav, Director, Khandelwal College of Management Science and Technology, Bareilly (KCMT), Campus-2, Bareilly presented a paper on the theme of the day and mentioned that India's self reliance is based on five pillars – Economy, Infrastructure, System, Demography and Demand. Mr K B Agrawal, Founder Chairman, Bareilly Local Centre delivered Lecture on "Engineering for Change". Earlier, Mr Sudhir Kumar Gupta, Chairman, Bareilly Local Centre delivered welcome address. Mr Saheb Singh, Honorary Secretary, Bareilly Local Centre proposed the vote of thanks.

### Bokaro Steel City

Bokaro Steel Cite Local Centre of the Institution observed 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Mr N P Srivastava, General Manager (Environment), SAIL, Bokaro Steel Plant graced the function as Chief Guest and addressed the audience. Mr Yogendra Nath Singh, Chairman, Bokaro Steel City Local Centre welcomed the dignitaries. During the technical session, papers were presented on the topic, Pandemic Covid-19 for Self Defence; Reinventing Engineer's Role for Self-reliant India; and Engineers Role in Nation Building. Mr Deo Prasad Jha, Honorary Secretary, Bokaro Steel City Local Centre proposed the vote of thanks.

### Coimbatore

Coimbatore Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020 in association with Akshaya College of Engineering and Technology, Coimbatore through online platform. Chief Guest, Mr Narayan Mani, Managing Director, Messer Cutting Systems India Private Limited, Coimbatore delivered lecture on the theme of the day. Dr J Jaya, Principal, Akshaya College of Engineering and Technology, Coimbatore was present during the function and addressed the audience. Earlier, Mr P R Natarajan, Chairman, Coimbatore Local Centre and Council Member, IEI welcomed the audience. Dr H Ram Mohan, Honorary Secretary, Coimbatore Local Centre proposed the vote of thanks.

### Dhanbad

Dhanbad Local Centre of the Institution observed 53<sup>rd</sup> Engineers' Day on 15 September, 2020 in association with CSIR-Central Institute of Mining and Fuel Research (CIMFR) Dhanbad. Chief Guest during the function, Mr Anil Kumar Jha, Former Chairman, Coal India Limited & Member, Expert Appraisal Committee, Ministry of Environment, Forest and Climate Change, Government

of India, delivered lecture on the theme of the day. Dr Pradeep Kumar Singh, Chairman, Dhanbad Local Centre, IEI and Director, CISR-CIMFR, Dhanbad delivered the welcome address. Dr Satyendra Kumar Singh, Honorary Secretary, Dhanbad Local Centre proposed the vote of thanks.

### Gorakhpur

Gorakhpur Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Mr Dharendra Chaturvedi, Chairman, Gorakhpur Local Centre addressed the audience in this occasion.

### Gwalior

Gwalior Local Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020 in association with The Institution of Electronics and Telecommunication (IETE), Bhopal through organising a Webinar on the occasion. The Keynote Speaker during the session, Maj General (Dr) S C Jain, VSM (Retd) & Director, Amity School of Engineering & Technology, Amity University Gwalior in his lecture mentioned that the engineers play the key role to ensure growth and development of the national economy as well as improving the quality of life for citizens of the country. Dr Chandra Shekhar Malvi, Professor, Mechanical Engineering Department, Madhav Institute of Technology and Science, Gwalior was present during the occasion and addressed the audience. Earlier, Prof (Dr) Pramod Kumar Singhal, Immediate past Chairman, Gwalior Local Centre delivered the welcome address. Mr P Y Khanwilkar, Honorary Secretary, Gwalior Local Centre proposed the voter of thanks.

### Jamshedpur

Jamshedpur Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day through virtual mode. Prof. Karunesh Kumar Shukla, Director, NIT Jamshedpur graced the function as Chief Guest. Keynote speaker during the occasion, Mr Souvik Ghosh, Head of Shared Services Technology Group, Tata Steel Limited, Jamshedpur delivered lecture on the topic "Maintenance Practices of Gas Analyzers in Steel Industry" and shared about standard maintenance practices deployed at Tata Steel, Jamshedpur and DM framework for Gas Analyzer maintenance. Mr Nirbhay Kumar Gupta, Head of Electrical Maintenance Mills and Utilities, Tata Steel Limited, Jamshedpur delivered Keynote lecture on the topic "Guidelines for Profibus Communication and its maintenance practices" and explained about Profibus DP common communication problems and their solution, use and importance of termination resistance etc. Earlier, Mr Anurag Saxena, Chairman, Jamshedpur Local Centre delivered the welcome address.

### Kalaburagi

Kalaburagi Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. On the occasion, Dr Siddarama R Patil, Dean (Academic), and Principal-in-Charge, PDA College of Engineering, Kalaburagi was the Chief Guest and Mr Prakash Harkude, Joint Director, Town Planning, KDA, Kalaburagi was the Guest of Honour. Mr Chand Basha, Assistant Engineer, Karnataka Power Transportation Corporation Limited (KPTCL), Kalaburagi, the Keynote Speaker during the event presented his address on the theme of the day. Earlier, Mr Babu Sidramappa More, Chairman, Kalaburagi Local Centre welcomed all and introduced the speakers. Dr Baburao Neelkantappa Sherikar, Honorary Secretary, Kalaburagi Local Centre deliberated an impressive talk, exhibiting the most illustrative achievements of Sir M Visvesvaraya.

### Kanyakumari

Kanyakumari Local Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020. Chief Guest during the function, Mr G Arul Jerald Prakash, Former Director, Kerala State Science and Technology Museum and Priyadarsini Planetarium delivered the Keynote address. Mr V Sivathanu Pillai, Chairman, Kanyakumari Local Centre welcomed all present during the function. Mr V Muthum Perumal, Honorary Secretary, Kanyakumari Local Centre proposed the vote of thanks.

### Munirabad

Munirabad Local Centre, IEI celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020 in the august presence of Mr Manjappa K E S, Chief Engineer, Irrigation

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# IEI Celebrates Royal Charter Day

The Institution of Engineers (India) was incorporated by Royal Charter on September 9, 1935 by King and Emperor George V at the Court at Buckingham Palace, London and remains the only professional body in India to be accorded this Honour. This endowed the Corporate Members of the Institution with the right to use the title 'Chartered Engineer' after their names, implying that they are qualified engineers deemed worthy to hold a Charter. The 'Royal Charter Day' was celebrated by IEI all over the country on September 9, 2020. A brief accounts of celebration as received from various Centres are reported hereunder.

## STATE CENTRES

### Bihar

Bihar State Centre, IEI observed Royal Charter Day on 9 September, 2020 through organising a Webinar. The Guest of Honour and Keynote speaker during the function, Capt. Pradip Kumar, General Manager (Retd), Oil India Limited and Techno-Legal Consultant delivered lecture on the theme "Techno-Legal Excellence in Dispute Resolution" and mentioned that engineers have a great role to perform in dispute resolution and arbitration of issues in the field of science, technology and engineering for the welfare of the society. Earlier, Mr Nishi Kant Prasad Sinha, Chairman, Bihar State Centre and Council Member, IEI delivered the welcome address. Eminent participants during the function include Mr Ashok Kumar Sinha, Immediate Past Chairman, Bihar State Centre, Mr K N Sahay, Advisor, South Bihar Power Distribution Company Limited (SBPDCL) and others. Kumar Abhay Pratap Singh, Honorary Secretary, Bihar State Centre proposed the vote of thanks.

### Kerala

Kerala State Centre, IEI observed Royal Charter Day on 9 September, 2020 through online platform jointly with all five Local Centres in Kerala. A Special Talk on the topic "Brief History of IEI – A President's Perspective" was deliberated by Mr P M Chacko, Past President, IEI. In his address, Past President of the Institution explained the role and responsibilities of the engineers towards the society and elaborated on the significance of Royal Charter. He mentioned that engineers have to accommodate environmental sustainability through their roles and responsibilities to preserve nature for future generations.

### Telangana

Telangana State Centre, IEI observed Royal Charter Day, on 9 September, 2020 through video conferencing mode. Dr I Satyanarayana Raju, Past Chairman, Telangana State Centre, IEI deliberated the talk as Chief Guest of the occasion. Mr G L Rao, Past President, IEI graced the function with his august presence. Mr G Sudhakar, Council Member, IEI and Dr S Satyanarayana, Immediate Past Chairman, Telangana State Centre were also present during the function. Earlier, Dr G Rameshwar Rao, Chairman, Telangana State Centre and Council Member, IEI briefly explained the importance of the day and introduced the Chief Guest with the audience. Dr S Satyanarayana, Immediate Past Chairman, Mr T Anjaiah, Honorary Secretary, Telangana State Centre proposed vote of thanks.

## LOCAL CENTRES

### Bareilly

Bareilly Local Centre of the Institution observed Royal Charter Day on 9 September, 2020. Mr S C Mehra, Immediate Past Chairman, Bareilly Local Centre welcomed all present in the session. Mr Sudhir Kumar Gupta, Chairman, Bareilly Local Centre delivered the inaugural address. Mr Saheb Singh, Honorary Secretary, Bareilly Local Centre proposed the vote of thanks.

### Bokaro Steel City

Bokaro Steel City Local Centre, IEI observed Royal Charter Day on 9 September, 2020. Special Guest during the function, Mr. N P Srivastava, General Manager (Environment), SAIL, Bokaro Steel Plant jointly with Mr Nitesh Ranjan, AGM (Environment), Bokaro Steel Plant presented a paper on "Industrial Safety : Technology as Enabler". Mr Yogendra Nath Singh, Chairman, Bokaro Steel City Local Centre delivered the welcome address and spoke about the significance of Royal Charter. Mr Deo Prasad Jha, Honorary Secretary, Bokaro Steel City Local Centre proposed the vote of thanks.

### Coimbatore

Coimbatore Local Centre, IEI in association with Department of Metallurgical Engineering, PSG College of Technology, Coimbatore and The Indian Institute of Metals (IIM), Coimbatore Chapter, Coimbatore observed Royal Charter Day on 10 September, 2020 through online platform. The Chief Guest during the session, Dr Giribaskar Sivaswamy, Research Associate, Advanced Forming Research Centre, National Manufacturing Institute Scotland (NMIS), University of Strathclyde, Glasgow, Scotland, UK deliberated lecture on the topic "Incremental Forming Techniques for Aerospace Applications". Earlier, Mr P R Natarajan, Chairman, Coimbatore Local Centre and Council Member, IEI welcomed all present in the function. Dr H Ram Mohan, Honorary Secretary, Coimbatore Local Centre proposed the vote of thanks.

### Gorakhpur

Gorakhpur Local Centre, IEI observed Royal Charter Day on 9 September, 2020 through organising a Webinar. Mr V B Singh, Council Member & Chairman, Civil Engineering Division Board, IEI, Dr Bharat Raj Singh, Past Chairman, U P State Centre, IEI and Mr Prabhat Kiran Chaurasia, Honorary Secretary, U P State Centre, IEI were present during the function and addressed the audience. Earlier, Mr Dharendra Chaturvedi, Chairman, Gorakhpur Local Centre welcomed all participated in the programme. Mr Ved Prakash Gupta, Honorary Secretary, Gorakhpur Local Centre introduced the distinguished keynote speakers and presented vote of thanks.

### Ghaziabad

Ghaziabad Local Centre of the Institution observed Royal Charter Day on 9 September, 2020 through online. Prof (Dr) H S Sharma, Past Chairman, Ghaziabad Local Centre graced the function as Chief Guest & Keynote Speaker. Mr Jai Pal Singh, Chairman, Ghaziabad Local Centre and Council Member, IEI welcomed the guests & audience and narrated the history of Royal Charter. Dr S C Gupta, Convener of the event proposed the vote of thanks.

### Gwalior

Gwalior Local Centre, IEI observed Royal Charter Day on 9 September 2020 through online platform. Mr Prabhat Kumar Bhargava, Chairman, Gwalior Local Centre spoke on functional domain of agile manufacturing and its relevance for the engineering applications. Mr P Y Khanwilkar, Honorary Secretary, Gwalior Local Centre deliberated on the use of renewal energy, intelligent cars, robotics and waste management in the field of engineering.

### Jamshedpur

Jamshedpur Local Centre, IEI observed Royal Charter Day through organising a Webinar on the topic 'Electrical Maintenance Practices in Steel Industry'. Mr Arindam Ghosh, Head of Electrical Maintenance Steel Making, Tata Steel Limited, Jamshedpur presented a lecture on "Success Journey of Zero Incidence due to Electrical Flash in Tata Steel". Mr Prasenjit Sinha, Head of Predictive Maintenance, Tata Steel Limited, Jamshedpur, presented lecture on the topic "Journey of Digital Initiatives in Tata Steel-Need and Future of Predictive Maintenance". Earlier, Mr Anurag Saxena, Chairman, Jamshedpur Local Centre delivered welcome address and highlighted the significance of celebrating 'Royal Charter Day'. The programme was well attended by industry and academia.

### Kanpur

The Institution of Engineers (India), Kanpur Local Centre celebrated Royal Charter Day on 9 September, 2020 through online platform. Guest Speaker during the session, Ms Piya Ghosh, Senior Research Fellow, IIT Kanpur

## Royal Charter Day

delivered an Expert Lecture on the topic “Challenges of Logistics and Supply Chain Management during COVID 19” and explained the need for a resilient supply chain due to different uncertainty throughout the supply chain network. Earlier, Prof (Dr) J Ramkumar, Chairman, Kanpur Local Centre welcomed the Guest Speaker and participants. The programme was concluded with vote of thanks by Dr Rajat Kumar Khare, Honorary Secretary, Kanpur Local Centre proposed the vote of thanks.

### Kanyakumari

Kanyakumari Local Centre, IEI observed Royal Charter Day through online. Mr P Gopal, Chief Engineer (Retd), Public Works Department was the Chief Guest. Mr S Natarajan, Chief Engineer (Retd), Public Works Department also addressed the audience. Mr V Sivathanu Pillai, Chairman, Kanyakumari Local Centre in his welcome address explained the significance of Royal Charter.

### Meerut

Meerut Local Centre, IEI observed Royal Charter Day on 9 September, 2020 by organizing a Webinar. Mr Rajneesh Kumar, Chairman, Meerut Local Centre welcomed all participants and delivered a brief lecture on the history of Royal Charter during the occasion. Mr Mohan Lal Jain, Honorary Secretary, Meerut Local Centre proposed the vote of thanks.

### Neyveli

Neyveli Local Centre of the Institution observed Royal Charter Day on 9 September, 2020 through organising a Webinar. Mr P Rajamani, Chairman, Electrical Engineering Division Board, IEI graced the function as Chief Guest and addressed the audience. Mr Nagamaheswar Rao Nadella, Chairman, Neyveli Local Centre and Council Member, IEI welcomed the Chief Guest and the audience. Mr A Sekar, Honorary Secretary, Neyveli Local Centre proposed the vote of thanks.

### North Bengal

North Bengal Local Centre, IEI observed Royal Charter Day through online platform. Speaker, Dr Goutam Kumar Panda, Professor and Head, Electrical Engineering Department, Jalpaiguri Government Engineering College presented a lecture on the topic “Emerging Technologies to combat COVID 19 Pandemic”. Welcome address was delivered by Prof (Dr) Gautam Das, Chairman, North Bengal Local Centre. Dr Santanu Das, Honorary Secretary, North Bengal Local Centre proposed the vote of thanks.

### Roorkee

Roorkee Local Centre, IEI observed Royal Charter Day on 9 September, 2020. Keynote Speaker during the session, Prof (Dr) Achal Kumar Mittal, Chairman, Roorkee Local Centre delivered the welcome address. Mr Narendra Kumar Yadav, Chief Engineer (Retd), Irrigation Department (UK) delivered the talk on “The History of Irrigation and Great Ganga Canal”. Dr Mohd Ashraf Iqbal, Honorary Secretary, Roorkee Local Centre proposed the vote of thanks.

### Saurashtra

Saurashtra Local Centre of the Institution observed Royal Charter Day by organising a Webinar. Speaker of the day, Dr Rajendrakumar Patel, Project Director, Regional Science Museum, Bhuj Kutchh delivered lecture on the topic “Application of Internet of Things” and discussed about applications of IoT in different sectors. Earlier, Mr Deepak V Suchde, on behalf of Saurashtra Local Centre welcomed all present in the function. Mr Ranchhod Kanjibhai Babaria, Honorary Secretary, Saurashtra Local Centre proposed the vote of thanks.

### South Gujarat

South Gujarat Local Centre, IEI Celebrated Royal Charter Day on 15 September, 2020 and organised a Seminar on the topic “Protect Our Environment”. Mr Kirti Hiralal Shethna, Chairman, South Gujarat Local Centre and Council Member, IEI delivered an expert lecture on the topic and discussed protection of environment from pollution. Mr Dipak Gomanbhai Patel, Honorary Secretary, South Gujarat Local Centre proposed the vote of thanks.

### Upper Assam

Upper Assam Local Centre observed Royal Charter Day on 9 September, 2020 through online platform. A technical paper presentation was organised in this occasion. Ms Mayuri Deka, Safety Officer, Assam Petrochemicals Limited presented a Paper on the topic, “Increasing Ventilation Rates in the Work Environment”. Mr Debajeet Sarma, Safety Officer, Assam Gas Company Limited presented a paper on “Use of Local Exhaust Ventilation as a Preventive Measures against spread of Covid-19 in Workplace”. Earlier, Mr Ashit Kumar Baruah, Chairman, Upper Assam Local Centre delivered the welcome address. Mr Diganta Goswami, Honorary Secretary, Upper Assam Local Centre proposed the vote of thanks.

## 53<sup>rd</sup> Engineers' Day

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Central Zone, Munirabad, Mr B G Eswarappa, Superintending Engineer (Retd), Mr Prahalada E, Chairman, Munirabad Local Centre and Mr Rajashekara Goud P, Former Honorary Secretary, Munirabad.

### South Gujarat

South Gujarat Local Centre, IEI in association with Dr S & S S Gandhi Government Engineering College, Surat observed 53<sup>rd</sup> Engineers' Day on 15 September, 2020 through organising a Webinar. A Panel Discussion was arranged on the theme “Voice of Connecting Flows of Rivers in India & Emerging threats against the Water Security”. Panelists during the Session, Dr R N Sankhua, Chief Engineer, MWDA (South), Hyderabad in his address discussed different aspects of National River Linking Project (NRLP) and Mr Jay Narayan Vyas, Economist, Thinker and Engineer deliberated on optimum management of global water resources.

### Upper Assam

Upper Assam Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day through organising a Webinar. Mr Rajendra Singh, Deputy General Manager, IT Department, Oil India Limited & Past Honorary Secretary, Upper Assam Local Centre presented a life sketch of Bharat Ratna Sir M Visvesvaraya. Four technical papers were presented during the occasion, Mr Devanga Gaurav Borah, Assistant Manager (Production), Assam Petrochemicals Limited on the

topic “Atmanirbhar Bharat”, Ms Priyanka Baruah, M/s Gainwell Commosales Private Limited on “Condition Monitoring”, Ms Mayuri Deka, Safety Officer, Assam Petrochemicals Limited on “Engineers for a Self-Reliant India” and Mr Debajeet Sarma, Officer, Fire & Safety, AGCL on the topic “A Need of Modern India”. Mr Diganta Goswami, Honorary Secretary, Upper Assam Local centre proposed the vote of thanks.

### Vallabh Vidyanagar

Vallabh Vidyanagar Local Centre of the Institution celebrated 53<sup>rd</sup> Engineers' Day on 15 September, 2020 through online platform. Prof (Dr) Navin Sheth, Vice-Chancellor, Gujarat Technological University graced the function as Chief Guest and addressed the audience. Keynote Speaker, Dr Pratapsinh K Desai, President, Indian Society of Technical Education, New Delhi in his address discussed the role of the present and future engineers to make the country self-reliant. Mr Bhikhubhai B Patel, Chairman, Charutar Vidyamandal and President, CVM University also addressed the gathering. Earlier, Dr Rakesh Devjibhai Patel, Chairman, Vallabh Vidyanagar Local Centre addressed the participants with welcome speech.

### Visakhapatnam

Visakhapatnam Local Centre of the Institution observed the 53<sup>rd</sup> Engineers' Day on 15 September, 2020 in the august presence of Prof K Venkatasubbaiah, Vice President, IEI. Dr O Ram Mohan Rao, Immediate Past Chairman, Visakhapatnam Local Centre and Mr K Venkata Rama Mohana Rao, Honorary Secretary, Visakhapatnam Local Centre were present during the event.

Special Issue

Micro and Nano Self Assembly

- ❖ Bio-inspired self-assembly
- ❖ Active self-assembly
- ❖ Heterogeneous integration
- ❖ Directed self-assembly
- ❖ Autonomous movement
- ❖ Controlled self-assembly
- ❖ Energy-dissipating Systems
- ❖ Microsystems, Microfabrication
- ❖ Polymers, Manufacturing
- ❖ Nanofabrication
- ❖ Atomic force microscopy
- ❖ Biosensors
- ❖ Nanostructures
- ❖ High Aspect Ratio, Etch Rate
- ❖ Double-shelled octahedron
- ❖ Scanning Electron Microscope
- ❖ Photocatalysis
- ❖ Sacrificial Layer and other relevant areas
- ❖ Oxidation of saturated CH bonds
- ❖ Quantum Wire



GUEST EDITOR

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**Prof Gautam Biswas**, FNA, Department of Mechanical Engineering, Indian Institute of Technology Kanpur, India; Former Director, Indian Institute of Technology Guwahati, India; Former Director, CSIR-Central Mechanical Engineering Research Institute, Durgapur, India

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Special Issue

Wind Tunnel Techniques from Hypersonic to Hypersonic Flows

- ❖ Wind tunnel design and construction
- ❖ Utilization of wind tunnels for aeronautical and non-aeronautical applications
- ❖ Model fabrication
- ❖ Model supports
- ❖ Wind tunnel measurements
- ❖ Use of CFD for improved wind tunnel design
- ❖ Use of computers in wind tunnel operation and testing
- ❖ Validation of CFD results with wind tunnel measurements
- ❖ Balance design and fabrication
- ❖ Integration of EFD / CFD and digital / analogue wind tunnels
- ❖ Use of water tunnels for testing aeronautical and non-aeronautical models
- ❖ Data capture and analysis and case studies



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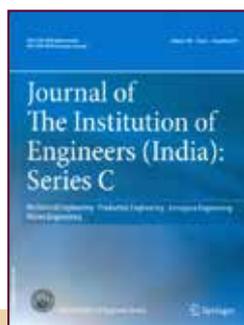
**Prof Gautam Biswas**, FNA, Department of Mechanical Engineering, Indian Institute of Technology Kanpur, India; Former Director, Indian Institute of Technology Guwahati, India; Former Director, CSIR-Central Mechanical Engineering Research Institute, Durgapur, India

Submission of papers through:  
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Special Issue

Creating a Circular Economy: Myth or Reality

- ❖ What are the major issues and challenges of each phase of circular economy (e.g. take, make, distribute, use and recover) within industrial supply chain?
- ❖ Is there any best practice within each phase of circular economy?
- ❖ What innovation could be suggested in each phase to enhance sustainability performance?
- ❖ What role individual organisation, industry consortium, and policymakers should play to adopt circular economy in businesses?
- ❖ Is there any difference and similarity of circular economy adoption in developed and emerging economies?
- ❖ Could we measure circular economy performance and suggest means for improvement?
- ❖ How could technology play major role in adopting circular economy?
- ❖ What are the various measures related to resource and energy efficiency that have been undertaken in order to achieve circular economy?
- ❖ How reduce, reuse and recycle principles have been practiced across the society in order to adopt circular economy?
- ❖ What resources, strategies, and competences are required to implement circular economy?
- ❖ How circular economy is related to sustainable development goals?
- ❖ How social wellbeing and gender equality are related to circular economy?
- ❖ Is there any synergy between physical and mental health wellbeing, and circular economy?
- ❖ Could circular economy help achieve greater sustainability across industries?
- ❖ How effective waste management helps achieve greater sustainability?
- ❖ How is adoption of circular economy facilitated through advanced information and communication technologies (e.g. Industry 4.0, Internet of Things, Block chain, big data and 3D printing)?



GUEST EDITOR

**Prof P K Dey**, Operation and Information Management, Aston Business School, Aston University, Birmingham, UK

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IEI Join Hands with Various Certification Bodies to Nurture Engineers

IEI and The Institute of Cost Accountants of India have signed an MoU on 27 May 2019, Kolkata, to offer a course exclusively for engineers- "Executive Diploma in Cost & Management Accounting for Engineers". Here is a wonderful opportunity for all corporate members of IEI to enhance knowledge in the domain of finance and understand the framework of costing, accounting system etc. in various decision making processes.

IEI also ties up with Project Management Associates (PMA), on 3 Jun 2019, at Chennai, in an exclusive collaboration to build a project mindset through Project Management education "IPMA's level C and D Certification Programme" in the country. The program offers a golden opportunity for project professionals to acquire key knowledge and concepts in Project Management, based on the approach followed by the world's leading authority on competence based Project, Program & Portfolio Management- International Project Management Association (IPMA).

IEI members have the exclusive facility of enrolling in the courses at a discounted fee!

For details, Corporate Members may login to their respective dashboard (<https://www.ieindia.org/WebUI/IEI-Registration.aspx>) and submit their application under Certification --> IPMA.

Please visit [www.ieindia.org](http://www.ieindia.org) under Certification for details. For further clarification you may call at: 033-40106304 or Email at [certification@ieindia.org](mailto:certification@ieindia.org)

# News-in-Brief

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

## STATE CENTRES

### Gujarat

Gujarat State Centre, IEI organised Webinar on the topic 'Water Resources Management' jointly with L D College of Engineering, Ahmedabad and Water Management Forum on 29 August, 2020. Mr M P Raval, Past Chairman, Water Management Forum and Special Secretary (Saurashtra), Water Resources Department was the Chief Guest of the Webinar. Keynote Speakers, Mr Vivek Kapadia, Director, Sardar Sarovar Narmada Nigam Limited presented a lecture on "Role of Effluent Treatment in Alleviating Stress of Water" and Mr V S Patel, Managing Director, Gujarat Water Resources Development Corporation, Gandhinagar, delivered lecture on "Sustainable Ground Water Management". Earlier, Mr M D Patel, Chairman-BOG, Water Management Forum, IEI and Chief Engineer & Additional Secretary, SSNNL Gandhinagar addressed the audience.

### Telangana

The Institution of Engineers (India), Telangana State Centre in association with GRIHA Council organised a Webinar on 'Green Building – The GRIHA Way' on 21 May 2020. Dr G Rameshwar Rao, Chairman, Telangana State Centre and Council Member, IEI welcomed the gathering. Mr T Anjaiah, Honorary Secretary, Telangana State Centre proposed the vote of thanks.

A two-day Webinar was organized by the Telangana State Centre, IEI on the theme 'Make-in-India Approach for Textile Industry : The Global Perspective' during August 28-29, 2020. Mr B Vinod Kumar, Vice Chairman, Telangana State Planning Board, Government of Telangana was the Chief Guest on the occasion and deliver an inspiring address to the audience. Er Narendra Singh, President, IEI graced the function as Special Chief Guest and

addressed the audience. Dr G Rameshwar Rao, Chairman, Telangana State Centre and Council Member, IEI presided over the function. Mr T Anjaiah, Honorary Secretary, Telangana State Centre welcomed the gathering. Dr P L Panda, Convener of the Webinar proposed the vote of thanks. During the technical sessions, number of papers were presented covering wide spectrum of subjects During the valedictory function, Prof (Dr) G H S Prasad, Joint Director, National Institute of Fashion Technology, Hyderabad was the Chief Guest.

## LOCAL CENTRES

### Kanpur

Kanpur Local Centre, IEI organised a Webinar on 18 July 2020 on the topic 'Technological Solution for Mitigating Covid 19'. The Webinar talk was delivered by Prof (Dr) J Ramkumar, Chairman, Kanpur Local Centre and Professor, Department of Mechanical Engineering, IIT Kanpur. Dr Rajat Kumar Khare, Honorary Secretary, Kanpur Local Centre delivered the welcome address and at the end of the lecture session, proposed the vote of thanks.

Kanpur Local Centre, IEI organised a Webinar on the topic '3D Printing - A Tool for Sustainable Manufacturing' on 21 August, 2020. Mr Dinesh Kumar, Spitfire, Coimbatore, Tamil Nadu delivered lecture on the topic and mentioned that 3D printing creates complex structures by using less amount of materials which are generally not possible with traditional subtractive manufacturing and provides greater flexibility during product development. Earlier, Prof (Dr) J Ramkumar, Chairman, Kanpur Local Centre delivered the welcome address. Dr Rajat Kumar Khare, Honorary Secretary, Kanpur Local Centre proposed the vote of thanks.

### Sunabeda

Sunabeda Local Centre, IEI observed World Environment Day on 5 June 2020. Mr Nirod Chandra Behera, Chairman, Sunabeda Local Centre, IEI & AGM (Planning), HAL welcomed the august audience. Chief Speaker during the function, Mr Pradeep Kumar Dash delivered a presentation on the theme and read out Hon'ble Prime Minister's Message. Mr Arabinda Swamy, Honorary Secretary, Sunabeda Local Centre proposed the vote of thanks.

## Important Notice

It has been observed that there are many Corporate Members of IEI whose mobile number/email id is not registered with IEI till date. Non availability of the mobile numbers and email ids precludes us not only from providing our full range of services but also from participation in the Online Election Process.

The Corporate Members whose mobile number/email id is not registered with IEI are therefore requested to kindly communicate their mobile no. and email id along with membership number to [datamemb@ieindia.org](mailto:datamemb@ieindia.org) by 10 November 2020.

For any further clarification, one may feel free to speak to us at (033)40106248/ 246/ 269/ 299.

Mr H R P Yadav  
Secretary and Director General-I/C

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